

## PEOPLE WITH SENSORY DISABILITIES: AN APPROACH FROM THE PERCEPTIONS OF TEACHERS

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### Abstract

This article is derived from the results of the research called Virtual Reality Simulator in Didactic Situations -SISI- A bet for teacher qualification in the framework of inclusive education<sup>3</sup> and gathers elements from the educational framework. It starts from the recognition of the value in higher education as well as the participation of teachers who articulate the concept to achieve an effective simulation and collects through a Likert-type survey the perceptions of 166 teachers regarding their knowledge and teaching skills for working with deaf, blind, deaf-blind and low vision students. This is a descriptive, non-experimental, quantitative study.

**Keywords:** Disability, teaching, inclusion of people with disabilities, Education, Deafness, Blindness.

### Introduction

To the present days, to continue asking questions about how important and necessary, it should be to think about an education open to the recognition of the diverse human capacities, that celebrate differences and is based on pedagogical scenarios of constant openness, facing the positive valuation of differences in education; it seems increasingly an insufficient exercise in the face of the challenges that educational practice in terms of attention to diversity brings. Currently, significant contributions in number and quality have emerged from politics, academia and communities, showing that thinking and acting within the framework of the right to a dignified, fair and quality education for all people, regardless of their differences, far from being an altruistic exercise, is an obligation that responds to countless historical debts that, as a society, we have regarding the educational attention to educationally excluded communities.

So it is no longer time to keep asking the same questions because the expected result will be to continue to get the same answers; besides, going into this so necessary topic carries with it the responsibility to advance and not to redo elegant non-operative speeches, this is a reality because nowadays everybody talks and writes about inclusive education, for Almalki, (2022) the danger of not advancing and staying only in dissertations that do not advance to the actual exercise, that leads to living a proper education to the capacity of all the subjects that are part of it, it is clear that the attention to the diversely capable of the human capacity is not a discardable option for educational institutions, and much less for teachers in exercise; Thus, the questions that should guide the advance in the subject of scholarly attention to the diverse forms of being capable must transcend the “what for” and the “why.” And why? To interlocutor the multiple options of answer that brings with it the question how? And after it opens the search for powerful ways that allow the encounter with the other in educational scenarios adapted to the capacity, potentialities and abilities of the subjects immersed in these.

Understanding the broad universe cited when referring to human diversity, for this case, the research process focused its knowledge interests on the educational attention to people who observe without their eyes and listen without their ears, to subjects who see and hear the world distanced from the medical standards and who, even so, mediated by their diverse sensory abilities, know, live and know the world, then the “dis “Ability according to Andrade & Restrepo (2017), it is established that from the sensory and its communicative, educational, community, participation and accessibility challenges among others, were the focus of attention for the research process.

Precisely because the spectrum of understanding of inclusion and diversity is so broad, asking about teaching skills for inclusive education openly and transparently is an excellent way to understand the generic approach would be such a broad exercise that the issue of specific didactics and differential attention would be dangerously blurred.

### **Theoretical and conceptual considerations on inclusive education and disability**

When the discourse ceases to be generalized and takes on more specific dimensions, the issue is enriched with possibilities and complexities in the light of addressing specific realities that cannot be solved with approaches that cover only universal aspects; This is what happens to the process of inclusive education, beyond the general premises in terms of respect for difference and positive valuation of human diversity in educational processes, the discourse must enter into specific and differential routes, which according to personal and community capabilities, together with the possibilities of development that the contexts facilitate, reach the achievement of an education that guarantees quality and relevance, always hand in hand with the various ways of being able in educational processes.

In line with this, inclusive education, seen from the diversity of abilities questioned by the clinical comparison of the concept of disability, requires that the actors who make it possible unlearn definitions, conceptions and attitudes about it. Although it is a semantic agreement that allows

referring to a human group in itself, it is a concept that must go beyond simplifying thinking (Amini et al., 2019), from where disability is reduced to be assumed as a synonym for a decrease in the ability of a subject, to perform some specific tasks, hand in hand with their bodily functions and structures in a specific context.

The previous path of understanding emerges as a product of Méndez et al. (2022) and of assuming normalizing looks of the other to seek its restoration, having as a comparison body understood as biologically correct or adequately functional (Andrade et al. 2018). Thus, one of the exercises of thought that conceptually oriented the research corresponded to assuming an orthographic rebellion in the way the traditional disability is thought, written and spoken.

This resistance consists of questioning the prefix -dis- by writing it between quotation marks to make use of the orthographic sign that has the function of questioning some expression; in this case, it is not about questioning the capacity of others but doing so in the face of the supposed diminution, deficiency, disorder, difficulty or diagnostic suspicion that is masked in such an expression prefix. Followed by “dis”, the word “capacity” must always be written with an initial capital letter since the spelling convention used for the writing of proper nouns is used as an exercise of resistance that seeks to remember that always when speaking about capabilities, “reference is being made to a person and with it, to the identities put into play behind the dangerous judgment of the prefix -dis” (Andrade, & Restrepo, 2017).

Therefore, by placing doubt in the imaginary of the -dis- and not in the human capacity as an exercise of thought, the “dis” Ability opens possibilities of encounters that, in the long term, will diminish the need more and more presence of the prefix. All human beings are diversely skilled, all present difficulties and outstanding performances in different aspects of life, we all also require members of our species to get the necessary support for each one, all without distinction since the differences make each subject unique, they have different ways of performing communicative, intellectual, associative and labor functions. Therefore, although nominations are useful and politically powerful for visibility and historical vindication, inclusive education requires transcending nominations, focusing on people and not on binomial relationships between diverse-non-diverse, functional-non-functional, capable-non-capable.

In the same line of the above, inclusive education is not only complex in the practical sense that implies making it possible and real in the life of the actors immersed in it. Moreover, when speaking of inclusion in education, it should not be understood exclusively as a matter that is embodied only in the subjects that are possible to group in population groups, such as people with “dis” ability, gender, ethnic origin, vulnerable socioeconomic contexts, and other nominations that in terms of Martin (2021) legitimize the stereotype that “is applied to collective social subjects, presenting a minimum set of features that would characterize the referred group, the result of two complementary processes: simplification and generalization.”

True education must begin by recognizing that all people are diversely skilled and diversely functional; in short, inclusive education is the education everyone deserves. According to the

above, inclusive education is fundamentally based on two basic pillars: human diversity as a principle inherent to human beings and respect for the ways of being different (Cabanilla et al., 2022). It also implies transformations in practices, discourses and knowledge of the school, family, community and politics.

As proposed in previous lines, the educational attention that recognizes the diverse abilities of human capacity, besides being a non-negotiable issue in the school, is framed in the right, in the understanding that inclusion is a democratic deepening of the rights of citizens: it means the right of every citizen to participate actively politically and civilly in any social context (Arteaga et al., 2022). Therefore, the above inclusive education, by its historically vindictive character, can be considered a transformation process that allows the actors to be bearers and guarantors of the right to education in key of equity, participation and democratic effectiveness of educational opportunities referred to by Bell (2020).

### **About the educational challenges in the Sensory “dis” Capabilities**

It is therefore time to introduce one of the questions raised by Biasutti et al. (2019), where the educational processes that hide the diverse and that generically reproduce beings based on a single mold are not only aggressive with the populations in which exclusion is embodied, but it is an unfair act with all people, whether or not they are reflected in minority groups. However, it should be noted that nowadays, inclusion, from the duty to be complete, is still a distant issue in the practices that are lived daily in educational scenarios.

In this regard, it is more common to find that the discourse projects advances that exceed inclusive practices and this is not a mistake in principle since the thought and the dream for a better world allow advancing every day more in achieving utopia. However, what happens in the classrooms and the various scenarios in which the school is present corresponds to an exercise closer to integration than inclusion. And this is not entirely detrimental if it is understood that part of the process is to transcend these integrative scenarios, from understanding that the coexistence of integration and inclusion conceptualizes inclusive education as the process of change in schools that allows offering quality education for all students (Cook, & Ogden, 2022). The danger would be staying in the change process and not finding the proper mechanisms to ensure inclusion.

### **Notes about the Deaf world**

In these unique complexities, the issue of sensory abilities, embodied in this case in the senses of sight and hearing that are outside the conventional norms and functions, brings other tensions to the didactic and pedagogical work of the school because in the case of people with other hearing abilities most of the difficulties presented by this community “are due to insufficient information, which Deaf students receive, given the existing limitations in communication between hearing and Deaf people” (Diez, & Sanchez (2015). However, it is widely known that sign language for subjects who construct their thinking and identity in this language “facilitates educational intervention and communication, fundamental with all Deaf students” (Downs & Floyd (2019).

Therefore, in most cases, sign language remains a pending duty in the education and training of teachers.

Thus, to understand inclusive education in terms of people who speak without voice, it is also necessary to transcend the clinical definitions of hearing impaired subjects, which require the remediation of their hearing abilities through therapeutic or corrective means. Assuming the other beyond the comparison with the conventional ways of being in the world in the case of signers is accompanied by aligning to the socio-anthropological view of Deaf subjects that, as a socio-cultural group, form a community with its characteristics that allow them to relate to others in a different way than the hearing community does (Kozibroda et al., 2020). The Deaf and hard of hearing people have their own characteristics that allow them to relate to others differently than the hearing community (Kozibroda et al., 2020). Chupakhina (2020) states that this necessarily places the hearing disability in the scope of a discussion centered on culture and, therefore, on the emerging epistemologies of the recognition exercises that the members of these communities have achieved, thus confronting deafness as a clinical picture versus deafness as an epistemic exercise that addresses the “origin, method and knowledge (Maia et al., 2020). For Oleína (2020), this confrontation referred to is also a product of the resistance that, as a community, Deaf people have given to normalizing and segregating practices. As referred by Mironova et al. (2019), the neo-orallism concept emerges from the community.

#### **Notes on the Blind World**

Therefore, the viewpoint with which the populations were assumed during the research was based on the dissent with the clinical definitions, in the same way for the case of people who can see without using their eyes and with their ways of being.

However, although clinically, there is a definition for most disabilities, and in the case of blindness, the World Health Organization (WHO) has defined it as the sensory characteristic of those people who have a visual performance of less than 20/400 in their best eye (Nolan, & Hannah, 2019). Therefore, inclusive education must transcend diagnoses and assume the challenge of knowing and valuing a different way of doing things (López et al., 2020). Thinking and assuming for the diversity of visual performances in inclusive education is necessary for teachers. However, it is a complexity that must be addressed initially from the language. How the other is nominated, the above calls then to place the deficit discourse not in the subjects directly but in the possibilities that as a human community are facilitated or not for the proper development of capabilities.

For this reason and in the case of the other ways of seeing, Salinger (2020), in his study of the academic goals of the members of this population, emphasized that “blindness (total or partial) did not diminish the ability to process information, but rather imposed limitations in the sensory data available to the person” so putting the prefix - dis- not in people but in educational phenomena such as the lack of appropriate methodologies for the population that sees in other ways and that end up exercising mostly improvised and unequal in results. According to Arteaga et al. (2022), it

would open the scenario to consider how disabling they can be, all measures that assume diversity as a reality to be treated and not to be recognized.

These openings to understand sensory capacity beyond the constant comparison with “normal-visual” people make it vital for subjects with blindness and low vision to assume constructions of identity that allow them to find ways to demonstrate capacity in and for themselves because, in this way, they must then assume themselves as transforming actors of a social construct of disability (Morel, & Villalobos, 2011) that positions diversity in education as an added value and not as a burden to be assumed by teachers as an obligation. However, these, in turn, are framed in the context of a social construct of disability (Villalobos, 2011) positions diversity in education as an added value and not as a burden to be assumed by teachers, although these, in turn, are framed in a complex formative problem.

### **Notes on the Deafblind World**

Continuing the approach of complexities in terms of educational attention to the various forms of the use of the senses in the school, we could not leave out of the reflection the people who not only do not see conventionally but also, in turn, and in different ways, do not hear as the norm expects it to happen; reference is made to the extensive world of deaf-blind people, in which some subjects are born with some auditory and visual diversities; or who are born as blind people and then lose their hearing; or those who are born as deaf subjects and then have compromised in their vision; or people who come to the world of deaf-blindness suddenly or by the passage of time (Almalki, 2022). Without even naming what it means for the development and maturation of language, the moment during the development of the person in which these various forms of being able to begin to be part of their lives, that is, if they occur before, during or after the processes of acquisition of the mother tongue and writing.

Although conceptually, deaf-blindness can be understood as a “multisensory disability that prevents the person from using the senses of hearing and sight, which need not necessarily be a total loss of both senses” (Cook, & Ogden, 2022). The ways in which the subjects are assumed in the educational exercise have to transcend the low expectations of the medical diagnoses; thus, issues such as impairment, losses and disability will be unimportant at the time of the encounter with the other in the school, which should not start from the suspicion of disability in the other, but on the contrary, start thinking about capabilities and opportunities for mutual transformation that emerge in the encounter with Deaf-blind people, hand in hand with their support needs (Diez, & Sanchez, 2015).

### **Method**

The general study purpose, which guided the course of the research, was to characterize teachers’ perceptions about their knowledge and skills for teaching people with sensory disabilities. This exercise sought the specific objectives, first to identify the current state of professional training and teaching experience for the educational care of people with a sensory disability, in addition to the recognition of the empirical and academic knowledge of the participants, in the second specific

objective, to determine the levels of knowledge and professional skills regarding medical and non-medical approaches, communication and accessibility, to establish possible conceptual appropriations that could be useful when understanding the issue of sensory diversity.

On the other hand, the third specific objective was focused on determining the levels of knowledge and professional skills in pedagogy, didactics and evaluation for teaching people with “dis” Sensory Ability; this is an extremely important point for the study since it directly alluded not to the specific disciplinary knowledge in the populations, but the skills from the actual practice of teaching.

Continuing with the systematization of the general objective, the last specific objective was designed as an exercise of projective consultation since it proposed to investigate the possible interest in receiving specialized teacher training for the educational attention to students with sensory “dis” ability; this issue is crucial when it comes to knowing the interest of the participants to be qualified since this could denote the willingness to receive specific disciplinary training in the future. Table 1 below details the variables that emerged from the objectives and configured the Likert-type scale that will be detailed below.

**Table 1**  
**Operationalization of variables**

N°	Variable	Purposes of inquiry	Operational definition
1	Training and teaching experience for the educational attention of the Sensory Disability population.	To characterize the levels of professional training and professional experience in teaching students with Sensory disability.	It inquiries about the professional preparation of teachers in the area of basic and postgraduate professional training, as well as professional and population experience.
	Knowledge and professional skills for “dis” Sensory ability	Characterize levels of knowledge and capabilities regarding “dis” ability from medical, non-medical, communication and accessibility perspectives.	Probes levels of professional knowledge and skills vs. in-depth knowledge of Sensory disability
	Teaching populations with “sensory dis-ability	Characterize the knowledge and proficiency levels for teaching people with “dis” Sensory Ability.	It explores levels of professional competence in didactics, pedagogy and evaluation for teaching with populations with “sensory dis” ability.

Specific training opportunities.	Identify specific training needs in educational care. To people with “sensory dis” ability	Inquire about interest in accessing specific professional training programs in this area.
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Note: Source: Own elaboration

### Participants

Based on the non-probabilistic sampling, the convenience sampling technique was used (Andrade et al., 2018). In this exercise, a total of 166 teachers participated in the study sample; the inclusion criteria considered were that the teachers were graduates and currently had or had had classroom experience in any of the educational levels of preschool, elementary, middle or high school (Table 2) with people who were within the medically contemplated as sensory disability, i.e., blind people, with low vision, Deaf, with hypoacusis or Deaf-blind.

**Table 2**  
**Institutional affiliations at the time of participation in the survey**

Type of institutional affiliation	N	%
Preschool education institutions	42	25
Basic education institutions	63	38
Secondary education institutions	45	27
Higher education institutions	16	10
Total	166	100

Note: Own elaboration

The sample consisted of 115 (69.3%) women and 51 (30.7%) men; the group of participants included 69 (41.6%) people between 21 and 32 years of age as the most representative age group (see Table 3). Of the total number of participants in the study, 155 (93.4%) were residents of the city of Bogotá and 11 (6.6%) were residents of neighboring towns, such as the municipalities of Chía, Cota, Funza, La Vega, Madrid, Mosquera, Soacha and Tenjo.

**Table 3**  
**Number of participants by age**

Age		N°	%
	21 - 32	69	41.6
	33 - 44	64	38.6
	45 - 56	27	16.3
	57 - 69	6	3.6
	Total	166	100.0

Note: Source: Own elaboration

## Design

This non-experimental quantitative research (Andrade & Restrepo, 2017) was developed through a cross-sectional study of descriptive scope since this exercise was not to seek a causal relationship between the emerging variables of the objectives nor to evaluate a hypothesis constructed a priori by the research team. In addition, in this study, there was no type of interference or control of the variables studied since the results to be revealed an uncertain nature and impossible to interfere. In addition, there were no plans to do any follow-up overtime on the results of the research (Arteaga et al., 2022).

Finally, this research is exploratory (Hernández et al., 2014) because in the country, according to the information previously consulted, there are no studies that address the variables that this research assumes as units of analysis regarding the educational attention to Deaf, hard of hearing, Blind, low vision and Deaf-blind students, approached from the teachers' perceptions in terms of knowledge and skills for teaching in these communities.

## Instrument

For the collection of information, a Likert-type survey was designed since after reviewing the specialized literature on the subject, no instrument was found that addressed the variables contemplated about the populations of interest for the study; the instrument has 83 items distributed for variable 1, on teacher training and experience for the educational care of the population with disabilities, and for variable 2, on teacher training and experience for the educational care of the population with disabilities. "Sensory capacity with 17 items allows the recording of open and multiple-choice information. For the other variables, under a continuous scale from 0 to 5, the items were distributed as follows: for variable 2, about knowledge and professional capabilities for "sensory dis" ability, 42 items; variable 3 on Teaching populations with "sensory dis" ability, 15 items; and for variable 4 which addressed specific training opportunities, 9 items.

14 national and international disciplinary experts reviewed the survey with professional experience in the field between 9 and 23 years in education and social sciences. In addition, four experts participated in inclusive education from Cuba, Mexico and the United States and 10 Colombian experts in education and inclusive education.

Each expert judge evaluated all the items of the questionnaire to perform the reliability analysis using a continuous numerical scale between 1 and 5 for each of the items and statements used in the survey, where a score of 1 would indicate that the item was not adequate and a score of 5 would indicate that the item was adequate, according to the following criteria:

- Relevance (in validation format as PER): If the item is considered relevant and adequate to investigate from the teachers' perceptions, information, knowledge and competencies related to the variable and dimension to which they allude.

- **Semantics:** (in validation format as SEM): Estimates whether the words used in the item statement are adequate in terms of meaning in each sentence of the instrument.
- **Syntax:** (in validation format as SIN): It assesses whether the composition of the sentences used is the most appropriate in terms of order and coherence.

Once the judges had numerically evaluated the criteria previously discussed, they were asked to mark with an X (x) for each of the items whether, according to their criteria, the item was due to

- **Keep** (in validation format as M): If you considered that the item should be kept in the instrument as it was written in the questionnaire.
- **Maintain with changes** (in validation format as a CM): If it was considered that the item should be maintained in the instrument by making some adjustment in form or substance.
- **Delete** (in validation format as E) If you consider that the item should be deleted from the instrument.

To complement the evaluation of the items in the format, there was a space for observations so that all the expert judges' appraisals of the questions in the questionnaire could be recorded there. The analysis of the reliability of the instrument was carried out through the internal consistency method based on Cronbach's alpha, which makes it possible to assess the reliability of a data collection instrument, according to how the items, if equivalent to each other, manage to measure the dimensions and constructs contemplated in the research. The estimate was processed in the SPSS v. 20.0 statistical software and yielded a Cronbach's coefficient of 0.886, indicating that the instrument's reliability was good.

As a result of the instrument validation process, it was decided to exclude four items related to sociodemographic information, which, according to the expert judges, contained information of little relevance to the nature of the study, leaving the instrument with 79 items.

## Procedure

For the application of the surveys, teachers who met the sample inclusion criteria of the study were contacted. Thus, among the 166 teachers, professionals linked to preschool, elementary, middle and higher education institutions participated. Before filling out the questionnaire, read and signed informed consent, which was constructed following the statutory law 1581 of 2012 on Habeas Data, regarding the proper handling and confidentiality of the information provided.

The information collected was processed in the statistical software SPSS v. 20.0, a procedure that, according to the dimensions addressed, made it possible to establish in the first instance, for the characterization questions about the training and professional experience of the participants, the results expressed in percentages to be subsequently analyzed, and in the second instance, for the Likert-type items of the variables, knowledge and professional skills regarding "sensory dis" ability; teaching populations with "sensory dis" ability and specific training opportunities; through SPSS v.20.0 software, data were determined in frequency distribution tables for the responses on

a continuous numerical scale from 0 to 5, where 0 meant no consent to what was asked and 5 meant total knowledge of the topic in question.

As will be developed later, the results of variables 2, 3 and 4 were represented using line graphs generated by SPSS v.20.0 and determining the most frequent score in the data obtained from the Likert-type items. The mode was used as a measure of central tendency to determine the more repetitive score in the actors through the reduction of the data.

## Results

For variable number 1 of the study, which inquired about the professional preparation of the teachers, the area of basic and postgraduate professional training, as well as professional and population experience, it was found that in the group of participants, the least frequent levels of training were 8 persons with higher education (4.8%) and 2 persons with higher education (4.8%). On the other hand, the two educational levels with the highest number of participants were 64 participants with master's degrees (38.6%) and 60 professionals (36.1%), with 32 teachers (19.3%) with specialist training also joining the group.

One of the aspects that were asked about professional training consisted in knowing if the teachers had an undergraduate degree in education, to which 142 participants (85.5%) responded affirmatively and 24 of the group (14.5%) responded no to this aspect (see Table 4). In this regard, it is important to note that this is a situation expected in advance since not all professionals who are in charge of the educational accompaniment in the teaching processes of people with sensory "dis" ability, have a bachelor's degree, although they perform the actual work of teaching, this situation is even more frequent in higher education, where teachers may have a background distant from the educational sciences, but in the practice of teaching, they need to understand and act as pedagogues.

**Table 4**  
**Undergraduate training of participants**

Program	N°	%
Bachelor's degree in education	142	85.5
Industrial Engineering	1	0.6
Phonoaudiology	3	1.8
Systems engineering	1	0.6
Psychology	17	10.2
Educational psychology	1	0.6
Theology	1	0.6
Total	166	100.0

Note: Own elaboration

Going deeper into the professional training of the respondents, they were asked if they had postgraduate training, understood as diplomas, courses, specializations or master's degrees specifically in topics related to inclusive education and educational attention to diversity. To this, the majority, i.e., 103 people representing 62% of the group members, answered in the negative and 63 (38%) in the affirmative.

Regarding professional teaching experience, without considering educational care in the framework of inclusive education, the most representative data shows that the majority of the group, i.e., 99 people (59.6%), have between 1 and 11 years of experience. However, when asked the same question about professional experience, but this time in the case of educational care for people with sensory "dis" ability, 121 teachers who had been trained in the field of inclusive education had between 1 and 11 years of experience. The 73% of participants had between 1 and 6 years of experience, while 35 participants (21%) had between 7 and 11 years of experience.

This indicates that the experience of the participants is entirely significant for the research since if we were to take the same range of time in which the professional experiences in conventional educational dynamics were grouped, that is, from 1 to 11 years, we would have a percentage of 94% of teachers with some experience in teaching people with a sensory disability, which indicates that the answers that the actors provide to the instrument are made with sufficient knowledge of the subject.

Reaching more specific levels of depth concerning teaching experience with the populations (see Table 5), it was necessary to consult specifically because it was anticipated the probability that a single person could have had contact with more than one group in their teaching exercises, therefore, options of combinations among the populations were contemplated. This aspect showed that the population with which the teachers have more accumulated experience is the Deaf population with 64% of the participants; likewise, the population work that reports less experience is in the field of deaf-blindness with 3% and in the combination between Blind and Deaf-blind people.

These results are directly related to the figures that are reported by the Secretariat of District Education of Bogota SED, in the official document of characterization of the education sector in 2017, with source in the management system of student enrollment in official institutions SIMAT, relate that of the 16,251 students with some disability enrolled, in preschool, primary, secondary and middle school levels, in terms of Sensory "dis" ability people with hearing compromises add 939, visual 548 and with deaf-blindness 15 students (SED, 2017).

**Table 5**

Populations with which the teachers have had experience		
Population	N°	%
Deaf People	64	38.5
Blind People	23	13.9
Person with low vision	13	7.8

Deaf-blind people	5	3.0
All of the above	22	13.3
Blind - Deafblind People	4	2.4
Deaf - Blind - low vision people	23	13.9
Deaf - Blind - Deaf-Blind People	6	3.6
Deaf people - low vision - Deaf-blind people	4	2.4
Blind - low vision - deaf-blind people	2	1.2
Total	166	100.0

Note: Own elaboration

According to the findings resulting from the characterization of the experience and academic training of the sample group, it can be identified that all participants, either because of the training received or because of their teaching experience at different educational levels, are bearers of significant and representative formative experiences in all the populations included in the study, as well as in the dimensions included in the research variables.

For the following variables, a continuous numerical scale from 0 to 5 was used for the professional knowledge regarding the sensory disability; in this sense, 42 items were asked about etiological factors, knowledge of sensory abilities of students, i.e., to know how people with low vision see at school in clinical pictures common to this condition of life such as diabetic retinopathy, glaucoma, keratoconus, macular degeneration, among others. In this sense, the responses showed scores (see table 6) that ranged from ignorance to partial knowledge about the aspects addressed.

**Table 6**

<b>Knowledge of etiology and sensory capabilities</b>			
		N°	%
Perception of the knowledge about the etiology of sensory "dis" ability	0	15	9.1
	1	28	17.0
	2	36	21.8
	3	46	27.9
	4	25	15.2
	5	15	9.1

Note: Own elaboration

Regarding knowledge of communicative systems such as Malosi and Lorm, those based on sign languages and those based on non-alphabetic systems, 87 people, corresponding to 52% of the group, scored 0. The result was similar for knowledge and abilities to accompany students in the process of maturing skills for writing and reading in the Braille system, as well as in reading and writing the code; the most representative score was 0 with 105 teachers, equivalent to 63.6% of the sample.

Regarding the processes of adaptation, management of skills and techniques for the orientation and mobility of students with sensory disability, the scores registered 0 in 74 of the professionals surveyed and 1 in 34 of the teachers, corresponding to 44.8% and 20.6%, respectively. The tendency to low scores was maintained in the questions on the mastery and knowledge of sign

language, the assertive accompaniment to language maturation processes in children (Duarte-Duarte, 2013) who communicate in unconventional ways, in the curricular management of reasonable adjustments relevant to the human capacities of the Deaf students and the understanding of contexts of acquisition of the mother tongue and learning of written Spanish in the population. Thus, the two most representative scores for this aspect were 91 participants (55.5%) with 0 and 25 participants with a score of 1 (15.2%).

Finally, in this variable, we addressed the knowledge about the approaches that the socio-anthropological views of the “sensory disability, contribute to the understanding of the dilemmas of the Deaf community (Pérez, 2014), as well as in general, regarding human capacity from the social and rights approach (Hernández, 2015) that allow the emergence of discourses distant from the clinical and pathological definitions of other ways of seeing, hearing and feeling. In this regard, the scores continued with the tendency to low results, where 93 participants were registered with 0, equivalent to 56% of the sample, while only 5 people (2.4%) declared to know sufficiently about other non-disabling discourses of “dis” ability.”

Figure 1 expresses the results of the variable Professional knowledge regarding sensory “dis” ability, showing the low scores on the scale from 0 to 5, where 56 of the participants on average were in score 1 with 33.7%, followed by 51 teachers in score 0 with 30.7% and no average score in number 5, which denoted professional knowledge in depth and with sufficiency in this regard. The mode calculated for the variable (Table 8) makes it evident that at basic levels, teachers usually have information about “dis” ability, from medical perspectives, for example, in the term of the causes, a disturbing issue for the research because it could be one of the reasons why in the speeches of teachers, it is common that when referring to the Deaf, Blind and Deaf-blind people, they allude to a state of health and not to a unique way of being in the world.

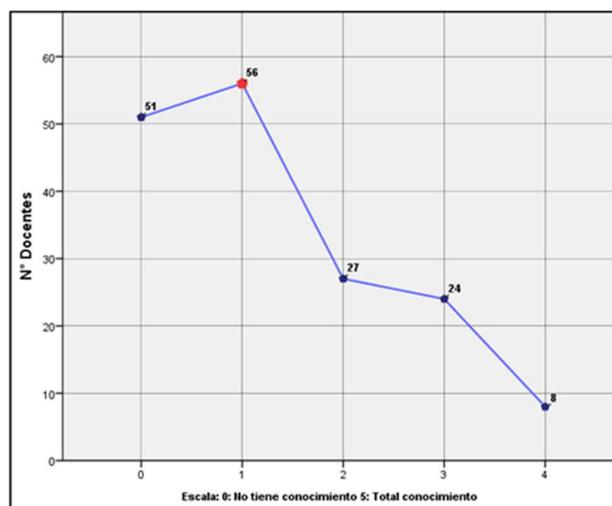


Figure 1. Professional knowledge regarding sensory disability

**Table 7. Fashion calculation in variable Professional knowledge for Sensory “dis”ability**

<b>Fashion</b>		Fashion
Knowledge of the etiology of sensory Sensory disability		3
Knowledge about the sensory capabilities of the populations		0
Knowledge of communication systems		0
On the mastery of the Braille system		0
Competencies necessary for effective accompaniment orientation and mobility		0
Proficiency and knowledge of the languages in the disability Sensory		0
Knowledge of the socio-anthropological perspectives of the Sensory0 disability		0

Note: Own elaboration

Regarding variable 3 on the perception of didactic capacities for teaching students with Sensory disabilities, regarding topics such as the application of universal learning design, the majority of teachers 51.8% scored 0 for lack of knowledge on the subject. On the other hand, regarding teaching with the populations and more specifically regarding the design of didactic situations based on the individual plans of reasonable accommodations PIAR MEN, as in the previous component, the majority of scores registered 0 for the thematic lack of knowledge alluded to with 45.2%. There were differences in the responses regarding the design and flexibility of the pedagogical evaluation exercises according to the sensory capacities of the students (see Table 8). Although the results were varied, the majority continued to be 0 with 36% of the participants, but the scores 1, 2 and 3 in the case of the results of the evaluation of learning were better valued from the perspectives teachers have regarding their practices.

**Table 8**  
**Knowledge and skills in evaluation**

		N°	%
Knowledge and teaching skills for pedagogical assessment of students with sensory disability	0	61	36.7
	1	31	18.7
	2	27	16.3
	3	28	16.9
	4	12	7.2
	5	7	4.2

Note: Own elaboration

The trend statistics for this variable determined 0, equivalent to lack of knowledge of the items addressed by the teachers, as the most frequent result regarding their perception related to knowledge and didactic capacities in curricular flexibilization for teaching, the design of individual plans for reasonable accommodations and the pedagogical evaluation of learning in the sensory disability, as shown in Figure 2.

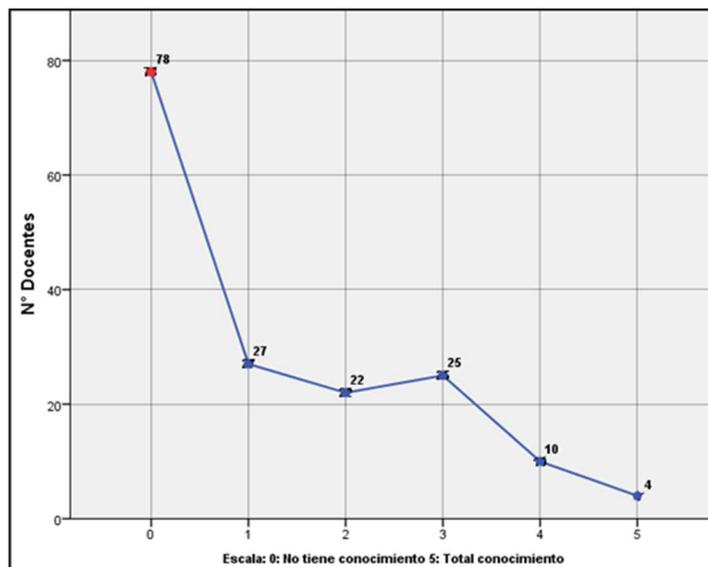


Figure 2. Teaching and evaluation of populations with sensory disability.

Finally, for variable number 4, called specific training opportunities, which sought to inquire about teachers' interest in accessing training programs on topics related to inclusive education, items were considered that referred to the topics addressed by the instrument, such as receiving specific professional training in:

- Biomedical components of the Sensory Disability oriented from a pedagogical perspective.
  - Communication systems and strategies for working with deaf-blind people
  - Basic Colombian Sign Language for the teaching of Deaf and Deaf-blind students
  - Writing, reading and didactic possibilities of the Braille system
  - Orientation and mobility techniques and support
  - Conceptual deepening in the socio-anthropological approaches to sensory disability such as Deaf epistemologies, deafness, co-visuality, among others...
  - Training in didactic mediations for inclusive education
  - Training in pedagogical strategies for inclusive education
  - Training in methodologies and strategies for evaluation in inclusive education
- As for the previous variables, a continuous numerical scale was applied from 0 to 5, where 0 indicated that for the teachers, it was not important and 5 represented that the aspect had high importance, thus (see table 9) 83% of the teachers surveyed scored between 5 and 4, which means that they considered it very important to receive specific disciplinary training in inclusive education and also in specialized contents in educational attention to sensory disability.

**Table 9**  
**Importance of receiving professional training in inclusive education**

		N°	%
Interest and perceived need to receive	0	0	0
specialized teacher training for the	1	0	0
educational care of students with	2	10	6.0
sensory disability.	3	17	10.2
	4	54	32.5
	5	85	51.2

Note: Own elaboration

## Discussion

The results of the survey revealed situations that are common when education is designed to cater to diversity. It is noteworthy that the teaching experiences were not unrepresentative since more than 90% of the participants had classroom experience between 1 and 11 years, and yet none of the aspects corresponding to disciplinary knowledge and teaching skills for teaching, adjustment and evaluation scored consistently high.

It is evident that the empirical teaching practices of teachers, even when supported by the time they have lived and the invaluable lessons learned due to this exercise, do not necessarily mean a training scenario that qualifies their practices. In short, the number of years of experience teachers with the populations is not an indicator of sufficiency versus quality of population, didactic and pedagogical knowledge for inclusive education.

Although one might expect a directly proportional relationship between population experience and teaching skills and knowledge for inclusive education, the evidence shows that this is not the case; that is why the quality of educational attention cannot be measured only by the years of experience of teachers; in this regard, it is necessary to understand that “the tension between the discourse on educational quality and the real capacity of educational centers to achieve it should be a mobilizer of affirmative actions and not a barrier to actions for the preparation and training of teaching staff and institutional capacities.

One aspect to be taken into account undoubtedly comes from the results regarding the knowledge of teachers in the field of the biomedical components of disability since, in contrast to the specific pedagogical, didactic and disciplinary components, in comparison to these, teachers declare more clinical than educational sufficiency in working with the populations. This is due to the training received in their professionalization processes since even universities are thinking about training for diversity, which takes a healthy distance from the traditional medical paradigms where the populations of interest for this study have historically been defined.

It is then complex to think of assuming people who see, hear and feel in unconventional ways, from a perspective centered on human capabilities as a political exercise of identity if the pathological views of difference are not transcended; as Leiva expresses it “the changes in schools that will be inclusive in this XXI century will be definitive when teacher training involves methodological, curricular and pedagogical innovation changes based on a culture of diversity”

(p. 25). 25) Thus, it becomes an opportunity for transformation to make evident the need to train teachers in diversity rather than in the clinical pictures that segment it.

In closing, we highlight the evident need and interest of the teachers participating in the study to receive professional training in inclusive education and, more specifically, in inclusive education; this is part of how teachers will assume the challenges of the school in the future. Therefore, teachers who are not sufficiently prepared for quality educational attention to diversity should not be a problem if they are interested and aware of the need to receive training to qualify their practices.

### Conclusions

- According to the evidence gathered in the study, the length of experience of teachers working with populations does not necessarily mean that they have knowledge and teaching skills that are sufficiently based on attention to diversity.
- The teachers' specific knowledge of biomedical factors of "dis"ability is higher than their knowledge of communication, accessibility, didactics and pedagogy for inclusive education.
- Teachers often perceive that their specific knowledge and professional skills for the educational care of students with sensory dis"ability are not sufficient.
- Even with a significant number of teachers with master's degrees and specializations, a total of 124, which corresponded to 69.7% of the sample, the levels of knowledge and teaching skills concerning educational attention to sensory dis"ability did not show a direct relationship with this characteristic of the sample, since the scores were mostly in a mode equal to 0.
- The levels of knowledge of Universal Design for Learning (DUA) principles and the design of Individualized Plans for Reasonable Adjustments (PIAR) are low. Therefore, they need to be addressed in order to project their application in the dynamics of teacher mediation.
- The 166 teachers demonstrated some degree of interest in accessing specific professional training on topics related to inclusive education, specifically in the educational attention to people with sensory disabilities.
- Undergraduate and postgraduate training processes must contemplate the preparation of professionals, contents and training practices for diversity that provide mediators with sufficient tools that contribute to the qualification of their care practices.
- Universities must assume their social responsibility towards the training of professionals, reflected in their practices of constant improvement in favor of the real and current challenges of education in terms of the recognition and valuation of diversity in educational processes.
- Although there was talk of school integration and educational inclusion, to later position the discourse in the process of inclusive education, today, teachers must project the actions of transformation towards the quality of inclusive education. It is not enough to assume an open and plural approach to the various forms of being able. The current context requires professionals who

materialize the speeches in practical didactic and pedagogical actions. Therefore, the training of teachers is a task to be further developed for genuinely inclusive education.

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