

The Schooling Process of a Deafblind Student: Challenges of Inclusive Education

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ABSTRACT

Background: Inclusion represents a crucial aspect of contemporary education, especially considering the intrinsic singularities of each student at all levels of education. **Objective:** Analyse the challenges of a student with deafblindness during her schooling process. **Design:** The research was qualitative and carried out from the perspective of life history. **Setting and participants:** The participants were the deafblind student, the interpreter, and the student's mother. **Collection and analysis:** Unstructured interviews were conducted to understand the participants' perceptions of the student's schooling process. **Results:** Data analysis highlighted the family's challenges in ensuring the student completed her education, indicating the relevance of acquiring Brazilian Tactile Sign Language and Braille for educational inclusion. The family's efforts to find qualified professionals were also highlighted, in addition to the societal lack of knowledge about deafblindness. **Conclusions:** Given these results, the need for a deeper understanding of deafblindness is emphasised, especially in the school environment.

Keywords: Deafblindness. Schooling. Inclusive education.

O Processo de escolarização de uma estudante surdocega: desafios de uma educação inclusiva

RESUMO

Contexto: A inclusão representa um aspecto crucial da educação contemporânea, especialmente considerando as singularidades intrínsecas de cada aluno em todos os níveis de ensino. **Objetivo:** Analisar os desafios de uma aluna com surdez-cegueira durante seu processo escolar. **Desenho:** A pesquisa foi qualitativa e realizada a partir da perspectiva da história de vida. **Local e participantes:** As participantes foram a aluna com surdez-cegueira, a intérprete e a mãe da aluna. **Coleta e análise:** Entrevistas não estruturadas foram realizadas para compreender as percepções das participantes sobre o processo escolar da aluna. **Resultados:** A análise

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dos dados destacou os desafios da família em garantir que a aluna concluísse sua educação, indicando a relevância da aquisição da Língua Brasileira de Sinais Tátil e do Braille para a inclusão educacional. Os esforços da família para encontrar profissionais qualificados também foram destacados, além da falta de conhecimento da sociedade sobre a surdez-cegueira. **Conclusões:** Diante desses resultados, enfatiza-se a necessidade de um entendimento mais profundo sobre a surdez-cegueira, especialmente no ambiente escolar.

Palavras-chave: Surdez-cegueira. Escolarização. Educação inclusiva.

INTRODUCTION

Since Law n. 13.146 - Brazilian Law for the Inclusion of People with Disabilities (Lei Brasileira de Inclusão da Pessoa com Deficiência - Brasil, 2015), the inclusion process in Brazil has provoked reflections and changes in attitudes towards students. In this movement, the path to establishing an inclusive school has faced numerous challenges, mainly because it is necessary to take into account several factors, such as the physical environment, pedagogical aspects, differentiated resources for learning and the presence of a team qualified to work with students of different profiles (Mantoan, 2003). Given this scenario, inclusion in schools has impacted the very identity of teachers, redefining education and problematising the idea of a school based on homogeneity, considering more closely the characteristics of each individual.

From this context, this article originates from an excerpt from a doctoral thesis aiming at analysing and understanding the challenges faced by a student with deafblindness during her learning process based on her, her mother's, and her interpreter's perceptions, especially regarding the construction of scientific and mathematical concepts, contemplating the processes of adaptation of mathematics and science classes and/or content carried out by basic education teachers for this student. This text presents partial results that make it possible to understand the beginning of the schooling process, reflecting on deafblindness, its causes, and communication processes based on the comparison of results with the literature (Almeida, 2015; Cader-Nascimento & Costa, 2010; Farias, 2015; Maia, 2004 Rached, 2011). Given the theoretical premises arising from the authors above and the implications resulting from their theoretical constructs, we reflected on how respondents perceive the significant challenges students face, pondering on the singularities intrinsic to the educational process in question and possible contributions to the inclusion process in Brazilian basic education.

REFLECTIONS ON DEAFBLINDNESS

Over the years, according to Farias (2015), deafblindness has had several names. Maia (2004) uses terminology such as profound and multiple learning difficulty, severe multiple disabilities, deaf with multiple disabilities, blind with additional disabilities, multi-sensory impairment, dual sensory disability, and deaf-blindness. Furthermore, according to Maia (2004), in 1991, Salvatore Lagati proposed the word deafblindness, without a hyphen, at the 9th World Conference in Orebro, indicating a deficiency characterised by two different sensory losses (Almeida, 2015; Cader-Nascimento & Costa, 2010; Farias, 2015; Maia, 2004; Rached, 2011).

According to Grupo Brasil (2005) and Cader-Nascimento (2003), the following expressions have also been used over time: dual sensory impairment, multi-sensory impairment (MSI), audiovisual impairment (AVI), hearing impairment and visual impairment (HI/VI), deaf-blindness, and deafblindness.

Currently, the term used is deafblindness, which, according to Farias (2015, p. 20), means recognising it “as a singular disability that characterises a unique being, as a person with deafblindness cannot be considered as a person with multiple disabilities.” Rached (2011, p. 77) defines deafblindness as “a disability in which the individual has no vision or hearing, functioning as a single disability and not the result of the sum of deafness and blindness.” Corroborating this same concept, Galvão (2015, p. 27) considers that,

Deafblindness is a unique disability caused by the simultaneous loss of vision and hearing; the way it presents itself will depend on the extent of the impairment, which may be total or partial; it affects communication, mobility, interaction, and access to information.

Santos (2019, p. 44) defines deafblindness as a “unique disability that includes people with hearing and visual loss, requiring specific care for each case.” For this service to occur, considering the specific needs of each student, it is necessary to understand the classifications of deafblind people. According to Cader-Nascimento and Costa (2010), the type and intensity of the loss do not matter, but rather their functionality. Thus, there is a classification according to the loss, that is: Total deafblind; Profound deafness associated with low vision; Severe deafness associated with low vision; Moderate deafness associated with low vision; Moderate deafness associated with blindness; People with several partial impairments (Grupo Brasil, 2005).

Regarding the level of functioning, there are three classifications: low, medium, and high functioning. As for low functioning, there is an understanding that this group will learn the basics for their survival, having a

cognitive deficit since it clusters children, young people, and adults whose communication is limited to basic aspects due to the severe impairment of their perceptual pathways of the senses to achieve “cognitive motivation.” That is, severe impairment of the senses of distance interferes with the impulse or desire to interact and learn about the environment (Maia, 2004, p. 9)

Concerning the average level of functioning, it is possible to establish a higher level of communication that allows them to be included in the job market and carry out their daily activities.

It brings together children, young people, and adults who can become interested in the world through their residual perceptual pathways of distance. They can generalise strategies to solve everyday problems and lead semi-independent lives. (Maia, 2004, p. 10).

A high level of functioning indicates that people with deafblindness can reach relevant levels of learning in basic and higher education as long as they are attended to with the necessary interventions according to their singularities and learning potential. This classification groups together people with no impairment other than deafblindness, and who demonstrate problem-solving strategies and interests in their learning, being able to lead a life and learn based on their potential when they have the appropriate assistance to their particularities (Maia, 2004, p. 10).

Some people are born with the disability, while others acquire it throughout their lives. According to Falkoski and Maia (2021, p. 9), “a person with congenital deafblindness is born with or develops the disability before developing language.” For Grupo Brasil (2005), this group of deafblind people are called pre-linguistic. After the *DbI* DeafBlind International meeting in 1999, the expressions used for these conditions became *congenital deafblindness* and, for post-linguistics, *acquired deafblindness*, considering that, in this group, people acquire the disability throughout their lives. *DbI* Deafblind is an international association concerned with the education and provision of services to all deafblind people from childhood to adulthood.

Falkoski and Maia (2021, p. 10) point out that the post-linguistic deafblind person is “someone who remains in this condition throughout his or her life after having acquired a language or use a language, which can be oral or of signs.” For this group, Falkoski and Maia (2021) describe three distinct situations: people who were born deaf and developed blindness, people who were born blind and developed deafness afterwards, and people who were not born with any disability and lost their hearing and vision over the years.

Given these theoretical constructs, it is possible to understand more precisely the disability of each deafblind person and, based on this knowledge, promote greater possibilities for learning and communication, thus favouring their inclusion and participation in society. Based on a greater understanding of deafblindness and its classifications, teachers and other professionals who work with students can carry out more appropriate educational processes, knowing how to intervene in the educational process aiming at inclusion and the best way of communicating with deafblind people in addition to their more effective inclusion in society.

Regarding the origin of deafblindness, numerous diseases can cause this disability. Galvão (2015) states that pathologies related to the aetiology of deafblindness can occur before birth, being identified as prenatal, during birth, or after birth at any time in the person's life, the latter being called postnatal. They may be caused by rubella, cytomegalovirus, AIDS, herpes, toxoplasmosis, congenital syphilis, as well as the Rh factor (Rached, 2011).

According to Maia (2004), 60% of deafblind Brazilians had the condition due to congenital rubella, a disease caused by a virus. Cader-Nascimento (2003, p. 07) states that "rubella is an infection characterised by a low-intensity fever accompanied by a rash that disappears quickly." Studies show that rubella is a universal endemic problem and can occur in seven or ten-year cycles, which can be transmitted from mother to fetus via the placenta (Cader-Nascimento, 2003; Rached, 2011).

Some syndromes can also cause deafblindness (Maia, 2004), such as Down syndrome - trisomy 21, Marfan, Usher, Hallermann-Streiff, trisomy 13 - trisomy D syndrome - Patau syndrome, cry-du-chat syndrome, and CHARGE syndrome, among others. For Galvão (2015), CHARGE and Usher syndromes are predominant among Brazilians with deafblindness. Usher syndrome affects men and women alike, and despite having a prenatal origin, it can manifest later, giving rise to postlinguistic deafblindness. CHARGE syndrome is an abnormal embryological development between the third and seventh week of pregnancy, leading to malformations of specific body structures (Galvão, 2015). Therefore, we note that different causes can lead a person to be deafblind, including prematurity (Almeida, 2015; Cader-Nascimento & Costa, 2010; Farias, 2015; Maia, 2004).

The way people with deafblindness communicate will depend on the classification of their disability. If it is post-linguistic, the person may choose a means of communication that takes into account the residual disability they have, whether auditory or visual. Congenitally deafblind people need

specialised support to learn to communicate and receive stimuli from an early age and feel included in society because “communication is the key to the social insertion of deafblind people in their social and cultural environment” (Farias, 2015, p. 30).

Communication can be receptive and expressive. For Cambruzzi and Costa (2016, p. 39), receptive communication “is the process of receiving the message.” In the case of deafblind children, it is essential to have a communication partner so that the messages are understood. Expressive communication “involves sending a message to another person(s) to (a) make something happen or (b) stop something that is already happening” (Cambruzzi & Costa, 2016, p. 49). In both cases, it is possible to use the same forms of communication, both receptive and expressive (Cader-Nascimento, 2003), since there are different forms of communication for people with deafblindness. Figure 1 shows the most used ones.

Figure 1

Forms of communication of people with deafblindness. (Cader-Nascimento & Costa, 2010; Farias, 2015; Maia, 2004).

Tactile Libras	Brazilian Sign Language - Libras is used, making signs on the hands of the people who are communicating.
Tactile Alphabet	It uses Libras, with the letters of the alphabet being written on the hand palm of the person with deafblindness or a flat surface. The “pencil” will be the finger of the person communicating.
Tadoma	Also known as the “vibration method,” the person with deafblindness lightly places their hand on the interlocutor’s face to feel the vocal folds and lip movements.
Braille Digital System	It uses the body of the person with deafblindness, specifically the index, middle, and ring fingers. “The points used have the same structure and generating sign as the Braille system” (Farias, 2015, p. 36).

In this way, the different types of communication allow a person with deafblindness to choose the form that best adapts to their reality.

METHODOLOGICAL TRAJECTORY

The research that gave rise to this paper was approved by the Ethics Committee (CEP/CONEP System) of the Lutheran University of Brazil and is supported by a qualitative approach, which, according to Dal Farra and Lopes (2013, p. 71), “examines the human being as a whole”, allowing the study [...] “in depth of human experiences in the personal, family and cultural spheres, in a way that cannot be obtained with measurement scales and multivariate models”. In this conception, we seek to understand the educational experiences that a deafblind student experienced throughout her basic education.

Thus, with the theoretical premises of the life history approach, the investigative process was carried out, enabling “(...) individuals to present their stories, talk about themselves, use their memory, their memories and their witnesses” (Maccali et al., 2013, p. 3). From this perspective, we conducted unstructured interviews with the deafblind student (identified as S), her mother (identified as M), and an interpreter (identified as GI), who accompanied her throughout elementary school. The interviews were based on a motivating question and with the possibility for the interviewees to add topics whenever they considered necessary. The names were removed to preserve the identity of the participants.

The interviews took place in the first and second semesters of 2024 to look for memories of the events during her basic education. S completed basic and higher education and is studying for a master’s degree at a public university.

The collected data was analysed through the lens of the life history approach. The transcriptions of the interviews observed the principle of confidentiality, and the narratives were considered iteratively (Hernandez Sampiere et al., 2013) through reflections on the correspondence between the data obtained and the theoretical framework used. The research was challenging due to difficulty accessing the GI and respondents’ recollection of the events that occurred during S’s basic school days since many years had passed.

THE INTERVIEWS: CHALLENGES AND REFLECTIONS

To conduct the interviews based on the premise of the life story, we created a motivating question to begin the reports (Hernandez Sampiere et al., 2013). With this first question, we intended to learn a little about S’s history since birth, including the diagnosis of deafblindness. The interviews lasted an average of thirty minutes to one hour and were conducted on separate days with each participant.

The life experiences of the deafblind student began when M became pregnant with twins. Their birth was premature and left consequences for S, who was diagnosed first with blindness. According to M, her daughter's diagnosis of blindness distressed the family. Goitein et al. (2011) infer that the family generally goes through different phases when receiving this diagnosis, including shock, denial, reaction, and adaptation.

The girls were born in the early 1990s, extremely premature, in the sixth month of pregnancy. The twins had to stay in the incubator for two months, and S's sister did not suffer any after-effects. Authors such as Maia (2004) and Galvão (2015) indicate that children from a twin pregnancy who are born prematurely may present deafblindness in only one, with prematurity already being a factor that may cause deafblindness. To Galvão (2015), "Perinatal causes refer to complications that occur at the time of birth: prematurity, low birth weight, oxygen insufficiency (anoxia) [...]" (Galvão, 2015, p. 41)".

M received the diagnostic report that S's deafblindness resulted from prematurity. In the interview, we realised that they first detected blindness, then deafness. This distance between one diagnosis and the other can cause the family to suffer twice as much. Farias (2015, p. 96) states: "When receiving a child with congenital deafblindness, the family enters a stressful situation." The stress happens because family members often do not know how to deal with this child or provide for their basic needs.

One month after leaving the hospital, M noticed S's reactions differed from her sister's during breastfeeding and bathing, which led to the blindness diagnosis.

Regarding hearing capacity, usually, after a few months, hearing parents realise that their baby's behaviour increasingly deviates from what is considered normal (Rebelo, 2014). The differences in behaviour prompted the family to seek a specialist doctor to understand what was happening to their baby. Five months after the diagnosis of blindness came the diagnosis of deafness. The fact that the findings of deficiencies occur separately, according to Araóz and Costa (2008), can cause even greater difficulties for the family in assimilating the information.

When the deafblindness diagnosis came, M asked the doctor: "And now, doctor, what do we do?" With this question, M expected the doctor to indicate an institution that worked with this specific disability or a doctor who could help the child. However, the doctor simply said that she should take the baby home and feed him, hoping, perhaps, that for an early death. The doctor's

reaction shows the difficulties faced by deafblind children's families because, although there have been advances in contemporary times, there is still much to be done in society.

Historically, we know that people with disabilities were abandoned or left to die. Throughout history, there has been a process of greater acceptance and the creation of protective legislation, although the process still requires constant reflection and improvements.

M took her daughter home and looked for ways to improve her living conditions and contribute to her development. According to her, one of the biggest challenges was understanding what deafblindness really was. According to Gualda, Borges, and Cia (2013, p. 309): "Mothers are normally the ones who assume full responsibility for caring for their children, and often give up their personal and professional activities to dedicate themselves exclusively to the family".

The most significant understanding of the issue occurred shortly after M participated in a conference in São Paulo. She recalls:

At the time, deafblindness was an unknown disability; I went to a conference on deafness to ask a speaker if I had mothered the only deafblind person there or if there was anyone like that in Spain. The speaker said they did exist there, and some work was being done [about it]; so, information began to arrive about where they worked with deafblind people here in Brazil. At that time, she was already 5 years old. (Mother).

It is important to highlight that deafblindness implies the loss of vision and hearing simultaneously; however, the way it "manifests will depend on the extent of the impairment of the losses, which may be total or partial, affecting communication, mobility, interaction, and access to information (Galvão, 2015). Considering that the constant search to help her daughter conquer her place in society and school life brought countless challenges, M commented that being the mother of a deafblind person meant facing many challenges in life and go through much learning.

For Gualda, Borges, and Cia (2013) and Goitein et al. (2011), mothers of children with disabilities dedicate their time to helping their child be included in society and at school. And that was what M sought: "I went after knowledge to enable (...) education and inclusion, as she began to enter a process of self-flagellation, stereotyping, and began to enter a world that was only hers".

Agreeing with Cader-Nascimento (2003), we understand that through communication, human beings intend to obtain and share information about events, people, objects, and situations, which is fundamental to triggering social and school inclusion possibilities. In this context, S's first stage of schooling was in a special education institution for deaf people. At this school, the aim was to learn how to communicate with S and how she would be able to express herself.

To Cambruzzi and Costa (2016, p. 39), receptive communication “is the process of receiving the message.” That means that deafblind children must have a communication partner for intelligible message exchanging. Expressive communication “involves sending a message to another person(s) to (a) make something happen or (b) stop something that is already happening” (Cambruzzi & Costa, 2016, p. 49). In both cases, it is possible to use the same forms of communication, both in reception and transmission (Cader-Nascimento, 2003).

S's first forms of communication were the Brazilian Tactile Sign Language and Braille. The schoolteacher taught M sign language; she told us that very intuitively, without much specific technique, she would “do it on the S's hand.” An example of a sign was the one for home. M made it inside S's palm and then repeated the sign so she could feel it in her hand. Initially, S could not understand the signs and their meaning. However, M told us she did not give up, and each time she learned the signs, she would teach them to her daughter until S could assimilate and understand their use. Farias (2015) says there are different forms of communication, such as tadoma, tactile libras, the tactile alphabet, and Braille. The different types of communication allow a person with deafblindness to feel included and to be able to choose the form of communication that best suits their reality.

The narrative addresses the importance of communication in S's life. By learning Libras and Braille, M demonstrated a crucial commitment to the process of including her daughter. This is in line with the guidelines of Grupo Brasil (2005), which recommends that early stimulation is fundamental for people with disabilities. This process allowed S to move from a phase of isolation to a process of stimulation of learning. When a deafblind child “is stimulated early, he or she acquires more appropriate social behaviours and will also be able to develop and learn to use his or her remaining senses better than those who do not receive assistance” (Grupo Brasil, 2005, p. 11).

In this first stage of schooling, the communication barrier was overcome when M began to participate in scientific events on deafblindness and to get to know support groups, guidance, and monitoring for families and

deafblind people in the inclusion process. Regarding the schooling process for deafblind people, it is worth highlighting that,

Children learn more effectively when learning is integrated into daily life activities. Success in this learning process depends on the partnership between the educator and the family; that is why everyone's collaboration (teacher, family members, and professionals) in a transdisciplinary approach is essential. (Grupo Brasil, 2005, p. 22)

Thus, S was enrolled in a school with a special class for deaf people in early childhood education. At this stage, M worked fully with the school, seeking to learn various cognitive and motor skills. For her, "the fact that deafblindness was an unknown disability back then made the schooling process difficult because each stage S attended was a new beginning."

In the city where she lived (1999), the process of school inclusion for people with disabilities was not happening as it is today. People with disabilities generally stayed out of school or participated in the Association of Parents and Friends of People with Disabilities (Associação de Pais e Amigos dos Excepcionais - APAE). With the arrival of the family in the city where they currently live, M began to look for other parents who had children with disabilities so that together, they would have more strength to conquer spaces in schools and society in general.

S attended a regular school where deaf and blind students were together in a classroom to learn Libras and Braille, aiming at literacy. Back then, there were no qualified people to work with S. Hence, M herself continued to specialise to teach her daughter, confronting different government agencies to assist people with disabilities based on the principle of equity. M reports:

Within the municipality [...] I provoked an inclusion movement and was heavily criticised; they thought I wanted to close APAE because I wanted people with disabilities to go to regular schools. I had to educate teachers to learn sign language to provide assistance.

After some time studying in this class, S and the other students with disabilities were included in a regular classroom. Two challenges marked this process: finding people qualified to work with S, and making teachers believe that a person with deafblindness could learn. Figure 2 presents the fundamental principles of the Inclusion Law.

Figure 2 – Principles of the inclusion law.

Source: Adapted from Brasil (2015).

PRINCIPLES OF THE INCLUSION LAW
1. EQUAL OPPORTUNITIES: The law ensures that people with disabilities have the same opportunities as others, without discrimination.
2. ACCESSIBILITY: Inclusion occurs through ensuring accessibility to public and private spaces, information and services, enabling mobility and communication.
3. SOCIAL PARTICIPATION: The law emphasises the right of people with disabilities to participate in decisions that affect their lives, promoting active citizenship.
4. VALUING DIVERSITY: Recognises and values human diversity, promoting a society that respects differences.

According to the Brazilian Law for the Inclusion of People with Disabilities [Lei Brasileira de Inclusão da Pessoa com Deficiência - LBI] (Brasil, 2015), in the chapter on the right to education, deafblind people have the right to “XI - education and provision of teachers for specialised educational services, Libras translators and interpreters, interpreter guides, and support professionals.”

In the 3rd grade of elementary school, the GI began to work with S and reported that: “First, I went to study about disability and how to work with deafblind people, because, at the time, I only knew Brazilian Sign Language and had had experience with deaf people.”

Thus, based on the knowledge of who the deafblind subject was, it is possible to understand that:

These children must be encouraged to develop their own learning style to compensate for their visual and auditory difficulties and establish and maintain interpersonal relationships. Therefore, children’s interactive exchanges must be oriented towards the development of the remaining senses, including cutaneous, kinesthetic (body - joints and muscles; and sensory - visceral), gustatory and olfactory, as a way of accessing information in the absence of the senses of sight and hearing (Grupo Brasil, 2005, p. 12).

Specialised educational services (Atendimento Educacional Especializado - AEE) became fundamental in helping deafblind students develop their potential with qualified professionals. According to the first paragraph of decree n. 6.571 of September 2008: “Specialised educational services are considered to be the set of activities, accessibility, and pedagogical resources organised institutionally, provided in a complementary or supplementary way to the education of students in regular education” (Brasil, 2008).

This right of students with disabilities was not guaranteed for many years, and in S’s life narrative, it became evident that at the beginning of her schooling, this role was played by M and later by professionals educated based on M’s experience. M highlighted the lack of understanding about deafblindness in the school community. The fight for inclusion, the need for teacher education and initial resistance highlight challenges that echo the discussions of the Brazilian Law for the Inclusion of People with Disabilities (Brasil, 2015).

The GI’s first challenge was to understand the disability that she had ignored until then. This aspect and the lack of awareness in society regarding the condition of deafblind people make their inclusion process difficult. People are often unfamiliar with the specific needs of these individuals, which may lead to social exclusion and create difficulties in their access to essential services, including education and health.

The World Health Organization (WHO) estimates that thousands of people worldwide are deafblind, but most support systems are still not adequately prepared to meet these specific needs (WHO, 2019).

In interviews with students with acquired deafblindness, Lupetina and Walter (2021) pointed out that, in general, there was an absence of interpreters and guide-interpreters in school institutions. For those students, schools did not provide adequately qualified professionals to guarantee accessibility for deafblind people, contributing to their discouragement and possibly causing them to drop out of school. Given their crucial work with these students, we understand that a guide-interpreter should be valued by schools and society. Indeed, their research could confirm the relevance of interpreter guides in the interviews of non-oral deafblind people and in the translation, interpretation, and transcription processes, which are fundamental actions to guarantee the academic rigour attributed to the study.

The interview asked a question about teaching mathematical concepts. The GI was asked about how they were worked on in the classroom. The professional reported that she:

[...] sought to use concrete material so that S could learn mathematical concepts. One of the materials widely used in math classes at this school stage was the golden material and money so that she could understand addition and subtraction operations.

The use of golden material in mathematics education is extremely important, especially when constructing fundamental concepts in arithmetic and algebra. It consists of unit blocks, ten bars, hundred plates, and thousand cubes, providing a visual and tactile representation that facilitates understanding mathematical operations and the relationship between numbers (Moura & Oliveira, 2020).

For Santos and Pereira (2016, p. 03), the golden material is a “Concrete material with an enormous capacity to give meaning to mathematical content, helping the teacher construct knowledge.” This resource is a valuable tool in teaching mathematics, contributing to developing essential skills and promoting a more interactive and inclusive learning environment. Furthermore, the use of the golden material in mathematics classes made abstract numerical relationships begin to have a concrete image, facilitating students’ understanding (Santos & Pereira, 2016).

Regarding geometry teaching, the GI reported: “3D glue was used to create relief in the lines, and the three-dimensional and flat geometric figures were made of paper or EVA.” Using 3D glue for deafblind people is an innovative practice that can enrich learning and communication. Although there is no extensive specific literature on the subject, it is possible to observe that authors such as Oliveira et al. (2024) show that to work with deafblind people, educational practices must be planned based on teaching strategies that enable the adaptation of activities and the production of pedagogical resources that contribute to learning.

About adapting materials to the LBI (Brasil, 2015), Article 74 states: “People with disabilities are guaranteed access to assistive technology products, resources, strategies, processes, methods, and services that maximise their autonomy, personal mobility, and quality of life.” In this sense, adaptations were made to meet students’ specific needs, according to the resources available at the school.

According to Grupo Brasil (2005) and Cambruzzi and Costa (2016), the use of touch is essential in the learning process of deafblind people. Another important factor in the development of learning concerns motivation and affection, “which are the bases for the development of teaching and learning from the beginning of school life” (Cambruzzi; Costa, 2016, p. 35).

Regarding science learning, S reported the following event, which, according to her, was remarkable: “My father took me to the countryside and killed a pig, and I felt it to understand how the human body worked.” Regarding how deafblind children learn, it is worth highlighting that the “functional approach emphasises the need to provide deafblind children with significant learning for their future lives, highlighting the need for learning centred on real everyday experiences” (Brasil, 2004, p. 20). Thus, for M, living with her daughter and seeking a schooling process that valued her rights was an eternal challenge, made up of (re)starts, because, at each stage of her daughter’s school life, she had to struggle to have her needs met.

Analysing life histories and trajectories of individuals with acquired deafblindness, Lupetina and Walter (2021) highlight many common points between them. According to the authors, everyone stated they were the only deafblind people in the schools where they studied. One interviewee even stated that her teacher told her that she should be in another school, and as she was gradually losing her vision, it would make it difficult for her to go to school alone, requiring help from other people. According to the authors, this attitude could probably cause school dropout among deafblind students. The authors continued by stating that the interviewees who reported having lost their hearing used sign language to communicate. However, they highlight an insistence on the part of the school on lip reading and little encouragement for using Libras. Lupetina and Walter (2021) also highlight the importance of respecting and valuing the way each deafblind person communicates, ratifying the fundamental relevance of students’ protagonism provided by their effective participation in the reports, ensuring the production of results that contribute to the construction of educational practices that promote their learning and their inclusion in school and society.

We understand that investigations related to inclusion are fundamental in contemporary times, given the complexity involved in this educational context and the need to meet each student’s singularities in their educational trajectory. In this aspect, each study and participant allows for understanding the issue in its broad domains and providing support for the reflections of teachers, managers, and researchers in the area.

FINAL CONSIDERATIONS

Far from exhausting the topic, based on the analysis of the interviews, we sought to investigate the perceptions related to the schooling process of a student with deafblindness in the construction of scientific and mathematical concepts based on interviews with her (S), her mother (M), and her guide-interpreter (GI). The reports reveal that the diagnosis of deafblindness represented a significant emotional burden for the family, being a disability that was unknown at first, which led the participants to face numerous difficulties in constructing appropriate approaches for the development of S's learning.

Furthermore, revealing the diagnosis in two stages proved to be an additional challenge for the family, highlighting the lack of information and guidance on how to deal with deafblindness. According to the reports, finding qualified professionals to guide the family in the child's care and education was a complex task.

The analysis of S's, M's, and GI's reports detail the challenges S faced in building her journey, marked by overcoming that indicated the continuous need for adaptation and struggling against barriers to guarantee an inclusive and meaningful education in light of her rights. The above highlights the importance of persistence and continued engagement of families to overcome barriers encountered during schooling.

A central point underscored in the data was communication as a crucial factor in the inclusion process. The student's acquisition of Libras and Braille developed her integrally as a human being, allowing her to see herself as an active part of society, which facilitated her interaction with the world around her.

Given the obstacles faced in the processes of including people with deafblindness, there is an urgent need for more in-depth studies on the subject, aiming to provide society with a clearer understanding of the disability, guiding both families and schools, and contributing to Brazilian education.

AUTHORSHIP CONTRIBUTION STATEMENTS

Layla Raquel Barbosa Lino: Responsible for designing the research, conducting interviews, compiling answers, analysing data, and writing the article.

Marlise Geller: Responsible for designing the research, developing the methodology, analysing data, and writing and reviewing the article.

Rossano André Dal-Farra: Responsible for the partial analysis of the data, developing the methodology, and writing and reviewing the article.

DATA AVAILABILITY STATEMENT

The data obtained from the interviews are in the possession of the first author due to the confidentiality inherent to the investigative process within the scope of ethics.

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