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NUMBER CONCEPT IN STUDENTS WITH DOWN SYNDROME: STRATEGIES AND RESOURCES

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ABSTRACT

This article is the result of a master's research, in which the objective was to identify whether and how the elementary school teacher uses pedagogical strategies and resources to work on the construction of the concept of numbers in students with Down syndrome. The research was performed in two public schools, with the participation of two teachers, a tutor, and two students with Down syndrome. The research was designed toidentify, describe, and systematize the teaching strategies and pedagogical resources that encourage students to build the concept of numbers. The research revealed gaps in strategies to show the creation of relations with numbers and their functions, as well as difficulties in the implementation of strategies as a way to enhance mathematical literacy.

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INTRODUCTION

This article is the result of a master's thesis, which aimed to identify whether and how the elementary school teacher uses pedagogical strategies and resources to work on the construction of number concepts in students with Down syndrome, in view of the development of basic mental processes for the construction of the concept of numbers.

The child with Down syndrome in the process of building the concept of numbers - Science shows that Down syndrome causes limitations in physical and intellectual development, however rather than imposing limits on individuals who have this syndrome, opportunities should be offered for them to discover their potential (DÉA; BALDIN; DÉA, 2009). Some of the accentuated difficulties in children with Down syndrome are related to abstract reasoning and difficulties in relation to short-term verbal memory, which impair the acquisition of new words and affect the counting procedure, and the deficit in long-term memory, which can interfere with understanding concepts and planning in problem situations (COMBLAIN, 1994; DÉA; BALDIN; DÉA, 2009; GOMES, 2011; YOKOYAMA, 2014). The literature highlights that difficulties in counting may be due to a deficit in memory and language (ABDELAHMEED, 2007; ABDELAHMEED& PORTER, 2006), therefore, the authors affirm the need for motivating, individualized activities, with a lot of repetition, as counting is a serial recall taskwhich needs a lot of practice. Abdelahmeed (2007; apud YOKOYAMA, 2012, p.22) presents the main results on counting in individuals with Down syndrome, based on a survey of studies carried out byAbdelahmeed (2007): these individuals learn to count through imitation of examples and repetition, a model known as associative learning (GELMAN and COHEN, 1988; CORNWELL, 1974); from the age of 5, children are able to learn some basic counting rules; when halted during counting, children with Down syndrome start counting again or do not complete the count (CORNWELL, 1974); they find it difficult to understand tips and suggestions for solving new counting situations, requiring exact instructions or the presentation of possible solutions (GELMAN and COHEN, 1988). Therefore, reflecting on the above, through the literature related to the mathematical learning process of children with Down syndrome in the classroom, the need for the teacher to develop proposals that minimize their difficulties is highlighted, based on activities that stimulate memory, attention, observation, and logical reasoning, so that more complex skills can be developed.

The construction of number concepts in children: fundamentals and proposals - To explain cognitive development, Piaget (1975, p.25) highlights the role of the child's action in the environment, such as counting objects, lifting weights, and activities that allow the child to interact with the environment and have experiences.From these experiences, two types of knowledge are built: physical knowledge

and logical-mathematical knowledge. Regarding the number and its process of construction by the child, Piaget (1975) highlights that this construction goes hand in hand with the construction of logic, and that operations with numbers evolve from activities such as counting objects, classifying them, and serializing them according to their characteristics; for the child, mathematical concepts are developed "spontaneously" and independently. Thus, the author Lorenzato (2006) was chosen for this research, who didactically and, based on Piagetian theory, presents basic mental processes for the child to build the concept of numbers. Lorenzato (2006) highlights that it is very important to establish what children know before studying mathematics and to think about what they can learn, as well as it being necessary for the teacher to understand the concepts worked on in the classroom, to provide security in carrying out activities with the children. Thus, the use of basic mental processes for the construction of the concept of numbers presented by Lorenzato (2006), from pedagogical applications to the teaching of numbers is justified in the current study.

Counting is fundamental in the elaboration of the construction of the number, which consists of the action of determining the number or quantity of elements in a set of objects.The child starts counting from an early age, and when stimulated can count increasingly larger sequences of numbers, however, this counting needs to obey some logical principles.Gelman andGallistel (1986) described five principles of counting that the child needs to intuit: one-to-one correspondence: it is necessary to establish a one-to-one correspondence between the objects and the numerical sequence, that is, each object can only be counted once;stable order: counting must always occur in a certain direction, obeying the same order; it is not possible to go back and forth; cardinality: the last number counted corresponds to the numerosity, or total number of objects in the counted set; abstraction: heterogeneous objects, that is, of any type, can be gathered (grouped) and counted; counting order irrelevance: counting can be performed in any order, whether from left to right or from right to left. Regarding the cardinality principle, it should be mentionedthat Gelman and Gallistel (1986) highlight that this principle only occurs when: the child has the ability to answer how many objects they have in a set after counting; pronounces the last word with emphasis; repeats the last term in the count; and, finally, when it is not necessary to count again to state the cardinal number of the collection. In addition to these characteristics in counting, Piaget and his collaborators emphasize that there is still the invariance of the number. This means that it is necessary for the child to understand that the arrangement of elements in a set does not change the total amount, for example, the order of counting does not require the ordering of elements queued one after the other, but that the ordering is performed mentally (PIAGET, 1975). Lorenzato (2006), when presenting the correspondence, defines it as the act of establishing a "one to one" relationship. However, in addition to the correspondence in which each element corresponds to another element, Lorenzato (2006) clarifies that there is also the correspondence of several elements to one or one to several, for example, a child corresponds to several siblings, or even several students correspond to one teacher. Building this mental process is fundamental for the child to understand other processes, such as classifying, serializing, including, and conserving quantities. Sorting is nothing more than grouping by similarities and sorting by differences. Lorenzato (2006) highlights that classification requires a prior comparison, so that the child can separate elements according to some established criteria.

Nacarato (1995) clarifies that the classification process is evolutionary, that is, the child first groups the objects, so that later, they can organize them according to a criterion used. From there, the child is able to form groups within groups and thus achieve class and hierarchical inclusions. Lorenzato (2006) states that this perception of the idea of inclusion is worked on a growing scale of difficulties, such as groupings of objects that have something in common; continuation of classification by observation; object classification that requires the discovery of a criterion; classification of equal objects; and distinct criteria and classifications within another classification. In this process, Schimitt (2017) says that there is no wrong answer when classifying, as there are several criteria to separate objects or elements and emphasizes that if this process is not well worked by the teacher, the child will certainly experience difficulties in the construction of the concept of numbers and in establishing relationships between objects, quantities, or numbers. What to include represents the ability to observe quantities within each other.Lorenzato (2006) clarifies that this mental process, like others, is also naturally worked by the child from a very early age, when they perceive the relationships of groups and kinship, for example, however, the inclusion process is not easy to perceive and presents two types of difficulty: 1) intrinsic, as it requires double and simultaneous perception, and 2) extrinsic, consisting of two factors, visual and knowledge popular. Regarding seriation, the order of the elements influences the results, as the succession of the elements is based on an established order, or criterion. Lorenzato (2006) clarifies that this process is also known as ordering.Schmitt (2017) shows that in this process, the child needs to manipulate objects to understand the relationships between them. The author further states that if this skill is not worked with the child, the concepts of understanding ascending order, disbelief, forming concepts, and establishing logical relationships will be the main difficulties for children. The notion of conservation, on the other hand, comes when the individual keeps the invariant, that is, when the child understands that something does not change when applying a set of transformations.In other words, it can be said that the child acquires the notion of conservation when they understand that the arrangement of the elements of a collection does not change the quantity if their arrangement changes, for example, the length of a string does not change when we change its shape or even that the volume of a liquid does not change if we change the container.Piaget (1980) highlights that conservation must be worked on several times with children, so that they can develop the ability to recognize equal amounts in different situations. However, for the notion of conservation to emerge, logical reversibility is necessary, which is the ability to perform an action simultaneously in two directions, that is, cutting the whole into parts and bringing the parts together into a whole (KAMII, 1990).

METHODOLOGY

The current study can be considered qualitative of the descriptive-analytical type and followed all the recommendations of the Research Ethics Committee. The participants in this study were two multi-skilled teachers from the early grades of elementary school (denominated P1 and P2), two students with Down syndrome (denominated E1 and E2), and a tutor who accompanied one of the students. The research was carried out in two municipal public schools in the interior of the State of São Paulo, in the western region. The study was based on the identification, description, and systematization of teaching strategies and pedagogical resources. Four phases were carried out: 1) Selection and characterization of participants and research context; 2) Preparation, validation, and implementation of the Observation script; 3) Preparation and application of the Semi-Structured Interviews Guide; and 4) Systematization and analysis of data. The first phase was characterized by the participants, who were composed of two teachers (P1 and P2); P1 - a 39-year-old teacher with training in pedagogy and letters and continuing education courses of the National Pact for Literacy at the Right Age (PNAIC) and (Re) Building a pedagogical practice and P2 – a 57-year-old teacher with a degree in pedagogy and a postgraduate degree in Special and Inclusive Education and Specialized Educational Care and Neuroscienceand continuing education course of PNAIC. A 35-year-old tutor with a degree in pedagogy. Two students (E1 and E2);E1 - an 8-year-old student enrolled in the first year of elementary school and E2 – an 11-year-old student enrolled in the fifth year of elementary school.An observation guide was prepared and sent for analysis by two experts in the field and an observation form was created for school and teacher data, so that the researcher could keep track of each day observed. In the second phase, the researcher was in loco in 12 classes of each teacher, with one session per week of the 1st academic semestercomprising the sample.

Table 2. Number of classes observed for P1 and P2, according to the contents worked in each grade, including the construction processes of the concept of numbers worked in each class

	Class	Content	Process worked		Class	Content	Process worked
P1	Class 1	Numbers	Correspondence	P2	Class 1	Decimal Numbering System (DNS)	Correspondence
	Class 2	Addition	Correspondence		Class 2	DNS/Never 10 game	Correspondence Inclusion
	Class 3	Writing numbers relating to familiar and frequent numbers	Correspondence		Class 3	DNSand natural numbers, successor and predecessor /Applied game TICO and TECO	Correspondence Comparison Classification
	Class 4	Addition	Comparison Classification		Class 4	Natural numbers/successor and predecessor/addition	Seriation
	Class 5	Writing numbers relating to familiar and frequent numbers	Correspondence		Class 5	Polyhedron properties	Comparison Classification
	Class 6	Identify days of the month by exploring the calendar	Correspondence		Class 6	Polyhedron properties	Comparison Classification
	Class 7	Addition	Correspondence Seriation		Class 7	Time and temperature units	
	Class 8	Fill in simple tables	Seriation		Class 8	Continuation of art class, free painting	
	Class 9	Writing numbers and counting	Correspondence		Class 9	Numbers and sequences/Length measures	Seriation
	Class 10	Writing numbers and counting	Comparison Classification		Class 10	Activity for Mother's Day	
	Class 11	Counting, numerical sequence, and comparing numbers	Inclusion		Class 11	Multiplication	
	Class 12	Compare numbers and identify the biggest and the smallest			Class 12	Multiplication	

Source: Own elaboration (2019).

After the observations had been carried out, the observed classes of P1 and P2 were described separately, so that it was possible to understand at which times the work of each of the basic mental processes for the construction of the concept of numberswas perceivedwith the students with Down syndrome. In the third phase, the researcher organized an interview guide, which was sent for consideration by three experts, including two who were the same as those who validated the observation guide, and a third, with a degree in Physical Education, and experience in the field of Special Education and elaboration of scripts.After validation, the researcher prepared the final version of the interview script, which, in general, sought to answer how the teacher selected the resources to work on the construction of the concept of numbers; how the teacher identified the logical-mathematical needs of students with Down Syndrome; and how the teacher worked the seven basic mental processes for the construction of the concept of numbers as highlighted by Lorenzato (2006).

Therefore, a semi-structured interview was carried out with both teachers, P1 and P2, and later, with the tutor, in order to complement and confirm information about facts that could not be observed or that needed to be clarified in the study. After conducting the interviews, each was transcribed in full, by the researcher, who appropriated a pre-analysis of the content, constituting the fourth phase. The main purpose of the transcription was to transpose the oral information into written information. The classification of elements into categories refers to the investigation of what each one of them has in common with the others (BARDIN, 2006). In this research, the items were previously classified into categories, taking into account each basic mental process for the construction of the concept of numbers, namely: correspondence, comparison, classification, seriation, inclusion, and conservation. The data obtained were triangulated using the combination of information from the observation, field report, and transcripts of the interviews, in order to integrate different perspectives in the studied phenomenon (FLICK, 2009; TRIVIÑOS, 1987). Therefore, the process of transcription and thorough and systematic reading of the data obtained was carried out, as well as content analysis through categorical analysis.

RESULTS AND DISCUSSIONS

The table below presents the content worked in each class, which was not necessarily the content worked with the students with Down syndrome.

The table above refers to the number of classes observed in both classrooms surveyed, according to the contents covered in each grade – P1 in the 1st year of Elementary School and P2 in the 5th year of Elementary School. The table also highlights the mental process for the construction of the concept of numbers when it was worked on in the respective class.

Term to Term Correspondence - The literature highlights the importance of using the fingers as an aid to counting in children with DS. Yokoyama (2012) highlights in his doctoral thesis that the fingers can be an obvious and easily accessible "instrument", however, with few research records about their use in counting.Brissiaud (1989; 1992; apud YOKOYAMA, 2012) states that before teaching children the counting procedures, it is necessary to teach them the number-words associated with the corresponding number of fingers, because for the author, using the fingers to start the conceptualization of numbers related to the number-words causes the child to "feel" the amount represented, and this influences the construction of the concept of numbers more than just observing quantities of objects or listening to a sequence.

Therefore, using the fingers as an auxiliary resource in counting is a practice that should be valued, and it is considered one of the most important in the child's construction of the number. For this process, Lorenzato (2006) suggests that the teacher make groups of four children in the classroom and give each one a set of ten cards, each with a numeral (from 1 to 10) and a symbol that indicates the correct shape (position) of each number; another ten cards with the numeral and drawing representing the correct quantity.It can be seen, that even without following this author's suggestion, the tutor worked on several characteristics highlighted by Lorenzato (2006), with the objective that E1 would correspond the quantity to the number.

With respect to the mistakes made and the difficulties presented by the students during the correspondence process, Gelman (1986); Fuson (1988); Porter (1999); and Abdelahmeed (2007), present five errors that can be identified in the counting process by children with DS: Numerical sequence: missing the sequence of number-words by skipping them or returning to one already recited; Point without labeling: point to an object, but do not associate any number-word. Ignored objects: objects not considered in the one-to-one correspondence, that is, which did not receive any number-word and were not pointed out; Double count: indicate two number-words for the same object at the same time as theannotation, and; Understanding the quantity, that is, cardinalization: when the question is asked: "How many objects do we have here?", the individual does not repeat the last number-word and performs the counting procedure again. Performing an analysis of the observations, it is possible to verify many of the errors presented above by the students, such as making a mistake in the numerical sequence, indicating two number-words for the same object at the same time as the annotation, and ignoring some objects, not considering the one-to-one correspondence. An evident difficulty that the students demonstrated during the work with the correspondence was being able to adequately carry out the counting from the number five. However, when asking P1 about what difficulty E1 had to perform math activities, the teacher clarifies that:

> [...].I think the main difficulty is when recording, and also when interpreting. This issue of relating to 10, the number to 10, the quantity, recognizing, quantifying... she managed to learn, now the difficulty would be in this part, to interpret a problem. If you give a question for a problem, she doesn't know how to proceed, if it's another child, even if it's a representation of a ball, a draft one, the child tries to do it. (Excerpt from P1)

The tutor states that during the period they worked together, they managed to reach 10. It is noted, however, that P1 and the tutor did not report the difficulty that E1 presented during the observations to continue counting from number five.P1 states that the student is able to quantify, relate, and recognize the numbers up to ten, but makes an important point when considering the progress the student has made, despite her limitations:

> [...] and this year, even within her limitations, she managed to learn some numbers, to associate the quantity with the symbol. She didn't have the same progress as other children who don't have atypia, but like... sometimes we have to consider the little she did learn as a lot too, so I see that she made progress within her limitations, which has to be considered. (Excerpt from P1)

On the other hand, P2, when asked about the student's difficulties in performing math activities, states:

> [...] So the difficulty I see in C syndrome is this quick thinking, but not that she doesn't understand, she took a little longer to realize, so that's why I had to work with the bottle tops, for her to understand first, that she has to see the concept in concrete, which I did with her, then she tried to memorize. (Excerpt from P2)

When asked about what type of activity was performed for the work of the correspondence mental process, P1 clarifies that:

> [...] in this term-to-term correspondence... but it can't be kept just there in the book, so I usually have the bottle tops, all this stuff that doesn't pose any danger, because there's also that, right!Ice cream sticks, and tokens too, which is something she likes a lot, so sometimes there is some way of relating, demonstrating, of associating this number with the amount presented. (Excerpt from P1)

P2 reported using:

> [...] little card game, we play. I had a deck, so I gave her a card, if I'm not mistaken she took the five, and I took the four.First we worked the quantity and then, when I had the four, and she had the five, I asked who had more, me or her?! Then she looked...but how much more she had, then the transformation came in, which she had to add, you know?! (Excerpt from P2)

In this speech by P2, it is clear that she presents concepts that also work with the processes of comparison, as in her report, she highlights that the student, when realizing that she had a higher card than the teacher, entered the transformation process, intuitively relating to the notions of addition. Lorenzato (2006) clarifies that the comparison process can lead the child to intuit the addition, and consequently the subtraction, that is, when realizing that a set A is greater than a set B, the child may be led to think: "what should I do so that I have the same amount as A". However, during the observations, it was possible to verify that P2, as well as P1 and the tutor, used their fingers to establish the one to onerelationship. As previously mentioned, Yokoyama (2012) describes that the fingers can also be number-words to represent quantities, it is enough that an element is associated with each finger, leaving the selected fingers raised. Several times, P2 could be observed performing this strategy. As an example, it stands out when P2 worked the decimal numbering system.In this activity P2, asks the student to represent the amount spoken with her fingers. Without difficulty, the student was able to represent the numbers on her fingers up to five, but from that number on, it took a little longer to select the fingers. It is important to highlight, therefore, that E2 does not yet understand the concepts inherent to the Decimal Numbering System. Lorenzato (2006) clarifies that if the four perceptions for understanding the mental process of correspondence are not worked with children, they may have difficulties in understanding that ten units correspond to the number ten, for example.

Comparison and Classification - When performing the comparison activity with E1, the tutor works with some notions that are necessary for working with mathematics in Early Childhood Education, and which are highlighted by Lorenzato (2006, p. 24): "large/small, bigger/smaller, thick/thin, high/low, among others".

When comparing the figures of cups and circuses, between larger and smaller, E1 works these elementary notions. It is noteworthy, therefore, that these activities, as well as practically all the others presented in the description of E1's observations, were mediated by the tutor, and not by the teacher responsible for the class, and the student's changes her place to carry out the activities. About the tutor performed the action of taking the student to the back of the room, she highlights that:

> When I wasn't in the classroom the student sat at the first desk, under the teacher's eyes, but when I arrived, it was time to stay with her, I preferred to take her to the back because I could talk to her, she could hear better, I didn't disturb the teacher's class, and I didn't disturb the other children. (Excerpt from tutor)

When asking P1 about activities to compare drawings of larger, smaller, or equal size, the teacher reports having already performed activities like this:

> [...] when you have to make comparisons of smaller, larger, I often use even the children, I often choose her (E1), we do it like this, let's assume a cooperation in ascending, descending, increasing, decreasing, also larger or smaller scales, so I always put it like this... it's showing, sampling that speaks, demonstrating the visual part. (Excerpt from P1)

When performing the activity of comparing which is the largest and which is the smallest number formed by the figures on the yellow card, E2 cannot perform the activity, maybe because the numbers formed are all with the figures 1, 2, 4 and 7, where only the order is changed. The activity requires the student to indicate which is the largest and which the smallest number that can be formed by the digits. For comparison activities, the teacher states that she often uses the student herself as an example to carry out the comparisons. P1 also clarifies using E1 to carry out comparison activities "[...] so, I

often choose her". Working on the mental process of comparison explores the understanding of quantities and measures, because as can be seen in the description of the observations, the different activities require the students to develop the capacity for observation, comparing two objects, numbers, or people. Lorenzato (2006) considers that classifying is separating into categories according to similarities or differences, establishing some criteria. In this perspective the tutor elaborated activities that work this process for E1. In the first activity, the established criterion for E1 to classify the figures was to separate girls and boys.The student separated the groups without any difficulty. In the next activity the objective was to separate groups of two girls, in this case pairs, and then groups of three stars. The counting by the student only took place after the tutor's command, when she started counting by pointing her finger and asking E1 to repeat the number-words. As highlighted in the description of the observations, the tutor mediated the entire activity without any help from the teacher, who worked on other content with the other students in the class. When asking P1 about activities in which we ask students to group similar elements, such as, of the same color, of the same size, from the same family, the teacher answered that she has already performed several activities of this type with the student using the logic blocks, whereas P2 reports that for the work of classification she has already worked with geometric shapes.As for the use of pedagogical resources during the activities, P1 clarifies that in addition to a game box that she has used twice, although she did not remember the name, she also used "tokens, bottle tops, toothpicks, more or less around there (Excerpt from P1)." P2 clarifies that she used the abacus and wooden blocks.

Inclusion - When asked about activities in which we show that oranges and bananas are fruits, that they are from the same family, or that a dog and a mouse are animals, P1 clarifies that she used the school's teaching material, although poor, but effective for the work of this process. P2 reports that: "[...] we only use lists, of animals, of names that belong to the same family".Lorenzato (2006) highlights that for the perception of inclusion, two types of difficulties on the part of children are evident: the first is intrinsic, as it requires double and simultaneous perception, and the second is extrinsic, consisting of two factors, visual and knowledge popular.Understanding this mental process is essential for the child to understand that there is, for example, 3 without 2, so 2 is included in 3.

Seriation - When asked about activities that work elements of numerical sequence with an established criterion, for example, ascending or descending order, P1 clarifies that she used: "[...] sheets of numbers cut up, but in this case it only went up to 10.. .to put in order from smallest to largest [...]".

To understand the activity and type of strategy the teacher used with the student, a supplementary question was asked, and P1 clarifies:

> [...]the paper slips with the numbers, then we shuffled them so they could be sequenced…from 0 to 10, in the ascending scale she managed it, there were one or two little mistakes there, but when we took the descending scale, from the largest number, it was a little more difficult. (Excerpt from P1)

P2,says that when she performs this type of activity, she uses the strategy related to practice ofgrowingwith increasing, and shrinking with decreasing quantities.
From the work on this mental process, it is possible for children to begin to perceive specific words such as, first, second, third, left, right, front, back, low, high, etc. (Lorenzato, 2006, p. 113).

Conservation: When asked about conservation activities, that we can place the bottle tops on a table, for example, and even if we separate them, the same amount remains, P1 clarifies that E1 has a lot of difficulty in carrying out activities of this type, and clarifies that she carried out activities with the student in one of the Piagetian operative tests, in this case, the liquid conservation test. P2 says she has not performed any activity of this type. Lorenzato (2006, p.125) clarifies that the child needs to understand very well all mental processes, so that they actually have the perception of conservation, and thus understand the concept of reversibility, and that this will be the basis for understanding the concepts of arithmetic and geometry that will be worked on in the following grades. Performing a brief summary of the processes presented, it is highlighted that the pattern of E1 activities was always the same in all activities for the process of building the concept of numbers: wait for the tutor to arrive, sit at the back of the far room away from other students, interact only with the tutor, sometimes receive praise from the teacher for the activity performed, wait for a command to start the activities, and, usually, ask to paint. On the other hand, it can be considered that E2 is more included in the contents worked within the classroom, as she rarely performed activities different from other colleagues. P2 seeks to broaden the student's understanding by repeating the explanations, sitting next to the student and asking for help from a colleague with whom E2 has greater affinity. Regarding the planning of these activities, the tutor clarifies that the student did not follow the Mathematics Education in the Early Years (EMAI) book or the school textbook because she did not know how to write yet, and therefore the tutor helped the teacher in the complementarity or adaptation of other activities. Regarding the students' difficulties in working the processes of comparison, term-to-term correspondence, seriation, classification, and conservation, the following were evident: making a mistake in the sequence of number-words; counting numbers greater than 5; counting the same object more than once or skip one when counting, among others evidenced in this research and by Abdelahmeed (2007), Gelman and Cohen (1988), Cornewell (1974), and Porter (1999).

CONCLUSION

It is evident that teachers from the early grades of elementary school, experience great difficulties in working with their students, proposals, and activities that lead to the construction of the concept of numbers.Every concept is formed through deduction, which in turn is not teachable, and, therefore, it is necessary to create possibilities for the child to perceive, internally, through insights, what is being taught. Activities that work only with traditional teaching methods, such as counting objects to ten, for example, are not enough to make the child understand cardinalization and build the concept of numbers. Another point that draws attention is the correspondence and comparison activities, which were the most worked by both teachers, however, it was noted that their proposals and strategies almost never led the students to reflect on what they were doing, making it difficult to understand the number construction in such activities. When performing comparison and classification activities, the teachers could, in addition to the activities observed, use, for example, recognizing and selecting number of fingers (YOKOYAMA, 2014). The pedagogical resource used in this activity is configured as the students' own hand. It is also important, according to the description of the activity, that the teacher asks students about the number of fingers on their hands, so that they can quickly determine the numbers by recognizing the configuration of the fingers on their hands. Therefore, in order for students with Down syndrome and the whole class to understand the notions of numbers, it is essential that the teachers carry out, several times and in different ways, activities that allow the children to perceive the characteristics of each process and, then, be able to classify, match, compare, and include.

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