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CHAPTER 13

THE GOLDEN MATERIAL AND THE TEACHING OF ADDITION AND SUBTRACTION: A REFLECTION FROM TEXTBOOKS

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ABSTRACT

Recognized by teachers who teach Mathematics and by theorists who study the use of manipulable materials in the teaching and learning processes related to this area of knowledge in Basic Education, the Golden Material represents an important pedagogical resource. Based on this understanding, we sought to answer the following question: How do the books made available by the 2019 National Textbook Program (PNLD) address the use of Golden Material as a pedagogical resource in the teaching and learning processes of the concept of addition and subtraction in the First Year of Elementary School? To this end, a bibliographic research was carried out, having as the object of the study 12 (twelve) textbooks selected by the PNLD 2019 and as a data collection instrument a form, which made it possible to identify elements related to the theme of this study in the analyzed works. With the development of this research it was possible to verify that not all the textbooks analyzed bring the Golden Material as a resource proposal for the teaching of addition and subtraction, but this does not mean that these works do not consider the use of manipulable materials relevant in this process, since other materials are indicated.

Keywords: Golden Material. Addition. Subtraction. First Year.

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INTRODUCTION

We know that the teaching of Mathematics faces numerous challenges in relation to the different realities found in schools, where we are often faced with highly structured schools, various equipment for the use of students, technology in abundance. In others, without any resources, there is a lack of professionals, students crammed into the classroom and in extreme cases even without electricity. In this way, we need to value education as a whole and provide our best to the student, motivating him to fight for his principles, showing the usefulness of Mathematics in its most diverse forms.

The Golden Material is a versatile resource that can be used in the Teaching of Mathematics, in proposals that address various concepts, ranging from the understanding of the number/quantity relationship to the abstraction of geometric concepts.

This material was created by Maria Montessori (1870-1952), graduated in medicine and in charge of the care of children with disabilities, she found that they learn more by action than by thought, which led her to develop a method and several materials aimed at the teaching and learning processes. At the age of 28, Maria visited a hospice in Rome and watched in horror as the little ones were treated in an absolutely inhumane way. She, at this moment, thought and developed this method so that she could work with these children and they would learn in the way that they best adapted.

In her successful experiments, she concluded that the Montessori method could be successful with so-called normal children, so Lubienska de Lenval, a follower of Montessori, made some modifications to the initial material and built it in wood in the form we find it in today. The name "Golden Material" comes from the original "Golden Bead Material", in analogy to beads, as the material has grooves in the form of squares.

Analyzing the teaching methods of the time, Maria Montessori proposed changes combined with her philosophy of education, with more freedom than in traditional education, where children end up memorizing the algorithms from tiring training, but without being able to understand what they do, she proposed that children use the teaching materials, including the Golden Material. In concrete experiences, the ease, comprehension and understanding of abstract numerical relations were verified. In this way, learning becomes much more enjoyable and it is verified that in addition to the understanding of the algorithms, a remarkable development of reasoning is obtained.

Among the materials used in the making of the Golden Material are wood or EVA, consisting of a large cube, ten plates, one hundred bars and one thousand smaller cubes, corresponding to the thousand, the hundred, the ten and the unit, respectively.

Another possibility of application of the Golden Material in the teaching of Mathematics is that which is intended for activities that assist in the teaching and learning processes of the decimal numbering system, in addition to representing a method to carry out fundamental operations, such as addition and subtraction.

Addition is linked to situations that involve gathering, joining, or adding. Using the concrete materials, the child has a better understanding and, in this way, the child will develop his independence, confidence in himself, concentration, coordination and order, therefore, he will work with the senses.

In this sense, a study was proposed that aims to answer the following research problem:

How do the books made available by the National Textbook Program (PNLD) two thousand and nineteen indicate the use of Golden Material as a pedagogical resource in the teaching and learning processes of the concept of addition and subtraction in the first year of Elementary School?

In order to answer this question, the objectives that guided this study were elaborated, presented below:

General objective:

Verify whether the books made available by the National Textbook Program, proposed in 2019 (two thousand and nineteen), indicate the use of Golden Material for teaching addition and subtraction for the first year of Elementary School.

With the specific objectives of studying the origin of the Golden Material and with this verify the approach that is given to this theme in textbooks, after this it will be analyzed the approach given to the concepts of addition and subtraction in the first year of Elementary School in official documents such as the National Common Curricular Base - BNCC and Gaucho Curriculum Reference - RC and also to know the National Textbook Program and its role in the availability of didactic material for the first years of Elementary School.

From this study, it is intended to contribute to the educational process of mathematics in a constructive and meaningful way, through observations of the real world and with representations using manipulated materials. Initially, the origin of the Golden Material is exposed, then the addition and subtraction in the first year of Elementary School according to the BNCC, Gaucho Curriculum Reference is presented, and we will also use the PNLD to know how the choice of books works and if each teacher takes into account the use of concrete materials for the teaching of mathematics, in this case the use of the Golden Material.

THE CONSTRUCTION OF THE GOLDEN MATERIAL

Although the current official documents indicate that from Early Childhood Education practices aimed at teaching Mathematics are carried out, in the first year several students have difficulties in understanding the basic algorithms, as well as the idea of classifying numbers according to their order or class. One of the alternatives that teachers can use so that this student does not have fear or difficulty would be to work with concrete materials, such as the Golden Material, which allows us to develop several areas and in this case addition and subtraction.

The Golden Material (Figure 1) is a resource initially produced in wood, composed of a smaller cube, with an edge measuring 1 centimeter, a bar, composed of ten of this smaller cube, a plate, 10 centimeters long, 10 centimeters wide and 1 centimeter high, and a larger cube, with an edge measuring 10 centimeters, which can also be found currently produced in EVA (Figure 2).

In this material, the smaller cube represents the unit, the bar, composed of 10 (ten) smaller cubes represents the ten, the plate, composed of 100 (one hundred) cubes, represents the hundred, and the largest cube, composed of 1000 (one thousand) smaller cubes, represents the unit of thousand.

Figura 01: Material Dourado em Madeira

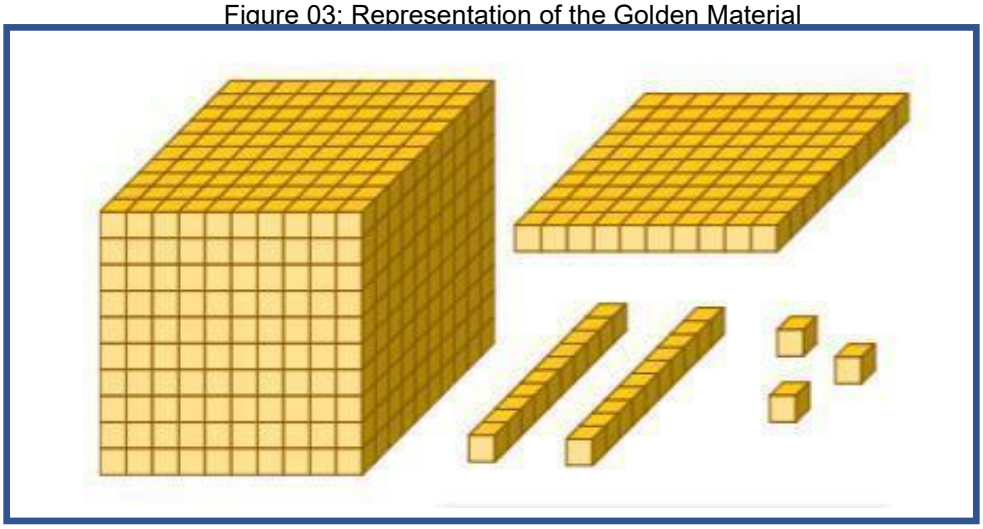
Fonte: Internet

Figura 02: Material Dourado em E.V.A

Fonte: Internet

In printed materials, such as articles and textbooks, the Golden Material is often represented by engravings, as shown in the figure below:

Figure 03: Representation of the Golden Material



Source: Internet

The Golden Material is an important device for the teaching of mathematics. With it it is possible to start various content that involves the decimal numbering system and its basic operations, but also problem solving is an effective method that can be used to develop reasoning, and also to motivate students to study mathematics. However, our schools have very different realities, both municipal and state schools are known that it is not always possible to acquire a Golden Material kit per student and sometimes even one per school.

So, with this situation, there is the opportunity to encourage students to build their own Golden Material using materials such as EVA, paper or wood and at this time involve parents in the construction, thus stimulating family interaction and their participation with the school community.

As Freitas said:

> For Montessori, manipulative material is an integral part of the learning process. In the environment imagined by her, the material is present in the classroom, which is prepared in such a way that the child has freedom and is motivated to handle it spontaneously. According to her, "the most important thing is not the teaching, but the objects: and, since it is the child who uses them, the active entity is not the teacher, but the child" (FREITAS, 2004 apud Fabio S. B.).

In traditional education, children end up learning algorithms from various trainings, and repetitions, even so, they often do not understand what they are doing. With the use of concrete material, he develops, and also better understands what he is learning. Currently, there are already several materials for manipulation in the teaching and learning of mathematics that use more recent proposals. From this, the teacher can use the industrialized form or exercise production by the students.

With the Golden Material, the student has a concrete image, facilitating the understanding of the algorithms, a remarkable development of reasoning and a much more

pleasant learning, thus facilitating the teaching of addition and subtraction. In the teaching-learning process, games can be considered motivating and formative instruments, also contributing to the development of intelligence.

The student's first contact with the material must occur in a playful way so that he can explore it freely, play, create games and shapes, it is at this moment that the child realizes the construction and the types of material used. The first activities to be proposed with the Golden Material aim to make the student perceive the relationships between the pieces and understand the exchanges in the addition and subtraction system.

With the use of concrete material in mathematics classes, we show that the student tends to absorb the proposed content more easily, in this way the teacher will provide the student with a more dynamic and different class without monotony, making a class fun, which will awaken the creativity and reasoning of the students, because they will learn mathematics having fun.

There is no intention here to place the Golden Material as the only resource to work in the classroom to teach addition and subtraction, as it is known the importance of the approach based on various resources and methodologies, as well as the long path that will have to be traveled by students to carry out operations and learn algorithms and solve problems.

The teaching of Mathematics is highly criticized for the low performance of students in the Early Years of Elementary School, by several evaluations made outside the classroom, such as the Provinha Brasil, and the Program for International Student Assessment (PISA).

Mathematics classes always have a highlight in the discussions of which methodologies should be used for teaching. In the texts we have a highlight that Carvalho emphasizes "the Teacher who proposes to work with Mathematics in the Teaching Qualification courses must reflect on this situation.". Knowledge is the result of a process of imagination, of working in a constructive and meaningful way through observations of the real world.

The didactic resources aim to promote learning more efficiently, serving as a support for the teaching of mathematics. In the teaching-learning process, games can be considered motivating instruments, also contributing to the development of intelligence.

In the state of Mato Grosso in the city of Dourados, an extension project entitled "Possibilities of teaching Mathematics with the use of didactic materials in the Public Schools of Dourados" was developed, this project intends to take the student out of the classroom and work with them in reverse shift, it was decided to work with manipulable

material because it was understood that these are instruments capable of providing a mediating approach. In these classes, addition and subtraction were worked, first the Golden Material was presented, showing it and letting the children manipulate it, then in groups conversations were held to see how much the students knew about this material.

Maria Montessori created the Golden Material to develop in children independence, self-confidence, concentration, coordination and order and with this develop experiences for a good school development. In the materials studied, Santos, Oliveira and Oliveira (2015, p. 311) highlight that: "(...) the more the child explores the world, the more he is able to relate facts and ideas, being able to think and understand". So when working with the concrete material in this case, the Golden Material it is important to allow children to play with the material, without the obligation to only use it to calculate, that the child observes what the material is made of, what its shape is, after all this explain the values of the pieces, showing each one.

With the practice carried out in this school, it was noticed that after the work with the Golden Material there was a great development of the students. Games with rules are considered by Piaget (1978) as an indispensable tool for this process. Through contact with the other, the child will internalize basic concepts of coexistence.

The objective of Mathematics classes is to offer students didactic and concrete materials that contribute to the understanding of the concepts studied, in the acquisition of knowledge, which is the result of the process of imagination, thus forming judgments, errors and successes.

PNLD AND ELEMENTARY SCHOOL BOOKS

The National Book and Didactic Material Program (PNLD) is intended to evaluate and select didactic, pedagogical and literary works, among other materials to support educational practice, in an orderly, regular and free manner, to public schools of basic education of the federal, state, municipal and district networks and to community early childhood education institutions, confessional or philanthropic non-profit and agreed with the Government.

The materials distributed by the Ministry of Education – MEC, to the public schools of basic education in the country are chosen by the schools themselves, as long as they are registered in the PNLD and also approved in some pedagogical evaluations coordinated by the Ministry of Education and which have the participation of specific technical commissions, made up of specialists from the different areas of knowledge corresponding, whose validity corresponds to the cycle to which the evaluation process refers.

After evaluation and selection by the MEC, the selected materials are made available to teachers so that they can choose the book that will be adopted the following year, evaluating whether it includes what is necessary to be worked on in the classroom.

The distribution of the books is done through a contract between the National Fund for the Development of Education (FNDE) and the Brazilian Post and Telegraph Company (ECT), which takes the books directly from the publisher to the schools. This stage of the PNLD is monitored by technicians from the FNDE and the State Secretariats of Education. The books arrive at schools approximately in October of the year prior to the service and the beginning of the school year. In rural areas, the works are delivered to the headquarters of the city halls or municipal departments of education, which must deliver the books.

The National Textbook Program (PNLD) is the oldest of the programs aimed at distributing didactic works to students in the Brazilian public school system and began, under another name, in 1937. Over these 80 years, the program has been perfected and has had different names and forms of execution. Currently, the PNLD is aimed at Brazilian basic education, with the only exception being early childhood education students.

In 1937, Decree-Law No. 93, of December 21, 1937, created the National Book Institute, the first name of the program. But in 1966, an agreement between the Ministry of Education (MEC) and the U.S. Agency for International Development (USAID) allowed the creation of the Technical Book and Textbook Commission (COLTED), with the objective of coordinating actions related to the production, editing, and distribution of textbooks. The agreement ensured the MEC sufficient resources for the free distribution of 51 million books over a period of three years. By guaranteeing government funding from public funds, the program acquired continuity.

In 1983, replacing the National Foundation for School Supplies (FENAME), the Student Assistance Foundation (FAE) was created, which incorporated the Textbook Program for Elementary Education (PLIDEF). On the occasion, the working group in charge of examining the problems related to textbooks proposes the participation of teachers in the choice of books and the expansion of the program, with the inclusion of the other grades of elementary school.

In 1985, with the enactment of Decree No. 91,542, of 8/19/85, PLIDEF gave way to the National Textbook Program (PNLD), which brought several changes, such as: indication of the textbook by teachers; reuse of the book, implying the abolition of the disposable book and the improvement of the technical specifications for its production, aiming at greater durability and enabling the implementation of textbook banks; extension of the offer to 1st and 2nd grade students in public and community schools; end of the financial participation

of the states, passing control of the decision-making process to the FAE and guaranteeing the criterion for choosing the book by teachers.

An important advance in the textbook programs occurred in 2012, when a public notice was published for the formation of partnerships for the structuring and operation of a public and free service to make digital materials available to users of national education.

For the 2015 school year, the public notice launched now provides for publishers to present multimedia works, bringing together printed books and digital books, and the digital version must bring the same content of the printed material in addition to digital educational objects, such as videos, animations, simulators, images, games, texts, among other items to assist in learning. This public notice also allowed the presentation of works only in the printed version, to enable the participation of publishers that have not yet mastered the new technologies. This material was intended for students and teachers of public elementary school.

The PNLD 2019 Notice, on the other hand, establishes that the selected collections must make available to the student the printed textbook (including in Braille) and the class regent must be offered the Teacher's Manual, consisting of a printed book and digital material. The works intended for the Initial Years of Elementary School will have a four-year cycle, and the replacement of these materials may be requested annually throughout this period.

The materials selected by the PNLD 2019 had to meet some indications proposed by its notice, some of which are:

> [...]2.2.4 The works will consist of the printed student book and in Braille and the teacher's manual, the latter consisting of a printed book and digital material, with the exception of the following:
> a) Physical Education Discipline, which will have only the printed teacher's manual;
> b) Integrative Projects, which will have a printed student book and teacher's manual. (BRASIL, 2017b, p. 03).

In this sense, it should be noted that, since its notice, the PNLD 2019 proposes that books in Braille be made available to students, and the Manual to teachers, both printed and in digital format, except for the subject component Physical Education.

With regard to the Teacher's Manual, the PNLD 2019 notice defines that:

> The teacher's manual, in its various components, should guide the teacher's work in the classroom, supporting him from the processes of planning, organization and sequencing of contents and activities to be carried out to the monitoring and evaluation of student learning, and, above all, should play a significant role in proposing innovative, stimulating and effective practices to the teaching-learning process (Brasil, 2017b, p. 37).

Therefore, the Teacher's Manual will enable this professional to organize their planning, from classroom activities to the evaluation of their students' learning, proposing innovative practices that contribute significantly to the teaching-learning process.

In addition to the Teacher's Manual, the PNLD 2019 notice proposes that the Digital Material be made available to teachers, consisting of development plans (bimonthly or quarterly), didactic sequences, among others. As we read below:

> 2.2.4.1 The digital material with complementary content will consist of the following materials, specified in Annex III: Bimonthly/Quarterly Development Plans, Didactic Sequences, Learning Monitoring Proposals and Audiovisual Material.
> 2.2.4.2 The presentation of the Digital Audiovisual Material is optional and the result of its evaluation does not condition the approval of the collection.
> 2.2.4.3 Digital material with complementary content, specified in Annex III, must be made available under an open Creative Commons - Non-Commercial Attribution license (CC BY NC – 4.0 International or CC BY NC – 3.0 BR) (BRASIL, 2017b, p. 03).

Another resource, also provided for by the PNLD 2019 notice, is what is called by this document the Audiovisual Material, even if on an optional basis and whose evaluation would not interfere in the choice or not of the material analyzed.

ADDITION AND SUBTRACTION IN THE FIRST YEAR OF ELEMENTARY SCHOOL FROM THE PERSPECTIVE OF OFFICIAL DOCUMENTS.

Mathematics, as an area of knowledge, through the articulation of its various fields – Arithmetic, Algebra, Geometry, Statistics and Probability, is defined by official documents, BNCC and RCG, as the area that aims to develop in the student the ability to solve problems existing in his daily life, applying the knowledge acquired.

In this sense, the Gaucho Curriculum Framework, based on the National Common Curricular Base, recognizes as specific competencies in this area:

> 1. Recognize that Mathematics is a human science, the result of the needs and concerns of different cultures, at different historical moments, and is a living science, which contributes to solving scientific and technological problems and to support discoveries and constructions, including impacts on the world of work.
> 2. Develop logical reasoning, the spirit of investigation and the ability to produce convincing arguments, using mathematical knowledge to understand and act in the world.
> 3. Understand the relationships between concepts and procedures in the different fields of Mathematics (Arithmetic, Algebra, Geometry, Statistics and Probability) and other areas of knowledge, feeling secure about their own ability to build and apply mathematical knowledge, developing self-esteem and perseverance in the search for solutions (BRASIL, 2017, p. 267).

From the competencies presented above, it is clear that these documents bring Mathematics as the area of knowledge that was developed by man, from his experience, in

the most varied historical moments and in the most diverse cultures. And that for this reason such an area enables the individual to develop logical reasoning and the ability to argue, relating the different fields of mathematics.

The same documents, BNCC and RCG, also indicate as specific competencies to be developed in Elementary School, with regard to Mathematics,

> 4. Make systematic observations of quantitative and qualitative aspects present in social and cultural practices, in order to investigate, organize, represent and communicate relevant information, to interpret and evaluate it critically and ethically, producing convincing arguments.
> 5. Use mathematical processes and tools, including available digital technologies, to model and solve problems in everyday life, social and other areas of knowledge, validating strategies and results.
> 6. To face problem situations in multiple contexts, including imagined situations, not directly related to the practical utilitarian aspect, to express their answers and synthesize conclusions, using different registers and languages (graphs, tables, schemes, as well as text written in the mother tongue and other languages to describe algorithms, such as flowcharts, and data) (BRASIL, 2017, p. 267).

It can be identified in the official documents the indication that the Mathematics to be addressed in Elementary School, from the Early Years, should provide the child with the ability to, based on social and cultural practices, make systematic observations of qualitative and quantitative aspects, using mathematical and technological processes and tools, so that he is able to solve problem situations, using different registers and languages.

Also according to the BNCC and the RCG, the following are specific competencies of Mathematics:

> 7. Develop and/or discuss projects that address, above all, issues of social urgency, based on ethical, democratic, sustainable and solidary principles, valuing the diversity of opinions of individuals and social groups, without prejudice of any kind.
> 8. Interact with their peers in a cooperative way, working collectively in the planning and development of research to answer questions and in the search for solutions to problems, in order to identify aspects that are consensual or not in the discussion of a given issue, respecting the way of thinking of colleagues and learning from them (BRASIL, 2017, p. 267).

In this way, it is possible to recognize in these documents the thought that it is also up to Mathematics, present in the curriculum of the second stage of Basic Education, to stimulate collective work, in an attempt to solve problems common to society and the ability to reflect on projects related to social urgencies, based on principles such as ethics, sustainability, appreciation of diversity and solidarity.

According to the BNCC:

> Elementary School should be committed to the development of mathematical literacy, defined as the competencies and skills of reasoning, representing,

> communicating and arguing mathematically, in order to favor the establishment of conjectures, the formulation and the resolution of problems in a variety of contexts, using concepts, procedures, facts and mathematical tools. It is also mathematical literacy that ensures students recognize that mathematical knowledge is fundamental for understanding and acting in the world and perceive the intellectual game character of mathematics, as an aspect that favors the development of logical and critical reasoning, stimulates investigation and can be pleasurable (fruition) (BRASIL, 2017, p. 265).

Therefore, it is considered that from the Early Years of Elementary School, with the development of mathematical literacy, the development of skills such as reasoning, arguing, formulating and solving problems should be stimulated in the child, because in this way it becomes possible to ensure that students have the ability to recognize that mathematical knowledge enables understanding and acting in the world.

In order to promote the development of such skills, to "ensure the right to learn mathematical knowledge considered essential for integral human formation and, also, with the objective of guiding schools in the organization of their Political-Pedagogical Proposal" (Rio Grande do Sul, 2018, p. 49-51), the official documents structured the Mathematics curriculum based on a set of skills related to the different objects of knowledge, contents, concepts and processes, organized into thematic units, called Numbers, Geometry, Algebra, Quantities and Measures and Probability and Statistics.

According to what is presented in the BNCC, the concepts of Addition and Subtraction, with regard to the First Year of Elementary School, are located in the thematic unidate "Numbers", based on the objects of knowledge "Construction of basic facts of addition" and "Problems involving different meanings of addition and subtraction (join, add, separate, remove)". The following skills are proposed to be developed, respectively:

> (EF01MA06) Build basic facts from addition and use them in calculation procedures to solve problems. Composition and decomposition of natural numbers.
> (EF01MA08) Solve and elaborate addition and subtraction problems, involving numbers of up to two digits, with the meanings of joining, adding, separating and removing, with the support of images and/or manipulable material, using strategies and forms of personal recording (BRASIL, 2017, p. 279).

Thus, the BNCC recognizes the fact that the concepts of addition and subtraction, in the context of the First Year of Elementary School, should be related to problem solving, the composition and decomposition of natural numbers, involving numbers composed of up to two digits, relating the concept of addition to the meaning of "join" and "add". And the concept of subtraction can be associated with the idea of "separating" and "removing".

The Gaucho Curriculum Reference with regard to the area of Mathematics, for Elementary School, is aligned with the BNCC, reaffirming the commitment to human formation, recognizing that mathematical knowledge is necessary for all students to become

a critical citizen aware of their social responsibilities, seeking through mathematical thinking to understand the significant representations and consistent argumentations in the context of mathematics.

Mathematics, in addition to playing a formative role, as it enables the role of reasoning, also helps in the development of problem solving in the context of everyday life.

After the contribution of more than 120 thousand people and the realization of several mobilizations throughout 2018, the Gaucho Curriculum Reference was approved on the morning of December 12, 2018, by the State Council of Education (CEED) and the National Union of Municipal Councils of Education (UNCME).

The document prepared in collaboration between the State Department of Education (SEDUC), the National Union of Municipal Education Directors (UNDIME) and the Private Education Union in Rio Grande do Sul (SINEPE/RS), should be the guide for the curricula of schools in Rio Grande do Sul since 2019. The changes, which follow the guidelines of the new National Common Curriculum Base (BNCC), are valid for Early Childhood Education and Elementary School.

Still in the thematic unit "Numbers" and having as object of knowledge also the "Construction of basic facts of addition", the Gaucho Curriculum Reference – RCG brings as skills whose development must be achieved in the First Year of Elementary School:

> (EF01MA06RS-1) Explore and establish additive relationships between numbers less than 10 by applying them to solve problems in everyday situations.
> (EF01MA06RS-2) Explore and express the idea of equality by realizing that the same number can be formed by different additions (RIO GRANDE DO SUL, 2018, p. 59).

With regard to the object of knowledge identified as "Problems involving different meanings of addition and subtraction (joining, adding, separating, removing)", the same document proposes:

> (EF01MA08RS-1) Understand the different meanings of addition and subtraction (joining, adding, separating and removing) using manipulable material.
> (EF01MA08RS-2) Express, through their own strategies, the resolution of problems involving addition and subtraction and their meanings.
> (EF01MA08RS-3) Perceive and argue the differences between the operations of addition and subtraction by applying them in different situations (RIO GRANDE DO SUL, 2018, p. 60).

Based on the skills proposed to be developed in the First Year of Elementary School, according to the RCG, it is verified that the concepts of addition and subtraction need to be approached at this level of education from everyday situations, problem solving, in addition to identifying in the most varied situations the differences between addition and difference.

The National Common Curricular Base and the Gaucho Curriculum Reference present similar approaches to the teaching of Addition and Subtraction in the first year of Elementary School, signaling the importance of relating the concepts addressed in the classroom with situations of the student's daily life, in addition to stimulating the development of logical reasoning and through teaching methodologies, such as problem solving and the use of manipulable materials.

The teacher when teaching Mathematics should try to organize the teaching and learning processes, respecting the differences between students and showing them that for each problem there may be more than one form of solution, since not everyone learns in the same way, some students have a little more difficulties and others, however, have greater ability, acquiring a taste for this subject.

METHODOLOGY

Considering that the general objective of this study is "To verify whether the books made available by the National Textbook Program, proposed in 2019 (two thousand and nineteen), indicate the use of Golden Material for the teaching of addition and subtraction for the first year of Elementary School", it is considered that the research methodology that best describes the study carried out is the one based on the methodological principles of bibliographic research, according to Marconi and Lakatos (2003).

As objects of this study, 12 (twelve) of the 16 (sixteen) textbooks aimed at the First Year of Elementary School, for the discipline of Mathematics and selected by the PNLD 2019, were considered. Where the possibilities of using the Golden Material as a pedagogical resource in the teaching and learning processes of addition and subtraction at this level of education were observed. And as an instrument for data collection, a table was used, which made it possible to identify elements related to the theme of this study in the analyzed works.

Considering that in this study the characteristics of the proposals presented in the textbooks made available by the PNLD 2019 were analyzed, for the discipline of Mathematics in the First Year of Elementary School, it was decided to use the methodology of qualitative analysis, since it is "[...] a method of dynamic and totalizing interpretation of reality, since it considers that facts cannot be revealed outside a social, political, economic context, etc." (PRODANOV; FREITAS, 2013, p. 35).

RESULTS AND DISCUSSIONS

Although recognized by many researchers as an important pedagogical resource, which contributes significantly to the teaching and learning processes of some mathematical concepts, the Golden Material is still little mentioned in textbooks. With the analysis of the selected materials, it was possible to verify that 06 (six) selected books present some proposal for the implementation of this resource.

Among the proposals found are activities in which the Golden Material is indicated to be used in situations involving the composition and decomposition of natural numbers into units and tens, as shown in the figure below (Figure 3):

Figure 3 - Activity with the Golden Material

PREENCHA O QUADRO DE ACORDO COM OS EXEMPLOS.

REPRESENTAÇÃO COM MATERIAL DOURADO	D	U	DECOMPOSIÇÃO EM DEZENAS E UNIDADES E ESCRITA POR EXTENSO	NÚMERO
	1	0	1 DEZENA DEZ	10
	1	1	1 DEZENA E 1 UNIDADE ONZE	11
	1	2	1 DEZENA E 2 UNIDADES DOZE	12
	1	3	1 DEZENA E 3 UNIDADES TREZE	13
	1	4	1 DEZENA E 4 UNIDADES QUATORZE	14
	1	6	1 DEZENA E 6 UNIDADES DEZESSEIS	16
	2	0	2 DEZENAS VINTE	20

Source: Conceição, Martins, Silva and Reis (2018)

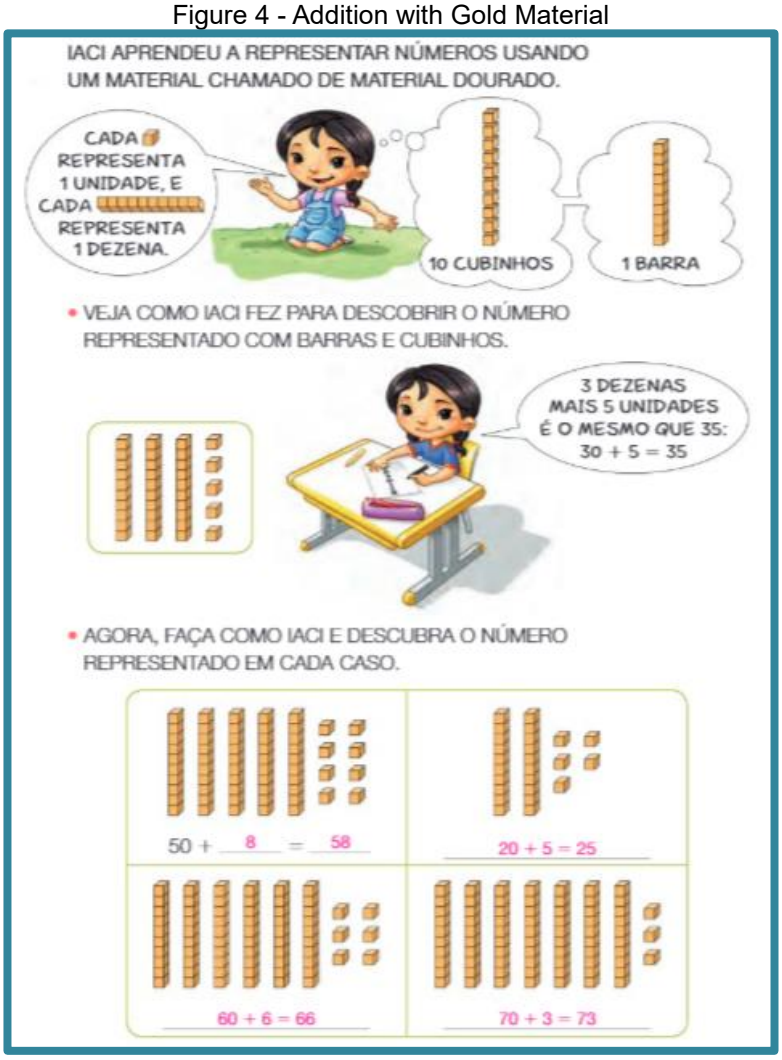
When carrying out activities involving mathematical concepts with the help of the Golden Material, the child can observe the concept from the concrete, because according to Freitas (2004, p. 65 - 66):

> [...] The Golden Material makes the processes easier to understand and accept because it is a practical and visual activity. The student can appropriate knowledge by manipulating and verifying all phases of the various construction processes, thus being able to assimilate, criticize and create new ways of organizing his thinking,

> which helps in the development of logical-mathematical reasoning. There are several operations that can be performed with this resource, all of them presuppose the previous understanding of the representations and the rules of groupings and ungroupings.

In addition to facilitating the understanding of primitive mathematical concepts, Freitas (2004) states that by manipulating the Golden Material, the child will be able to perform important empirical and reflective abstractions. Another application for the Golden Material, although represented by figures in textbooks, is the use of this resource as a way of representing the operations of addition and subtraction, as can be seen in the activity presented as an example, in the following figure.

Figure 4 - Addition with Gold Material



Source: Silveira (2017)

According to Moura and Oliveira (2020, p. 106),

> The importance of the Golden Material is made exactly in filling gaps often left aside in the initial grades. Such as the understanding of what really happens when operating with addition and subtraction, the concept of units, tens and hundreds, sums of numbers with two digits or more, among other problems that many

> educators encounter. That is why the Golden Material is important because it brings the problems of the abstract to the concrete, and vice versa. We can present the Golden Material and encourage students to represent numbers, operate and finally apply this knowledge in their daily lives as simple operations.

As for several scholars and teachers who use the Golden Material as a resource aimed at teaching mathematical concepts, such as addition and subtraction, Moura and Oliveira the authors state that, as it is a way of reproducing the abstract from concrete materials, this resource provides the filling of gaps that often originate in the Early Years of Elementary School.

FINAL CONSIDERATIONS

Currently, the textbook, as well as the Teacher's Manual, still represents an important aspect for the definition of the curriculum effectively used in classrooms, even more so when, in the midst of a pandemic like COVID19's, where teachers find themselves distant from their students.

In this sense, the study called "The use of Golden Material as a resource in the teaching of Addition and Subtraction in the First Year of Elementary School: a reflection from Textbooks" was proposed in order to verify whether the books made available by the National Textbook Program, proposed in 2019 (two thousand and nineteen), indicate the use of the Golden Material for teaching addition and subtraction for this level of education.

Based on this objective, when analyzing 12 (twelve) of the 16 (sixteen) textbooks, an integral part of the Teacher's Manual for the First Year of Elementary School and selected by the PNLD 2019, we can see that 06 (six) of these materials do not mention the Golden Material as a proposal for a pedagogical resource aimed at the teaching and learning processes of Mathematics, for this cycle of education. However, the other materials analyzed bring examples of activities related to addition, subtraction, composition and decomposition of a natural number (unit and ten) in which the Golden Material can be used.

From the readings carried out, we verified that the Golden Material represents an important pedagogical resource for the teaching of Mathematics, especially in the Early Years of Elementary School, when the child still has the need to use concrete materials to understand some concepts.

Regarding the concepts of Addition and Subtraction, to be addressed in the First Year of Elementary School, both the BNCC and the RCG reinforce the importance of approaching these concepts from the resolution of problems that represent situations of the child's daily life, in addition to the use of manipulable materials, such as the Abacus, the Golden Material, the use of calculators, games and the performance of mental calculations.

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