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Teacher Education in Special Education via Distance Learning: Combining Quality with Inclusion, Innovation, and Accessibility

Formação de Professores em Educação Especial na Modalidade EaD: Combinando Qualidade com Inclusão, Inovação e Acessibilidade

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Abstract

This article discusses the initial and continuing education of teachers in Special Education through Distance Learning in the state of Rio de Janeiro. Methodologically, the study followed the principles of qualitative research, analyzing documents produced in two programs offered by public institutions: an undergraduate degree in Special Education and a specialization program in Special Education and Technological Innovation. Data analysis revealed, among other points, that the pedagogical projects of both programs focus on the role of dialogical interaction and mediation in educational processes. This approach led to greater student participation in learning activities and lower dropout rates compared to other programs nationwide. The research also showed that the innovative methodology in Distance Learning, with synchronous and asynchronous activities, can be considered highly successful in preparing teachers in Special Education through this modality, combining quality, inclusion, and accessibility.

Keywords: Distance learning. Teacher education in special education. Inclusive education. Assistive technology. Accessibility.

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Formação de Professores em Educação Especial na Modalidade EaD: Combinando Qualidade com Inclusão, Inovação e Acessibilidade

Resumo

Neste artigo, discute-se a formação inicial e continuada de professores em Educação Especial na modalidade Educação a Distância (EaD) no Estado do Rio de Janeiro. Em termos metodológicos, seguiram-se os princípios da pesquisa qualitativa, com análise de documentos produzidos em dois cursos oferecidos por instituições públicas: um de graduação em Educação Especial e outro de especialização em Educação Especial e Inovação Tecnológica. A análise dos dados evidenciou, entre outros pontos, que os projetos pedagógicos de ambos os cursos têm foco no papel da dialogicidade e da mediação nos processos educacionais. Essa abordagem, se comparada a outros cursos nacionais, proporcionou maior participação dos estudantes nas atividades de ensino e menor taxa de evasão. A pesquisa também revelou que a metodologia inovadora em EaD, com atividades síncronas e assíncronas, pode ser considerada bastante exitosa na formação de professores em Educação Especial nessa modalidade, combinando qualidade, inclusão e acessibilidade.

***Palavras-chave**: EaD. Formação de professores em educação especial. Educação inclusiva. Tecnologia assistiva. Acessibilidade.*

1. Introduction, Ethical and Methodological Considerations

Since the 1990s, there has been a growing body of debate and research on the inclusion of people with disabilities, autism spectrum disorder (ASD), and other social groups. In recent years, with the introduction of the National Policy on Special Education from the Perspective of Inclusive Education (PNEEPEI) (Brazil, 2008) and the Brazilian Inclusion Law (LBI) — Law No. 13,146, of July 6, 2015 — (Brazil, 2015), both in line with the Convention on the Rights of Persons with Disabilities, incorporated as an amendment to the Federal Constitution, the debate has expanded even further. This expansion also followed the enactment of Law No. 13,409, dated December 28, 2016, which amended Law No. 12,711, dated August 29, 2012, establishing the reservation of spots for people with disabilities in technical programs at the secondary and higher education levels at Federal Institutions of Higher Education (Brazil, 2016). This legal framework establishes, among other aspects, that educational systems must be inclusive and accessible in their various dimensions (physical, communicational, instrumental, methodological, curricular, attitudinal, and digital), as a principle of human rights (Souza, 2023).

In line with these principles and legal developments, institutions of higher education (HEIs) have made progress on this front, with some expanding the number of reserved spots for this population in their stricto sensu and lato sensu graduate programs as well. At the same time, this period saw the growth and consolidation of distance learning programs, led largely by the private sector and supported by the widespread adoption of the internet. While, on the one hand, the expansion of distance learning (DL) programs has facilitated the expansion of higher education into rural areas, ensuring access for previously excluded individuals, on the other hand, it has led to the precariousness and homogenization of massive programs with limited pedagogical interaction.

Based on this reality, this article presents the results of a qualitative documentary study on initial and continuing teacher training in Special Education through distance learning, offered by public institutions located in Rio de Janeiro. The article focuses on discussing the pedagogical and methodological innovations adopted in these courses, in line with the inclusion and accessibility of individuals in Special Education, as well as examining the challenges of initial and continuing teacher training in this field.

2. Methodology and Ethical Considerations

Research on the inclusion and development of people with disabilities and the use of Assistive Technology (AT) is part of a network involving researchers from the Assistive Technology and Inclusion Laboratory at the National Institute of Technology (INT), the Assistive Technology Laboratory at the Education Center of the Federal University of Rio Grande do Norte (UFRN), and the Robotic Learning Laboratory (LAR) at the State University of Rio Grande do Norte (UERN), under the coordination of the Multi-User Laboratory at the Center for Technological Innovation and Inclusive Education (CITEI) at the Federal Rural University of Rio de Janeiro (UFRRJ). The project is part of SisAssistiva, under the "Novo Viver sem Limite" Plan of the Ministry of Science, Technology, and Innovation (MCTI). Among other areas of focus, the project proposes: a) the development, evaluation, and validation of products and solutions for people with disabilities; b) the training of teachers in the field of Assistive Technology (AT) to serve public education, particularly students with disabilities and ASD; c) accessible teaching solutions, using the principles of Universal Design for Learning (UDL) — such as virtual learning environments and distance learning platforms; and d) popularization and scientific dissemination, in accordance with the Project's Scientific and Technological Dissemination Plan – Decree No. 11,754, of October 25, 2023 (Brazil, 2023a), considering AT, inclusion, universal design, and accessibility. The project was approved on the Plataforma Brasil under number 83288524.0.0000.0311.

The concept of AT adopted by the research team follows the guidelines of Decree No. 10,645, dated March 11, 2021, which implemented Article 75 of the LBI (Brazil, 2015) and sets forth the guidelines, objectives, and priorities of the National Assistive Technology Plan (Brazil, 2021). According to the Decree, AT refers to a set of resources and services aimed at promoting autonomy, independence, quality of life, and social inclusion for people with disabilities or limited mobility. These resources include products, equipment, devices, methodologies, and services that assist in the performance of activities and social participation (Brazil, 2021).

In terms of methodology, for this article, we conducted a qualitative literature review of two teacher training programs in Special Education, namely: the Bachelor's Degree in Special Education, which began in the first semester of 2022 and is offered online by UFRRJ; and the lato sensu course, at the Specialization level in Special Education and Technological Innovation, offered through a public-public partnership between UFRRJ and the Rio de Janeiro State Foundation for Science and Higher Distance Education (Fundação CECIERJ), which began in April 2022 and is currently in its third edition. Table 1 below summarizes the documents analyzed.

Table 1: Documents for Initial and Continuing Education Programs in Special Education.

Course	Document	Year	Link
Bachelor's Degree in Special Education	Educational Policy Project	2022	https://cead.ufrrj.br/licenciatura-em-educacao-especial/
Bachelor's Degree in Special Education	Management Report	2023	https://cead.ufrrj.br/licenciatura-em-educacao-especial/
Specialization in Special Education and Technological Innovation	Educational Policy Project	2022	https://cead.ufrrj.br/especializacao-em-educacao-especial-e-inovacao-tecnologica-fortalece-formacao-de-profissionais-qualificados/
Specialization in Special Education and Technological Innovation	Report from Class 1	2023	https://cead.ufrrj.br/especializacao-em-educacao-especial-e-inovacao-tecnologica-fortalece-formacao-de-profissionais-qualificados/
Specialization in Special Education and Technological Innovation	Report from Class 2	2025	https://cead.ufrrj.br/especializacao-em-educacao-especial-e-inovacao-tecnologica-fortalece-formacao-de-profissionais-qualificados/

Based on the analysis of these documents, we have organized the discussion of the data around two main themes: a) the background and development of distance learning teacher training programs in Special Education; and b) dialogicity, inclusion, and accessibility as foundational principles for distance learning teacher training. These themes will be compared with the specialized literature in the field and with official data on distance learning and teacher training in Brazil. We also engage with historical-cultural theory, which underpins the theoretical and methodological frameworks adopted in the courses regarding dialogicity and the mediation of teaching and learning processes.

3. Background and Development of Distance Learning Teacher Training Programs in Special Education

In recent decades, the number of students enrolled in special education programs within the basic education system has more than doubled. According to data from the 2024 School Census, released by the Anísio Teixeira National Institute for Educational Studies and Research (Inep) (2025), enrollment rose from 930,600 in 2015 to 2.07 million students in 2024. Of this total, 92.6% study in regular classrooms within the mainstream school system. In higher education, despite the reservation of spots at federal institutions under Law No. 13,409/2016, previously cited, we have not yet reached 1% of total enrollment for students in special education.

Despite these advances, research in the field indicates that a number of challenges still need to be addressed, such as ensuring support in the multifunctional resource rooms of the Specialized Educational Services (AEE), which serve approximately 30% of educational institutions with students in the Special Education population. Another notable issue is the lack of guaranteed access to the curriculum, particularly for students with intellectual disabilities and ASD, who total 1,773,403 enrollments (Borges; Camargo; Valle, 2024; Casagrande, 2023).

In addition to these issues, one of the themes that has historically been present in research—and which directly affects educational inclusion—is teacher training (Araújo, 2024; Mendes, 2023; Pletsch, 2023). According to data from the 2024 School Census, 93.19% of classroom teachers working in the country lack continuing education in Special Education from an inclusive perspective. According to the same indicators, among those working in AEE multifunctional resource rooms, less than half (41.9%) had continuing educa-

tion in this area (Inep, 2025). In the specific case of the state of Rio de Janeiro, these figures are even more concerning, as only 3.47% of teachers in regular classrooms have training in Special Education from an inclusive perspective, and 32.81% of those working exclusively in AEE.

Still regarding initial and continuing education in Special Education, the data analyzed by Casagrande (2023) reveal that private courses predominate in both initial and continuing education in Special Education. According to the author, based on an analysis of the courses registered in e-MEC, it can be inferred that the majority are offered in the distance learning format. In continuing education, there are 232,661 on-campus spots and 354,119 spots in distance learning courses. Only 20 courses are offered by public institutions of higher education, in the form of specialization courses in Special Education

Casagrande (2023) also analyzed the educational programs and found that some institutions offer more than 70 courses simultaneously, and that some professionals coordinate between 10 and 46 specialization courses. Likewise, the author found that the courses, to a large extent, follow self-instructional distance learning methodologies, focused on approaches without interaction and/or mediation in the teaching and learning processes. Her analysis also highlighted a tendency toward a medical model in the curricula proposed for course development, where the focus remains on the characterization of disability, to the detriment of discussions about pedagogical processes, curriculum accessibility, and the supports required by the Special Education population.

With regard to initial teacher training, Casagrande's (2023) study—conducted prior to the 2024 National Plan for Basic Education Teacher Training (PARFOR) Equity—shows that 791 spots were offered at public institutions and 51,014 at private institutions, primarily through distance learning. Still on the topic of initial teacher training in Special Education, it is important to note that, as of 2022, only the Federal University of Santa Maria (UFSM) and the Federal University of São Carlos (UFSCar) offered regular Bachelor's degree programs in Special Education in Brazil.

In the case of Rio de Janeiro, prior to the creation of the programs under discussion here, 12,400 spots were available for initial and continuing teacher training in Special Education, as demonstrated by Bruno Cleiton Macedo do Carmo and colleagues in 2021 during a presentation at the 40th National Meeting of the National Association of Graduate Studies and Research in Education (ANPEd) regarding research conducted on e-MEC.

In light of this reality, the specialization programs in Special Education and Technological Innovation and the Bachelor's Degree in Special Education were developed. The specialization program, the first of its kind in the state of Rio de Janeiro, was approved by the Council for Teaching, Research, and Extension (CEPE) at UFRRJ through Resolution 323 (Case No. 23083.042395/2021-83). The course originated from one of the initiatives developed as part of the project "Interdisciplinary Research and Actions Between Education and Health to Promote Schooling and Development of Children with Congenital Zika Virus Syndrome," which focused on the collaborative development, evaluation, and validation of a continuing education program with 50 early childhood education professionals from the Municipal Education Network of Duque de Caxias, to develop pedagogical strategies for the arrival of children with multiple disabilities and complex communication needs resulting from Congenital Zika Virus Syndrome (CZVS) (Pletsch; Araújo; Rocha, 2020).

The program's results were deemed very positive, and the special education administrators who are members of the Permanent Forum on Special Education from an Inclusive Perspective in the Baixada and Southern Rio de Janeiro regions began calling for the program to be replicated within their school districts. Since there was no funding, the administrators drafted letters through their Departments of Education requesting a Specialization Course in Special Education and Technological Innovation. These letters and the course's pedagogical project were presented during a meeting to the Secretary of Science, Techno-

logy, and Innovation of the State of Rio de Janeiro (SECTI), who approved the proposal and encouraged the partnership between UFRRJ and CECIERJ (UFRRJ; CECIERJ, 2023). Based on this, from January to March 2022, a working group (WG) composed of researchers from UFRRJ and CECIERJ worked collectively and collaboratively to develop the course's pedagogical and methodological proposal. Since then, this WG has functioned as a permanent advisory body, involved in course coordination, coordination and implementation of course modules, and tutoring coordination. According to documents analyzed, year after year, the proposal has been evaluated to improve the didactic-methodological design for distance learning, following principles of accessibility and the DUA (UFRRJ; CECIERJ, 2023, 2025).

Driven by the achievement of establishing the specialization program, a broad initiative was launched during the same period, orchestrated by members of the Permanent Forum on Special Education from the Perspective of Inclusive Education in the South and Baixada Fluminense regions and the Intermunicipal Group, involving approximately 40 school districts at that time, as well as the Lotus Association, formed by families affected by SCZ, and other organizations for people with disabilities. As a result of this coordination, approximately 40 letters were sent to the dean of UFRRJ, requesting support for the creation of the Bachelor's Degree in Special Education in the distance learning format, 19 of which were from municipal secretaries of education and 20 from administrators in the field of Special Education.

In response to this demand, in February 2022, the CEPE at UFRRJ approved, through Resolution No. 92, the Bachelor's Degree in Special Education offered through distance learning, following the pedagogical and methodological guidelines adopted in the Specialization Course in Special Education and Technological Innovation. This program became part of the Program for the Expansion of Distance Learning at Federal Public Universities – Reuni Digital, created by the Ministry of Education (MEC) through the Secretariat of Higher Education (Sesu), based on proposals developed by a working group comprising members from universities, associations, and third-sector organizations, with representation from Brazil's five regions, in accordance with Ordinance No. 434 of October 22, 2020 (Brazil, 2020).

The Reuni Digital Program aimed to expand access to and retention in public higher education through distance learning, and to ensure the quality of programs offered by the network of Federal Institutions of Higher Education (IFES), a goal set forth in the National Education Plan (PNE) 2014–2024. In addition to expanding enrollment in public higher education, the courses included in the program were intended to serve as a basis for data collection and the evaluation of innovations in distance learning within higher education. Unfortunately, in 2023, without any dialogue or feedback regarding the data and innovations produced by the institutions, the Ministry of Education (MEC) discontinued the program.

As we can see, both distance learning courses were developed in response to social demands raised by education network administrators and organized civil society groups representing families and people with disabilities. During the development of the pedagogical projects, online meetings were held to discuss the pedagogical proposal for the courses, and in both cases, the following principles were adopted: educational inclusion, accessibility in its various dimensions, assistive technology, and collaboration as the central foundations for the initial and continuing training of teachers in Special Education. Regarding participation, the involvement of people with disabilities, their families, public officials, and civil society in the development of course proposals is one of the core principles of transformative citizen science, a term coined by Pletsch (2023) based on the premises of Citizen Science and Transformative Activist Research (Stetsenko, 2021).

4. Dialogicity, Inclusion, and Accessibility as Foundations for Teacher Training in Distance Education

An analysis of the pedagogical plans and management reports for both courses reveals a range of innovations in the development of distance learning. They also point to pedagogical and technological innovations, particularly regarding accessibility, DUA, and AT—especially those of low complexity or cost—which are largely employed in the educational process for students with disabilities in the multifunctional resource rooms that are part of the AEE, as provided for in the LBI and the recent National Assistive Technology Plan (Art. 8) – Decree No. 10,645/2021 –, which lists a series of responsibilities and competencies of the MEC in these areas (Brazil, 2021). In this regard, the courses—in addition to meeting a need expressed by municipalities and the state of Rio de Janeiro—have contributed to the dissemination of knowledge about ASD and accessible teaching methodologies used in K-12 education and higher education, with a view to increasing the participation and inclusion of people with disabilities and ASD.

Below, we outline a set of pedagogical innovations and technologies developed within the programs: 1) Publicly accessible classes on YouTube, subsequently made available on the Virtual Learning Environment (Moodle); 2) Weekly video tutorials with the faculty members holding doctoral degrees in the Bachelor's program and, in the case of the Specialization program, with the tutors, under the supervision of the course coordinators and the tutoring coordination team, using online conferencing tools; 3) In-person tutoring sessions at the learning centers with tutors for Bachelor's students, and use of the learning centers for the Specialization program by appointment through the coordination office; 4) A standing committee for both programs and, in the case of the Bachelor's program, a faculty body; 5) Priority given to the use of open-source teaching materials, without the use of handouts, in line with open science and the use of public educational repositories; 6) Methodology centered on DUA, in dialogue with accessibility in its various dimensions (primarily curricular and digital accessibility); 7) Cross-cutting integration of collaboration, DUA, accessibility, and assistive technology in the courses' pedagogical projects; 8) Teaching materials with pedagogical accessibility from the DUA perspective (e.g., use of different educational strategies, captions, Brazilian Sign Language (Libras), audio description, images, concept maps, summary videos, and other resources that promote the participation, learning, and development of people with disabilities); 9) Courses/modules and content aligned with the biopsychosocial model of disability, as provided for in the LBI; 10) Both courses offer content and/or courses on the educational process of children with Zika syndrome—an important aspect for education, considering the epidemic experienced in Brazil from 2015 to 2016.

We should also mention that the LMS offers accessible plugins, in accordance with the Web Content Accessibility Guidelines (WCAG 2.1) – eMAG – and with digital accessibility standards as outlined in the Guide to Best Practices for Digital Accessibility issued by the Ministry of Management and Innovation (Brazil, 2023b). It is important to note here that following WCAG guidelines alone does not guarantee accessibility. Gonçalves's (2023) study, which analyzed the digital accessibility of the Moodle LMS for Class 1 of the Specialization program, highlighted aspects such as navigability and usability as fundamental to accessibility for people with disabilities. To this end, as Pletsch (Course Launch [...], 2024) highlights, it is not enough to provide accessible instructional materials and accessibility tools and plugins; it is necessary to structure the LMS with accessible language—for example, in the wording and organization of the content presented—with validation of the tools and plugins, as well as the content, by users with disabilities.

In addition to these innovations, it is also worth noting that, in the Bachelor's program, instruction is organized into thematic areas with ongoing assessment, coordinating content and courses by semester, with instruction centered on projects developed based on the needs of the students' local communities. According to the Course's Pedagogical Project, internships, extension activities integrated into the curriculum, and seminars are conducted in partnership with the networks where the course's centers are located; these are in-person, as required by law.

Another key factor in the course's quality is the average student-to-tutor ratio of up to 55 students per tutor in each class offered in the Specialization program, a factor that enhances the quality of instruction. In distance learning, it is common for each instructor to be responsible for more than 100 students. In some institutions, the more self-directed the course's pedagogical model is, the higher this ratio becomes — exceeding 1,000 or even 2,000 students per tutor. The significant increase in distance learning enrollments has led the Ministry of Education (MEC) to present new data. Although this is not yet a consolidated indicator, in the 2023 Higher Education Census, Inep (2024) presented the ratio between the number of enrollments by mode of instruction and the number of faculty members at four major higher education institutions to highlight the importance of considering this data. One of the listed institutions, where 99.99% of enrollments are in distance learning, has a student-to-faculty ratio of 2,177 students per faculty member.

Another innovation in both courses is that the general classes for each subject or module are open to the public and can be viewed by students in real time via YouTube and Facebook channels (in the case of the Specialization), with a discussion at the end of each class and live chat interactions with tutors and instructors during the session. These classes are also available on the Moodle LMS. The discussion continues in the LMS discussion forums, where reflections related to what was discussed in the synchronous class are shared. This practice fosters dialogue in teaching and brings students closer to professors and tutors. Furthermore, it offers the flexibility necessary for distance learning students to engage in discussions, as well as assisting them in planning their studies. Considering that the Specialization's classes have already reached 334,227 views and nearly 100,000 hours watched, this practice also contributes to popularization and scientific dissemination.

In the Specialization program, in addition to the innovations listed above, we also highlight the inclusion of content and discussions on artificial intelligence (AI), linked to ASD and pedagogical strategies aimed at involving children and young people with disabilities and ASD in teaching and learning processes. AI is also discussed from a critical and ethical perspective regarding its use in education. It is also worth noting that in this program—unlike at the Open University of Brazil (UAB)—course coordinators and tutors are involved throughout the entire program, rather than just in specific courses, which allows for continuous monitoring of students' educational progress.

In addition, the documents analyzed indicate that, throughout the course, training sessions and assessments are conducted at the beginning and end of each module. We believe this strategy is crucial to the course's quality and helps reduce dropout rates, which, in the case of the Specialization program, were 25.38% and 26.10% for Cohorts 1 and 2, respectively. Since the Bachelor's program is still ongoing, it is not possible to analyze this data; however, all indications suggest that it will also show lower dropout rates compared to other undergraduate programs of this type (Oliveira & Bittencourt, 2020).

These findings corroborate the results of Araújo's (2024) doctoral dissertation in education, which analyzed documents from approximately 1,500 elementary and secondary school teachers who enrolled in the first cohort of the Specialization Program in Special Education and Technological Innovation. An analysis of the registration forms containing general information about the registrants, the letters explaining their reasons for taking the course, and the participant evaluation forms highlighted the dialogic nature and mediation of the teaching and learning processes experienced during the course as one of the positive factors. Among the experiences mentioned, we highlight the weekly video tutorials with the tutors.

These findings were confirmed in the course report, which indicates that 674 students (83.21%) out of a total of 810 respondents (74% of those enrolled) rated the strategy as excellent or very good. Another very positive finding concerns the assessment activities designed in accordance with DUA principles. According to 791 students (97.65%), these activities provided learning opportunities in which they were able to complete the tasks. Of these, 770 (95.06%) found the way the tasks were assigned and organized on Moodle to be easy. Data reinforcing this perspective were also identified in Class 2 (UFRRJ; CECIERJ, 2023, 2025).

The importance of this strategy in distance learning was also highlighted in the training report on 575 tutors, conducted by UFRRJ (2025) , which indicated that 74.7% of participants rated it as excellent or very good. The data on the distance learning methodology used, which included synchronous and asynchronous activities in the training, were rated by 69.6% of participants as excellent or very good. If we include the "good" rating, 90.8% of participants approved of this didactic-methodological design. This highlights the potential of technology to expand participation and even inclusion in the educational activities offered.

Given what has been discussed so far, we realize that, in today's world, it is impossible to ignore the impact that technology has had on teaching and learning methods, a fact that is particularly evident in distance learning experiences. At first glance, everything seems designed to "work" well: the content is available, the forums are filled with the required posts, and assignments are submitted by the deadlines. However, when we decided to build our own model for distance education, we sought to understand the human element within this space. Were we, in fact, teaching and learning—or merely completing a sequence of tasks? Distance learning constitutes a realm of possibilities, but also of silences. A structured platform and a well-developed instructional design are not enough. Educational potential is realized when there is a genuine exchange between the individuals involved. And this exchange is not automatic; it must be built and facilitated.

In this vein, the dialogical approach adopted drew upon one of the aspects highlighted by Vygotsky (2001) in understanding human beings: the qualitative transformation that culture brings to the construction of subjectivity. For the author, humans are historical and cultural products of the relationships they experience, and are therefore deeply shaped by the concreteness of their conditions. Thus, relationship and mediation become necessary conceptual elements for dialogicity to be established in an educational approach. In other words, the subject becomes human by being inserted into language, which leads to symbolic/abstract thought, freeing them from the constraints of the here and now and enabling generalizing thought. Objects of knowledge unfold in two dimensions: the concrete dimension of the presented object; and the conceptual dimension, which encompasses the object in its most varied presentations.

Drawing also on Bakhtin (2011), we consider that meaning arises from the clash between different voices. Discourse is never neutral or isolated: it is always in response to another utterance. In the experience of the Specialization program described here, this dynamic was evident from the very conception of the course, in the collective development of content, and also in the design of the Moodle LMS. It persisted at the end of each module, when the activities carried out were collectively evaluated, leading to changes deemed necessary for the next module. It was informed by the evaluations provided by students at the end of each stage. It was evident in the chat during public classes, which were collectively attended by course participants and the entire team. The idea of collaborative work guided the entire project and all those involved.

Here, we again draw on Vygotsky (2000, p. 75): "All functions in development [...] appear twice: first at the social level, and then at the personal level [...]". The notion that everything that becomes intrapsychic was first interpsychic helps us understand the role of mediation. We learn through relationships—through symbolic exchanges that broaden our horizons. However, how can we ensure that these exchanges actually occur in distance education? How can we create learning situations that transcend individualism and promote a genuine restructuring of knowledge?

This mediation requires intentionality. In our experience, the teacher-tutor played a key role in the process. He or she does not merely "facilitate" the process, but effectively mediates it by listening to the student, asking questions, and challenging them. They closely observe where the student's knowledge is anchored to encourage them to move toward what Vygotsky defines as potential development. Learning and teaching, conceived as inseparable parts of a dialogical act, require a willingness to embrace discomfort. They require us to deal with contradictions and to reexamine ideas that once seemed unquestionable to us. It is a delicate, often tense process, yet one that is profoundly necessary to bridge the gap in education,

for beyond the cognitive dimension, there is also an ethical dimension to the mediation process. Dialogue is sustained only when there is recognition of the other as a legitimate interlocutor. Bakhtin (2011, p. 394) challenges us by saying that ethical dialogue is "the idea of God in the presence of God"— a striking image to remind us that the other is simultaneously an obstacle and a condition of our own understanding. In distance education, this translates into responsible and responsive listening, valuing students' contributions, and being mindful of one's words.

The challenge is not merely to improve tools or expand access to content. It is to conceive of distance education as a space where knowledge is built through relationships—a place of living, provocative language in constant transformation. Ultimately, to educate is to uphold this commitment to encounter—with all its unpredictability, risk, and, at the same time, profound fruitfulness. If we want to envision a dialogic, intimate form of distance learning, we need to invest in pedagogical spaces that welcome conflict, dialogue, and listening. Knowledge is not built in silence, but in the tension between voices. Dialogue is a risk—and it is where the real possibility of transformation lies.

This perspective runs through the proposals analyzed, particularly in the Specialization course. This suggests that the problem and the precariousness do not lie in the educational format itself, but rather in the pedagogical design and structure, as well as in the resources and strategies of mediation and dialogic interaction employed to promote quality education, inclusion, accessibility, and ethical and social commitment. This commitment appears to be being fulfilled in the courses analyzed here, which could serve as a reference in the development of proposals in this area.

5. Conclusion

Based on a qualitative document analysis, this article presented the process of creating and developing the pedagogical and methodological framework for distance learning in two courses in the field of Special Education: the Specialization in Special Education and Technological Innovation and the Bachelor's Degree in Special Education. The data indicate the background and social participation in their design, as well as highlighting technological and pedagogical innovations in the development of the courses, with a focus on mediation and dialogic interaction with students in synchronous and asynchronous activities.

The documents analyzed show that, to increase student participation and inclusion, the design adopted for the Moodle LMS was based on the cross-cutting principles of accessibility throughout its development, in consultation with the DUA and assistive technology (AT). Unfortunately, even today, AT is often understood from a narrow perspective, as merely a technological resource. Throughout this article, we highlight the understanding of AT linked to curricular and digital accessibility, viewing it within a broader dimension that encompasses equipment, devices, resources, methodologies, strategies, practices, and methodological processes in distance education. Here, we must point out that, to a large extent, the AT used in schools is handmade by teachers, using materials and resources available in schools (often referred to as "scrap"). These technologies ultimately have a decisive impact on participation, learning, and, consequently, the academic and life trajectories of students in Special Education.

These principles were also central to the development of the content and teaching activities carried out, particularly in the Specialization course, which is based on collaboration among students in carrying out activities and assessments. In our analysis, collaboration is central to promoting inclusive pedagogical practices, especially in planning between teachers of regular classes and special education, as previously highlighted by Braun and Marin (2016) and Mendes (2023). Finally, the data presented here help to reflect on the urgency of discussing distance education teacher training that takes into account scientific, pedagogical, and technological advances. Quality distance education, with a social and ethical commitment to teacher training that combines quality, inclusion, and accessibility, cannot be conceived without considering these advances and the demands of Brazil's social reality.

In this article, we highlight that it is not the mode of instruction that defines the quality of education, but rather the pedagogical design, the interactions, and the educational mediations fostered throughout the learning process. In other words, the legislative change requiring in-person testing for teacher-training courses delivered through distance learning seems to us an inadequate proposal given the country's needs and the advances in scientific and technological research. Approaching distance learning based on assumptions of the in-person model, disregarding the possibilities opened up by technological resources (such as AI, gamification, and so many other digital advancements) that foster interaction and the mediation of collaborative educational processes, as well as the participation and accessibility of people with disabilities, strikes us as a step backward.

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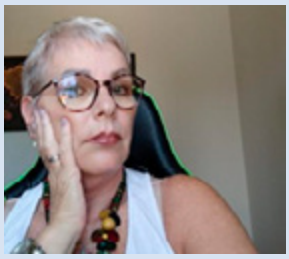

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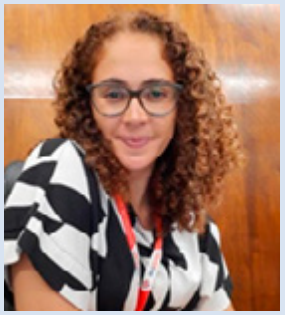

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