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Narratives of teachers who teach Mathematics: a look at difficulties and teaching methods used in the Final Years of Elementary School[1]

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ABSTRACT

This article analyzed the difficulties faced in the classroom by teachers who teach mathematics in the Final Years of Elementary School and investigated the teaching methods they use, observing whether they stimulate and awaken in the student the desire and interest in studying mathematics. The data collection took place through interviews with six teachers who work in public schools in Itapecuru Mirim (Maranhão). Based on the results, it was possible to understand that the difficulties faced are related to the lack of knowledge in reading and writing and the lack of mastery of the basic operations of mathematics by the students; the lack of infrastructure at the school; and the lack of family support in this process. As for the methods, it was found that they use the method of exposure by the teacher, but seek other teaching methods in order to stimulate and awaken the students' interest.

KEYWORDS: Elementary Education; Mathematics teaching; Teachers' narrative; Teaching methods.

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Narrativas de professores que ensinam matemática: um olhar para dificuldades e métodos de ensino utilizados nos Anos Finais do Ensino Fundamental

RESUMO

Este artigo buscou analisar as dificuldades enfrentadas em sala de aula pelos professores que ensinam matemática nos Anos Finais do Ensino Fundamental e investigar os métodos de ensino por eles utilizados, observando se estes estimulam e despertam no aluno o desejo e o interesse em estudar matemática. A coleta de dados ocorreu por meio de entrevista narrativa com seis professores que atuam na rede pública municipal de Itapecuru Mirim (Maranhão). Com base nos resultados foi possível compreender que as dificuldades enfrentadas estão relacionadas a falta de conhecimento na leitura e escrita e a falta de domínio das operações básicas da matemática por parte dos alunos; a falta de infraestrutura nas escolas; e a falta de acompanhamento da família nesse processo. Quanto aos métodos, constatou-se que os professores utilizam o método da exposição, porém buscam outros métodos de ensino com o intuito de estimular e despertar o interesse dos alunos.

PALAVRAS-CHAVE: Ensino Fundamental; Ensino de matemática; Narrativa de professores; Métodos de ensino.

Narrativas de profesores que enseñan matemáticas: una mirada a las dificultades y métodos de enseñanza utilizados en los últimos cursos de Primaria

RESUMEN

Este artículo buscó analizar las dificultades enfrentadas en el aula por los profesores que enseñan matemáticas en los últimos años de la Educación Primaria e investigar los métodos de enseñanza utilizados por ellos, observando si éstos estimulan y despiertan en el alumno el deseo y el interés por el estudio de las matemáticas. La recolección de datos ocurrió a través de entrevista narrativa con seis profesores que trabajan en la red pública municipal de Itapecuru Mirim (Maranhão). A partir de los resultados fue posible comprender

que las dificultades enfrentadas están relacionadas con la falta de conocimiento en lectura y escritura y la falta de dominio de las operaciones básicas de matemática por parte de los alumnos; la falta de infraestructura en las escuelas; y la falta de apoyo familiar en este proceso. En cuanto a los métodos, se constató que los profesores utilizan el método expositivo, pero buscan otros métodos de enseñanza para estimular y despertar el interés de los alumnos.
PALABRAS CLAVE: Educación Primaria; Enseñanza de las matemáticas; Narrativa de los professores; Métodos de enseñanza.

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Introduction

Based on our classroom experiences, wondering on our training and professional trajectories and participation in moments of discussions and debates during pedagogical planning at school, regarding the profile and characteristics of students and the teaching practices developed, we have observed the difficulties in the teaching and learning process faced by teachers who teach Mathematics, mainly in the Final Years of Elementary School.

At this stage of schooling, it is common to hear teachers comment that a significant portion of students have demonstrated disinterest, lack of motivation, aversion and difficulties in learning the objects of knowledge of Mathematics, which has been considered a complicating factor in the teaching and learning process of this subject.

This reality can be observed when we analyze the results of the Basic Education Development Index (IDEB), regarding the evolution of Mathematics learning over the last few years in the State of Maranhão. In the period from 2005 to 2021, the learning level of students in middles school's senior year of the State's Elementary School, based on the proficiency scale, has always been basic, that is, students only have a minimum mastery of Mathematics content and, therefore, they need learning reinforcement activities (BRASIL, 2023).

When analyzing the results of the IDEB in the County of Itapecuru Mirim, the first author's place of professional activity and the setting for this research, we found that the level of Mathematics learning in the period from 2005 to 2021, based on the proficiency scale, has always been insufficient (BRASIL, 2023), therefore lacking studies and investments to improve this educational reality.

Nowadays, it has been considered that to promote more attractive and meaningful teaching for students, transforming the current reality, it is up to the teacher to encourage the student using teaching methods that make them feel safe and encouraged to study and understand that " Mathematics helps to structure thinking and deductive reasoning, in addition to being a tool for specific tasks in almost all human activities" (BRASIL,1998, p. 256).

As stated in the National Common Curricular Base (BNCC), mathematical knowledge "is necessary for all Basic Education students, either because of its wide application in contemporary society, or because of its potential in the formation of critical citizens, aware of their social responsibilities" (BRASIL, 2018, p. 267).

To develop the skills in the Mathematics area planned for the Final Years of Elementary School, the BNCC recommends that the teacher uses different teaching resources and materials, such as: grids, abacuses, games, calculators, electronic spreadsheets, dynamic geometry software and history of Mathematics, in order to spark interest in students and build a meaningful context for learning and teaching Mathematics. However, this curricular advisor emphasizes that "these resources and materials need to be integrated into situations that encourage reflection, contributing to the systematization and formalization of mathematical concepts". (BRASIL, 2018, p. 301).

The Territory Curriculum Document of the State of Maranhão (DCTMA) for Early Childhood Education and Elementary Education, drawn up based on BNCC guidelines and published in 2019 by the Maranhão State

Department of Education, advises that "mathematics teaching needs to be treated in a dynamic way, so that it can awaken the student's interest, in order to provide teacher/student and student/student interaction, encouraging the search for a better understanding of mathematical principles" (MARANHÃO, 2019, p. 313).

Therefore, based on our experiences and reflections and on the guidelines of BNCC and DCTMA, this research sought to answer the following guiding question: How does the teaching and learning process of Mathematics occur in the Final Years of Elementary School in the County of Itapecuru Mirim (MA)?

To answer this question, we seek to analyze the difficulties faced in the classroom by teachers who teach Mathematics in the Final Years of Elementary School and investigate the teaching methods used by teachers, observing whether these professionals stimulate and awaken in the student the desire and interest in studying Mathematics, as suggested by the curriculum advisors.

It is expected that this research will significantly contribute to the development of reflections on the teaching and learning process of Mathematics in the Final Years of Elementary School and that it can serve as an instrument to reveal the need and importance of support for teachers to overcome difficulties faced in the classroom and for changes in teaching practices, so that the methods used, in fact, encourage and stimulate the awakening to learning mathematical knowledge.

Methodological aspects

This research, developed from the perspective of a qualitative approach (GODOY, 2005; MARCONI; LAKATOS, 2003), was carried out in three schools in the County education network of Itapecuru Mirim (MA). The choice of this investigation scenario occurred due to the interest in investigating the difficulties faced by teachers who teach mathematics in the Final Years of Elementary School and their respective teaching

methods, considering that in recent years, the County of Itapecuru Mirim has presented low rates in learning Mathematics, as revealed by IDEB.

To collect data, we carried out narrative interviews (NI) with six teachers who teach mathematics in selected County schools, as we understand that narrating is a human action, it is telling stories and stories about themselves. According to Jovchelovitch and Bauer (2012, p. 91), "[...] storytelling implies intentional states that alleviate, or at least make familiar, events and feelings that confront normal everyday life". In the act of telling them, the subject constitutes himself and gives meaning to the lived experiences.

The choice for NI was made because we understood that in it "the subject expresses himself, bringing in his voice the tone of others, thinking about the context of his group, gender, ethnicity, social class, historical, social and cultural moment" (MOURA; NACARATO, 2017, p. 16) and because it makes it possible to "reconstruct social events from the perspective of the informants, as directly as possible" (JOVCHELOVITCH; BAUER, 2008, p. 93). These characteristics of NI meet what we were looking for, which was to investigate how the teaching and learning process of Mathematics occurs in the County of Itapecuru Mirim.

The procedures for carrying it out include requesting authorization for recording, narration by the person being researched without interruption, followed by a questioning phase. Furthermore, the initial topic of the interview "needs to be part of the informant's experience" which can "guarantee their interest and a narration rich in details" (JOVCHELOVITCH; BAUER, 2008, p. 98). Therefore, the interview carried out with the six teachers began with an autobiographically oriented narrative question: *Tell me about your life trajectory and education so far.*

Based on this question, we present in Table 1 the participants of this research. We emphasize that the names of the teachers are fictitious, guaranteeing complete anonymity, and that everyone signed the Free Informed Consent Form (ICF), authorizing the use of the data collected during the interview for scientific purposes.

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Table 1 - Characterization of research participants

RESEARCH PARTICIPANTS	PROFESSIONAL CAREER
Teacher Aline	Born in Itapecuru Mirim. She finish normal high school and after completing the 3rd year, at the time called scientific, he studied teaching, completing in 2000. During the same period, he began teaching and also began studying mathematics through the Teacher Training Program (Procad). In 2002, she passed her first competition for Primary Education and worked for 8 years in this stage of teaching. In 2004, without yet completing Procad, she was approved in a public competition to work in the Final Years teaching Mathematics. From then on, she only works at this level and in 2022 she completed 20 years of teaching.
Teacher Bianca	Born in Itapecuru Mirim. She completed scientific high school and teaching. Soon after, she took a degree in Mathematics through the Teacher Training Program (Procad). In 2002, she passed the municipality's public exam, worked for a year in Primary Education and, later, started working with teenagers from the 6th to the 9th year with the subject of Mathematics and Science, even though she was still studying for an undergraduate degree, which she finished only in 2006. With this, in 2022 she completed 20 years of teaching.
Teacher Carla	She completed her teaching degree and, soon after, was approved in her first competition to work in Primary Education for Early Years. She studied Mathematics and began working in schools teaching this subject. As she had two enrollments in the County, she completed the unification and started working only in the Final Years teaching Mathematics. She has specialization in Mathematics Methodology, Psychopedagogy and School Management and Supervision. She completed 18 years of teaching.
Teacher Diana	Firstly, she took the Nursing Technical Course, then became interested in teaching and says she fell in love with it. Soon after, when she began working as a teacher, after passing the public exam in the County of Itapecuru Mirim, she always identified with the mathematical discipline. So, she decided to pursue a degree in this area and, later, a specialization in Mathematics Teaching Methodology. She has been working in the classroom for 18 years.

Teacher Eva	Born in Arari (MA). She says that she was always interested in teaching and it also greatly influenced her economic situation at the time. In 1986, at the age of 15, the opportunity arose to work at a Kindergarten school in Itapecuru Mirim. She began working as a teacher's assistant in the first period and in the second semester of the same year she took on teaching a nursery class. She got married and later completed her teaching degree and graduated in Mathematics from UEMA. In 2002, she was approved in the municipality's public examination. She started teaching at EJA, after about 3 years she started teaching the science subject and, when she completed her degree, she started teaching mathematics for the Final Years. She has been teaching for 20 years.
Teacher Fábio	He got a degree in Mathematics at the Federal University of Maranhão, completing it in 2010. He started teaching in 2009, when he was still studying for an undergraduate degree, and since then he has worked as a mathematics teacher.

Source: Elaborated by the authors

As a way of organizing the narratives of the six interviewed teachers, we chose to create two categories of analysis which, according to Fiorentini and Santos (2021, p. 14), consists of the "delimitation of thematic axes aimed at demarcating border lines for the dispersion theme of research in a configuration that favors organization, which, in turn, allows for a more systematic and enlightening analysis". Therefore, the categories used here are: Difficulties in the process of teaching and learning Mathematics; and Teaching methods used by teachers who teach mathematics. We will present them together with the participants' narratives in subsequent sections.

Difficulties in the process of teaching and learning Mathematics in the Final Years of Elementary School

As stated in the National Curricular Parameters (PCNs), "Mathematics can and should be available to everyone and ensuring their learning must be a priority goal of teaching work" (BRASIL, 1998, p. 56).

However, it is currently clear that teachers have encountered numerous difficulties in the process of teaching and learning Mathematics, which encompass social, political, institutional, family issues, among others.

We believe that identifying and understanding these difficulties is an important step towards identifying possible solutions in the search for a meaningful, emancipatory and liberating education. Based on this, we seek, in this section, to present the narratives of the teachers participating in this research, identifying the difficulties they faced in the process of teaching and learning Mathematics in the Final Years of Elementary School and weaving reflections on them, based on theoretical references.

Teachers Bianca and Fábio reveal that one of the difficulties faced in the teaching and learning process lies in the fact that students do not like mathematics: *"I hear that they do not like mathematics and that is why they show a lack of interest"* (Prof. Bianca); "[...] *there are few people who like mathematics*" (Prof. Fábio).

Authors such as Reis (2005) and Tatto and Scapin (2004) explain that the lack of interest and rejection of the area of mathematics may have its origins in the students' own family environment, as "when they hear the greatest references of their lives affirm that Mathematics is difficult, students mentally internalize these statements and this causes them to create an adverse feeling in relation to Mathematics, making it difficult to learn this area of knowledge" (BATISTA, 2022, p. 18).

In addition to this factor, Silveira (2002) states that, on several occasions, the media also contributes to the creation and dissemination of this idea at a time when Mathematics is shown as a subject that causes fear in students. According to Batista (2022, p. 20), these preconceived ideas:

> [...] these students do not develop an appreciation/taste for the subject and, consequently, develop a feeling of rejection of Mathematics, which causes these students to distance themselves from this area of knowledge.

To demystify students' preconceived ideas, Lorenzato (2010, p. 118-119) states that it is essential that mathematics teaching "is simple and easy and its learning always with understanding". According to him, "this is the way both to not block children and to weaken or destroy many beliefs, myths and prejudices regarding mathematics".

Another difficulty revealed by teachers Bianca, Carla and Fábio is the students' lack of knowledge of the multiplication table: "The biggest difficulty is the lack of basic mathematics because they don't know the multiplication table and as a result they can hardly advance" (Prof. Bianca); "The students' difficulty lies in not knowing the multiplication table. They are not bringing this knowledge from the initial grades, which causes great difficulty for them to learn any subject because they do not know the multiplication table. [...]" (Professor Carla); "[...] many students don't even know the multiplication table." (Prof. Fábio).

The multiplication table, an object of desire for teachers who teach mathematics, seems to us to be something organically intertwined in the process of studying arithmetic, which is directly related to a process of memorization in which success promotes the student to a status of good performance in math. We do not want to deny the undoubted advantage of those who can memorize them at the beginning of their schooling, but promoting it as a *sine qua non* condition for a student's academic success seems to us to be too much of an exaggeration.

Authors such as Duarte (1987) argue that learning Mathematics based on reproduction techniques and momentary memorization no longer meets the needs of society in general, that is, demanding from students the requirement to have the multiplication table memorized no longer fits with the process of teaching and learning in the current context.

Therefore, we believe that the teacher who teaches mathematics in Elementary School must provide students with reflections, understanding and learning of the four operations from real situations, so that they

realize that it is not necessary to memorize the tables present in the multiplication table, but to learn knowledge of arithmetic that are routinely necessary in your daily life.

Teachers Eva and Fábio reveal that the lack of materials, resources and/or spaces that serve to assist in mathematics classes, so that they can make them more dynamic and attractive, is a difficulty they face in the teaching and learning process.

> *[...] the issue of infrastructure, sometimes there is not enough material, the school does not provide equipment. Sometimes I want to work on a subject using the datashow, but another teacher is already using it. (Professor Eva, 48 years old)*
> *[...] There is a lack of resources, for example a library, a computer sector, a laboratory that could be working on an extra-class activity, a place to visit, which could be a museum or something related, where the student can use school transport, or a visit to a theater, a visit that may have some involvement with mathematics, which may have meaning and relate to mathematics, making their knowledge come to fruition. (Prof. Fábio, 41 years old)*

Teacher Eva and Teacher Fábio expose a problem present in public schools: infrastructure; by revealing the absence of materials and equipment and laboratories intended for the teaching and learning process. The narratives of these teachers take us to the words of Lorenzato (2012, p. 5):

> Our society presupposes and even demands that many professionals have their own appropriate places to carry out their work. It's like that for the dentist, cook, surgeon, veterinarian [...]. And why is it an appropriate place to work? Because the good performance of every professional also depends on the environments and instruments available.

Without an infrastructure that meets the needs of teachers and enables the promotion of dynamic, attractive and innovative mathematics classes, the teaching and learning process will continue to be prone to failure. Schools need to have materials and equipment and other spaces, such as the Mathematics Teaching Laboratory (LEM), so that the teacher can use them appropriately and transform mathematics learning into something meaningful and stimulating, so that students can become protagonists in the classroom and in the construction of their own knowledge.

We believe that as long as teachers only have textbooks, a whiteboard and a paintbrush, which limit the student's creativity and cause the famous "traditional classes" to be offered, the process of teaching mathematics, even if the teacher has the best intentions and qualifications, will tend to follow old-fashioned and obsolete methods, which do not match and no longer satisfactorily meet the demands of students of the 21st century.

Professor Fábio, in his narrative, explains other of his teaching desires that must be present in an educational process based on critical-reflective principles, which is the use of non-formal spaces to teach mathematical objects that dialogue with social aspects present in the students' lives, as is the case of museums, theaters, environmental parks, squares, etc. We understand here, based on Jacobucci (2008, p. 55), that non-formal spaces consist of "[...] places, different from schools, where it is possible to develop educational activities".

Another difficulty in the mathematics teaching and learning process revealed by teachers Aline and Eva is related to reading and writing. According to them, many students are at this stage of schooling without knowing how to read and write.

> *[...] the difficulty with reading, most learned to read late. I think that reading has the right time to happen, because*

> *when the student learns at the right time, they grow faster. [...] The 6th year student arrives and he doesn't even know the margin of his notebook, even how to hold a pencil, so I imagine what it was like at school in previous years, and now the difficulty continues. (Professor Aline, 40 years old).*
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> *[...] we receive 9th grade students who barely write their names in cursive. The year before last we had practically illiterate students. (Professor Eva, 48 years old).*

The narratives of teachers Aline and Eva reveal what Lima et al. (2017, p. 1) highlighted in their research: "reading and writing difficulties are present in the daily life of schools, and they affect all types of students, whether they are children, adolescents or adults, becoming a problem to be faced by educators [...]". Also according to these authors, it is essential to know, identify and seek to solve reading and writing difficulties because, when teachers are unaware of these, they will not know how to deal with or carry out the work efficiently due to lack of knowledge, leading to acting incorrectly with them. To do this, teachers need the support of the school community, as well as the bodies that coordinate the actions of public educational institutions, such as municipal and state education departments.

Carneiro (2007, p. 6), in turn, corroborates this by emphasizing that "reading and writing difficulties are extremely harmful to the educational development of individuals, both in terms of results, motivation, self-esteem, professional success and others aspects of life, beyond school", that is, when the student does not know how to read and write, their interest in learning becomes scarce, as they cannot follow what the teachers teach.

In this sense, we believe that the observation of students' lack of reading and writing competence should allow teachers to reflect and rethink their teaching practices, seeking methodological strategies in order to

contribute to these students' learning. Furthermore, the teacher can seek to get closer, in the context of their mathematics classes, to what Soares (2003, s/p) calls “alphabetizing literacy”, that is, “enabling access not only to the code, but to the readings mathematics in different social practices, seeking to discuss the different perspectives (conceptions, objectives, values, etc.) that are present in such practices”.

Teachers Diana and Carla reveal that the lack of interaction with the family is one of the greatest difficulties in the process of teaching and learning mathematics in the Final Years of Elementary School.

> *[...] my difficulty is the lack of family interaction. We need commitment from parents. Some students work, have a difficult or undisciplined routine and this ends up bringing it into the classroom. (Prof. Diana, 47 years old)*

> *Another difficulty is the lack of family support at school, but I always invite parental participation. I am always demanding a good result from the family and students. (Professor Carla, 47 years old).*

Thinking about an educational program without the presence of the family in the school environment is a somewhat controversial topic, as “the school-family relationship is as old as the school institution, since as long as there have been schools and families there has always been some type of relationship between the two. ” (Silva, 2003, p. 29).

We agree with Piaget (2007) when he argues that family members are essential in the child's growth and socialization in the educational and social environment and are extremely important for the development of students' learning. In his words:

> A close and continuous connection between teachers and parents therefore leads to much more than mutual

> information: this exchange ends up resulting in reciprocal help and, often, in real improvement of methods. (PIAGET, 2007, p. 50).

It seems clear to us that school positioning must be constructed in its political pedagogical projects based on a broad debate about the expectations that each of these institutions expects from each other. Furthermore, we defend that the family and school must go hand in hand, in partnership so that there is good performance and academic success in the lives of children.

According to the teachers' narratives, we observed that the difficulties in the process of teaching and learning mathematics in the Final Years of Elementary School are related to the lack of knowledge in reading and writing and the lack of mastery of basic operations on the part of the students; the lack of interest and rejection of Mathematics; the lack of resources, materials and/or spaces to provide more dynamic and attractive teaching; and the lack of family support.

Revealing these difficulties based on the narratives of teachers who teach Mathematics allows us to gain insight into the reality they face and enable the development of reflections on what can and should be done, urgently, to transform the teaching and learning process in the County of Itapecuru Mirim, specifically Mathematics. However, it is worth highlighting that the difficulties presented here are not something specific to this County, but that, unfortunately, today, permeate the entire Brazilian educational context.

Teaching methods used by teachers who teach mathematics

Regarding the term “method”, Libâneo (2006, p. 150) highlights that the simplest concept is “the path to achieving an objective”. According to this author, we are daily pursuing objectives, however, they do not come

true on their own, and are therefore necessary for our action, that is, the organization of a sequence of actions to achieve them.

Based on this concept, Libâneo (2006, p. 152) clarifies the concept of teaching method, highlighting that:

> [...] are the teacher's actions through which teaching and student activities are organized to achieve the objectives of teaching work in relation to specific content. They regulate the forms of interaction between teaching and learning, between teacher and students, the result of which is the conscious assimilation of knowledge and the development of students' cognitive and operational capabilities.

The choice and organization of the teaching method, as highlighted by Libâneo (2006, p. 152), "must correspond to the necessary unity of objectives-content-methods and forms of organization of teaching and the concrete conditions of didactic situations". Furthermore, the author emphasizes:

> Firstly, teaching methods depend on the immediate objectives of the class: introduction of new material, explanation of concepts, development of skills, consolidation of knowledge, etc. At the same time, they depend on general educational objectives foreseen in teaching plans by the school or teachers. Secondly, the choice and organization of methods depend on the specific contents and methods peculiar to each discipline and the methods of their assimilation. [...] There is no single teaching method, but a variety of methods whose choice depends on the contents of the subjects, specific didactic situations and the sociocultural characteristics and mental development of students. Thirdly, the choice of methods implies knowledge of the students' characteristics regarding their ability to assimilate according

> to their age and level of mental and physical development and their sociocultural and individual characteristics.

When presenting his conception of teaching methods, Libâneo (2006) highlights that these can be classified following criteria that result from the relationship between teaching and learning, implemented by the activities of the teacher and students in the teaching process. In this way, the aforementioned author presents a classification of teaching methods "according to external aspects, which indicates procedures and ways of directing the teaching process, that is, the teacher-student-subject relationships" (ibidem, p. 161). Teaching methods are classified as follows by Libâneo (2006): Lecture method by the teacher; Independent work method; Joint elaboration method; Group work method; Special activities.

It is based on the classification of teaching methods presented by Libâneo (2006) that we seek in the narratives of teachers, participants in this research, to investigate how the teaching and learning process occurs in the County of Itapecuru Mirim, aiming to identify whether the teaching methods used stimulate and awaken the student's desire and interest in studying Mathematics, as suggested by the curriculum advisors.

Teacher Aline says that her classes are always expository, as she has no other way to teach them: *"Content right on the board, lots of questions, because I think the math teacher has to work on a lot of questions, ask the student to do them, it has to be an expository class. Nothing can be learned if you don't do it."* Based on the classification presented by Libâneo (2006), we understand that teacher Aline uses the teacher exposure method.

According to Libâneo (2006), this method is widely used in schools, in which "knowledge, skills and tasks are presented and explained by the teacher. Students' activity is receptive, although not necessarily passive" (p. 161). Among the forms of exposition are verbal exposition, demonstration,

illustration and exemplification. However, the author emphasizes that this method receives numerous criticisms, mainly because it does not take into account the principle of student activity. However, he states:

> [...] if this limitation is overcome, it is an important means of obtaining knowledge. The logical exposition of the material therefore continues to be a necessary procedure, as long as the teacher is able to mobilize the student's internal activity of concentrating and thinking, and combines it with other procedures, such as independent work, conversation and Group work. (LIBÂNEO, 2006, p. 161)

Teachers Eva and Fábio reveal that their classes are also usually expository, but they seek to provide situations that lead students to build their knowledge by searching for answers to certain mathematical problems. As they say, they do not usually give ready-made answers, but they encourage students to investigate, discover and understand the result, which leads us to realize that they use the independent work method proposed by Libâneo (2006). In addition, they also seek to use other teaching strategies, such as interdisciplinarity, playful activities, dynamics and videos.

> *I tend to vary a lot in my mathematics classes, of course I am a teacher who usually says that I am a traditional teacher,* ***because I demand a lot from my students, the question of doing, searching, investigating and finding out why that thing is there gave that result and how mathematics is****. In the 9th year I always try to bring something new to them, sometimes doing an interdisciplinary approach, I bring a text and in that text I can work on mathematics, to show them that mathematics is not just about numbers. (Eva, 48 years old)*

> *For their understanding, my classes, most of the time, are expository and depending on the content we explain some other tools, such as videos, speakers, fun games, in other words, depending on the content, a different activity is carried out. [...]. I use many challenges as strategies, encouraging them to think,* ***I don't give them the ready answer, so I let them research, encouraging them to respond by giving a certain score as a reward****, because many only do the activity if it's worth a grade, they don't try to be interested, so Sometimes math competitions are held to give prizes, sometimes individually or in pairs. (Prof. Fábio, 41 years old)*

Regarding the method of independent work, identified in the narratives of teachers Eva and Fábio, Libâneo (2006, p. 163) explains that it "consists of tasks, directed and guided by the teacher, so that students can solve them in a relatively independent and creative way ". Furthermore, the author emphasizes that it "can be adopted at any time in the sequence of the didactic unit or class, as a preparatory task, content assimilation task or personal elaboration task" (p. 163).

Teachers Bianca and Carla also reveal that they use the teacher exposure method. However, they emphasize that they always seek to innovate in their classes, seeking to teach the content in an attractive way and in accordance with the students' reality, using dynamics and games, providing moments of interaction and also working, in the case of teacher Carla, with concrete materials to teach geometry knowledge objects in a meaningful way for students. We therefore noticed that teachers Bianca and Carla also tend to use special activities in their classes, as listed by Libâneo (2006).

> *[...]* ***I work a lot on the issue of content with exercises, I follow the activities in the textbook,***

> ***because it is support material for the student, so I believe that we learn mathematics by exercising*** *[...]. During classes we try to show the content in a much more cheerful way, doing some* ***dynamics and interactions between them, games, so that it draws the attention of these students to the content*** *and so that there is that interaction between them when playing games, a healthy dispute so that there is learning in the games.* ***To do this, it has to adapt very much to the students' reality, showing that certain contents are present in everyday life and how they are present****. I think it is essential for them to see this relationship to see that mathematics is important and that it is directly linked to our daily lives, so we always have to show that that content is present in the student's daily life. So, this is the biggest strategy I use, showing that the content is interesting for life. (Professor Bianca, 43 years old)*
>
> *[...]* ***the method is the lecture****, also taking the student to the board, competitions, but it all depends on the content being worked on [...].* ***The dynamics, within the subject****, enable us to teach. An example is geometry,* ***if I'm working on this subject then I bring ropes to take measurements, pieces of tile, bringing the resources that are necessary to show them that it's not because I have three measurements that I'm going to have a triangle.*** *So, we show this to them, showing reality. (Professor Carla, 47 years old).*

According to Libâneo (2006, p. 171), special activities "are those that complement teaching methods and that contribute to the active assimilation of content". In this case, we can mention the use of games, dynamics, challenges, etc. Among these activities, Libâneo (2006) emphasizes the study of the environment, which "refers to all procedures that enable the survey, discussion

and understanding of concrete problems in the student's daily life [...]", like the case of the method used by teacher Carla when working on geometry with concrete materials and by teacher Bianca when looking for ways to teach objects of knowledge linked to the reality of her students.

Teacher Diana, in turn, says that she usually teaches her classes by asking students questions, so that mathematical knowledge is built together during the process. Furthermore, the teacher reveals that she likes to launch group challenges in her classes with the aim of motivating them, building learning together, providing interactions and losing the fear of speaking in public. We therefore realize that Professor Diana usually uses the method of joint elaboration and group work presented by Libâneo (2006).

> ***To start my mathematics classes, they are always asked first about a certain subject, they need to build knowledge, I don't put anything ready, I take them to participate in the process, build it together with me.*** *Therefore, the interaction is one of proximity, because it is not about standing on the board and asking questions, but rather making them participate, mainly in my classes, those students who have difficulties, and with whom I get closer, making them break that fear of mathematics. Whenever I launch a challenge, a problem, I look for mistakes, I tell them that through mistakes we will get things right.* ***I really like doing challenges in groups, it's a way I do things that they like, they get motivated, I do group challenges to reward them. So, it's a review where they are building together. This is my method, of proximity, of interaction, of losing fear, of talking, of being the protagonist, in their construction.*** *(Prof. Diana, 47 years old)*

Regarding the method of joint elaboration, Libâneo (2006, p. 168) clarifies that "it is a form of active interaction between the teacher and students aiming to obtain new knowledge, skills, attitudes and convictions, as well as the establishment and consolidation of knowledge and convictions already acquired". According to the author, "the most typical form of the joint elaboration method is didactic conversation" (ibidem, p. 168), which is:

> It does not merely consist of students' answers to the teacher's questions, in a "closed" conversation in which students think and say what the teacher has already thought and said, like a catechism class. The didactic conversation is "open" and the result that arises from it presupposes the joint contribution of the teacher and students. (LIBÂNEO, 2006, p. 168)

Libâneo (2006, p. 169) also adds that didactic conversation "is [...] an excellent procedure for promoting the active assimilation of content, eliciting mental activity from students and not simply a receptive attitude". To achieve this, it is up to the teacher to "have a positive attitude towards the students' responses. They may be incomplete, but they contain a correct part; unsatisfactory performance is a reason to encourage students to study more." (ibid., p. 169).

Regarding the group work method, used by teacher Diana, Libâneo (2006) argues that "the main purpose [...] is to obtain the cooperation of students among themselves in carrying out a task". Furthermore, the author adds that this method

> [...] should seek to develop responsible collective work skills and the ability to verbalize so that students learn to express themselves and defend their points of view. It must also enable individual demonstrations by students, observation of

> their performance, direct encounter between student and subject of study and a relationship of reciprocal help between group members. (LIBÂNEO, 2006, p. 171)

Based on the narratives presented, we observed that teachers, in addition to using the teacher exposure method, use other methods presented by Libâneo (2006), with the aim of making the class more attractive and providing a more meaningful and effective teaching and learning process in line with what is established in the DCTMA:

> The teaching of Mathematics needs to be treated in a dynamic way, so that it can arouse the student's interest, in order to provide teacher/student and student/student interaction, encouraging the search for a better understanding of mathematical principles. To this end, the teacher needs to use methodologies that actually stimulate the student in everyday situations that involve applications of mathematical knowledge." (MARANHÃO, 2019, p. 313)

Even so, we observed that teachers seek, within the classroom, to "create situations that involve students in the process of building knowledge", as they understand that "learning cannot be based on knowledge of rules and memorization; it must be associated with knowledge and attitudes that integrate the action of understanding, doing and using" (MARANHÃO, 2019, p. 314).

Final considerations

Seeking to answer the guiding question of this study: *How does the process of teaching and learning Mathematics occur in the Final Years of Elementary School in the Couinty of Itapecuru Mirim (MA)?*, we set out as goals to analyze the difficulties faced in the classroom by

teachers who teach Mathematics in the Final Years of Elementary School and investigate the teaching methods they use, observing whether they stimulate and awaken in the student the desire and interest in studying Mathematics.

We carried out this research with a qualitative approach and used the narrative interview as a data collection instrument. The research was carried out in three schools in the County education network of Itapecuru Mirim (MA) and included the participation of six teachers who teach mathematics in the Final Years of Elementary School.

With the data collected, transcribed and analyzed, it was noticeable in the teachers' narrative that the process of teaching and learning mathematics in Itapecuru Mirim presents a complexity, considering the difficulties that need to be faced in the classroom, such as: the lack of knowledge in reading and writing and students' lack of mastery of basic operations; the lack of interest and aversion to Mathematics; the lack of resources, materials and/or spaces to provide more dynamic and attractive teaching; and the lack of family support.

Given these difficulties faced in the classroom, found during the research, we understand that it is necessary for the public entities that govern education in the County of Itapecuru Mirim to formulate public policies and/or educational projects aiming to overcome them and providing real support and conditions so that the teaching-learning process occurs efficiently and effectively, thus improving its educational indicators; as well as schools, represented by managers, coordinators, parents and teachers, create strategies that can encourage students to learn through strategies, methodological resources and special projects.

It was observed that teachers understand and work on teaching methods that contribute to the teaching and learning process, based on those presented by Libâneo (2006) – the exposure method, independent work method, joint elaboration method and group work method. Furthermore, we found that they seek to make Mathematics classes

more meaningful, attractive, dynamic and related to the student's context, but there is still a lack of investment from the County of Itapecuru Mirim so that teachers have an adequate work environment and support for the development of innovative and contextualized pedagogical practices.

Ultimately, there are many difficulties in the teaching and learning process. Teachers need to be stimulaters, seek alternatives that enable the student to learn, carry out interventions using the student's daily life as a starting point and awaken stimuli in the student that lead them to seek new perspectives in life, through different and innovative methods in the classroom. But to achieve this, we highlight the importance of investments by the County of Itapecuru Mirim, in continued training, which enables teachers to increasingly improve their teaching methods, and in dignified and appropriate spaces for the development of good teaching practices in the educational context, so that basic education rates are improved.

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