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Mathematical Creativity with Comics in the First Year of Elementary School

Criatividade matemática com histórias em quadrinhos no primeiro ano do Ensino Fundamental

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Abstract

The teaching of Mathematics in a creative way, based on children's literature, is the theme of this paper, which aims to analyze a practical proposal conducted in a classroom with twenty-four first-year students from Elementary School. The literature we used presents the teaching of Mathematics through literature, specifically through comics, as a text genre for problem creation and resolution by the students, as well as the mathematical creativity within this process. The results and analyses were conducted based on the creation of six comic strips with addition (add and gather) and subtraction (remove) problem situations and the different solving strategies. We perceive the child as the protagonist within a creative environment and their grasp of the mathematical skills present in the graphic records, as well as the possibility for mathematical creativity.

Keywords: Children's Literature; Math Teaching; Early Years; Creative Math.

Resumo

O ensino da Matemática de forma criativa, a partir da literatura infantil, é o tema deste artigo, que busca analisar uma proposta prática realizada em sala de aula com 24 alunos do primeiro ano do Ensino Fundamental. Os referenciais teóricos utilizados apresentam o ensino da Matemática através da literatura, especificamente das histórias em quadrinhos enquanto gênero textual para a criação e resolução de problemas pelos alunos, bem como a criatividade matemática nesse processo. Os resultados e análises se deram a partir da criação de seis tirinhas com situações-problema de adição (acrescentar e reunir) e subtração (retirar), e diferentes estratégias de resolução. Percebemos a criança como protagonista em um ambiente criativo e com domínio das habilidades matemáticas presentes nos registros gráficos, bem como a possibilidade da criatividade matemática.

Palavras-chave: Literatura Infantil; Ensino de Matemática; Anos Iniciais; Matemática Criativa.

Introduction

Creative pedagogical practices favor participation, interaction, and reflection among students, transforming them into active subjects that can also contribute to a pleasant and

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contextualized literacy process. But to do so, according to Ramos (2009, p. 11), "educators need to feel free to create, to notice the kids' interests and needs." The author also mentions that kids "copy, when they would rather invent and create." (Ramos, 2009, p. 12).

Unfortunately, the school is still concerned with fulfilling content requirements when in actuality it should be a space for creation because, according to Gontijo, Carvalho, Fonseca and Farias (2019, p. 14), "the school is one of the main living and socializing spaces for children and young people, hence converging into a privileged place for a pedagogical work that favors the development of creativity."

This text aims to show possible connections between children's literature and Mathematics, more specifically through the usage of comics as a text genre, allowing creative action in the classroom, since according to Smole, Rocha, Cândido and Stancanelli (2001, p. 2), "somehow literature appears to the child as a manifestation of feeling and knowledge that allows them to invent, renovate and disagree."

Comics are narratives that combine image and text, an appropriate text genre to be applied during the literacy period because, according to Vergueiro (2022a, p. 22), "words and images, together, teach in a more efficient way."

Based on this context, this article brings an excerpt from the master's research in progress, developed in the Federal University of Pelotas, in the city of Pelotas, Rio Grande do Sul state, through the Postgrad Program on Mathematical Education. The research analyses, qualitatively, different practices related to the usage of children's literature teaching Mathematics in a first-year Elementary School class with twenty-four students during the school year of 2022. In turn, this article aims to investigate, in terms of mathematical creativity, the creation and resolution of problems from students in the first year of Elementary School when experiencing articulated practices between children's literature and the teaching of Mathematics from comics, that being one of the different practices developed during 2022.

Theoretical framework

Listening to stories encourage the imagination and the creativity in children, besides perception and other important skills, such as the linguistic development. Thinking and expressing your own ideas, amplifying the vocabulary, encouraging reading and writing turns children's literature into something fundamental in the pedagogical work with kids in their literacy process, creating the common association between literature with the teaching of one's mother tongue (in our case, the Portuguese language).

We can also highlight the connection between the native language and Mathematics, because "the impregnation between Mathematics and the mother tongue is undeniable. Even if the first has its own very specific symbology, to read Mathematics and to interpret the symbols, we 'translate' it to the common language" (Smole *et al*., 2001, p. 3). On this impregnation between Mathematics and the native language, the work of Machado (2011, p.

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95-96) emphasized "a parallelism in the functions they perform, as reality representation systems."

Children's literature opens doors to many mathematical possibilities, because "we believe that children's literature, when used in a defying manner, can invite multiple interpretations and help restoring the sound of different voices in the classroom's mathematical discourse." (Smole, Cândido & Stancanelli, 1999, p. 15).

Thus, the structure of this article is based on the following topics, in a way that the teaching of Mathematics seeks support in children's literature, more specifically in the text genre of comics. In this scenario, the creativity can be explored in the classroom from the creation of stories that present a mathematical problem solved (Figure 1).

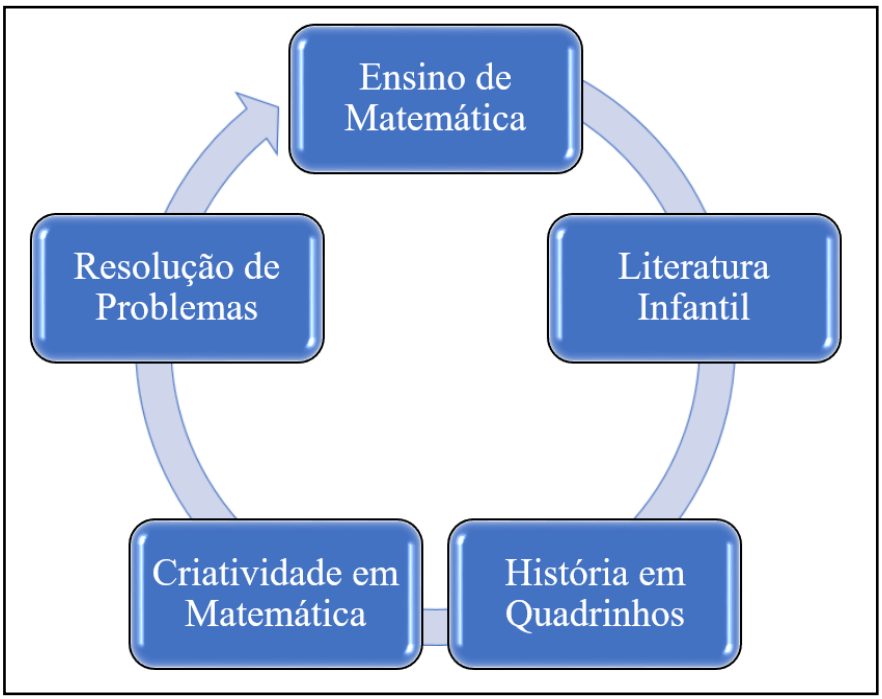

Figure 1 – Organization chart of the theoretical framework
Source: Elaborated by the authors (2023).

Literature allows the creating of interdisciplinary teaching strategies, bringing charm and playfulness to the classroom. According to Zilberman (2003), through literature, the teacher must go beyond teaching decoding for the purpose of reading, but to broaden it to deciphering and comprehending what is being read, and the perception of the addressed topics.

> When we get used to telling stories, we can lead students to motivation, fun, freedom of expression, regeneration and education of the human being. It is a different way of teaching, because we reach the goal of making the child interested in the class and participating in a natural way, thus having a meaningful learning experience (Santos & Campos, 2016, p. 102).

Considering the usage of children's literature in the teaching of Mathematics, we have opted for the comics' genre. According to Vergueiro (2022a, p. 7), "comics represent today, in the whole world, a way of mass communication with great popular pervasion." It is a text

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genre that uses mixed language, both verbal and nonverbal, in which images, phrases and text balloons are what compose the narrative, with the visual language predominating.

Comics have a unique structure, organized in little boxes, of equal or varied sizes, open or closed, depending on the message it aims to convey. They have different elements and it is indispensable that students learn to "read" comics and all its components (Vergueiro, 2022b). The author complements it by saying that

> [...] in a way, it can be said that comics meet the needs of the human being, as they make extensive use of a communication element that has been present in human history since the beginning: the graphic image (Vergueiro, 2022a, p. 8).

Therefore, comics can be a text genre that favors the development of reading and writing skills, as well as the stimulation of interest and creativity in the children's productions.

> [...] children start to transmit their impressions of the world early on through drawing, representing their parents, siblings and friends with scribbles that do not always resemble the people or objects portrayed, but even so they fulfill the goal of communicating a message (Vergueiro, 2022a, p. 8).

Boaler (2018, p. 160) claims that "the art and visual representation do not only perform a therapeutic and creative role, even though both are important. They also play a key role in opening up access to understanding for all students." So, the visuality present in comics can favor the students' learning process. Therefore, we can propose a creative math from the comic strips. We understand that creative math is the one that encourages logical thinking as much as the creativity in organizing information and problem situation resolution. Boaler (2020, p. 67) claims that "those who believe they are learning in a more productive way, in fact, learn more", and that this is what we look for in our students: a more productive learning experience, in which the pedagogical practice is capable of instilling creativity and reflection in the teaching and learning process.

When we talk about creativity, "it is worth quoting Laycock (1970), who defined mathematical creativity as a capacity to analyze problems from different perspectives, aiming to generate multiple answers" (Fonseca & Gontijo, 2021, p. 33). Gontijo (2007, p. 37) describes mathematical creativity in his thesis as

> [...] the ability to present numerous possibilities of appropriate solutions to a problem situation, so that they focus on different aspects of the problem and/or different ways of solving it, especially unusual ways (originality), both in situations that require the resolution and elaboration of problems as well as in situations that request the classification or organization of objects and/or mathematical elements according to their properties and attributes, either textually, numerically, graphically, or as a sequence of actions.

A good example is the experience of Costa, Silva and Gontijo (2021) with the mathematical creativity workshops based on different activities developed during eight meetings, according to a script model used. Regarding the activities, "each of them contained a particular characteristic that could evoke the desire on the students of implementing their

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own strategies to solve the math problems then presented" (Costa, Silva & Gontijo, 2021, p. 6). As an example of one of the workshops:

> Workshop 8 - Playing with numbers: This workshop aimed to explore problems involving addition, subtraction, multiplication and division operations in a ludic context mediated by games, in which the students were then questioned about the strategies used to "win" the games and structure reflections on the strategies built for that. (Costa, Silva & Gontijo, 2021, p. 6).

Children need to have interest, to be excited about Mathematics. Boaler (2018) says that there are five elements for the true engagement with Math: curiosity, the establishing of connections, challenge, creativity and collaboration. "It is very important that students engage in visual thinking about Mathematics, because it gives them access to comprehension and to the use of multiple brain pathways," (Boaler, 2018, p. 159).

Boaler (2018, p. 51) also talks about the teacher's role in this process, because "they can create stimulating mathematical environments, giving the students the positive messages they need to make any math task awaken the curiosity and interest in the students."

According to Gontijo *et al*. (2019), there are different strategies to developing creativity in Mathematics. Among them, what stands out is "[...] the resolution of open problems, the elaboration of problems and the redefinition of mathematical elements" (Gontijo *et al*., 2019, p. 61). The first two out of the three will be emphasized here.

Considering the resolution of open problems, the proposition is to offer students a problem that has a list of possible solutions, in a way that the student can create from it. The suggested answers will not always be adequate, some will be trivial and other original. And, in the exchange with peers, it is noteworthy that students show their creativity from the solutions, in addition to a moment of exchange and construction of knowledge.

Thinking about problem elaboration, one of the aspects highlighted by Gontijo *et al*. (2019) is the use of image for this creation. This fact has been analyzed by Yevdokimov (2005 *apud* Gontijo *et al*., 2019, p. 69), claiming that "[...] working with drawings can help the student find balance between visual and analytical thinking."

According to Muniz (2009a *apud* Gontijo *et al*., 2019, p. 60), "mathematical situations need to be preferably of variable nature, in a way that the student can demonstrate his knowledge and mathematical capacity not only through algorithmic operation, but also through texts, graphs and multimedia actions."

In this way, based on the literature, it is possible to work with problem resolution in a creative and contextualized manner. Therefore, "creativity contributes so that the students understands that doing math requires an interpretation of situations, as well as generating possible solutions, or even the adoption of different strategies to reach an expected solution" (Fonseca & Gontijo, 2021, p. 24).

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Working Math with problem solving can bring reality closer to the student and promote a contextualized learning. But before solving problems the student can also create them because

> [...] when a student creates their own problem texts, he needs to organize everything he knows and elaborate the text, giving it adequate meaning and structure, so that it can communicate his intention. Besides that, this type of strategy modifies the most common ways of working with problem situations. In a way, it becomes an incentive, because a new challenge it is proposed to the students, which is not only giving a solution to a problem, but creating one (Nacarato, Mengali & Passos, 2021, p. 43).

It is up to the school to propose an education that has "the end goal of awakening the motivation and mathematical creativity in the students to solve real problems in a diversified and original manner, being critical in reading the world they are in" (Fonseca & Gontijo, 2021, p. 21).

In this article, we present a proposal applied to children in the first year of Elementary School involving literature, more specifically comics, problem creation and resolution through creative math.

Methodological path

This research followed a quantitative approach, from the world of meanings (Minayo, 2016, p. 20). It was characterized as an action research, which allows greater proximity between the researcher and the researched object, making it more humane and truthful. The action research allows the reflection-action-reflection, since the subjects are inserted in an investigative field, observing and acting on it (Thiollent, 2011). This movement makes the research self-reflective and significant to all involved in the process.

The proposal described here, part of the master's research, was applied to a classroom of first-year Elementary School students that was in their literacy process. The researcher was also acting teacher of the classroom. That is why the activities were done during classes. To develop these specific activities, nine classes were held during the month of October 2022, interspersed with other school activities and not following continuous days. It is important to emphasize here that the teacher/researcher held a meeting with the parents and guardians together with the school's management team to inform about the research procedures and clarify existing doubts. From them on, we have the school and family authorization to use the images and activities done by the kids, but without their names, and with their faces covered in the pictures. For the researcher's control towards the analyzed material, the students are going to be numbered. So, along this text, numbers will be used every time a student is referred to.

Varied materials were used for data production and collection. The first two to be highlighted are: the researcher's field diary, in which she wrote down daily events; and the interactions, dialogues and considerations the students made with both the teacher and their classmates. Besides the diary, she registered photos to illustrate the moments and the students' creations.

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Also, from each activity, certain materials were produced by the students and "collected" to be analyzed by the teacher. Standing out in this scenario: drawing, words, phrases, *[b]rainstorming*, mathematical problems, initial sketch of the comic strips, pictures of the comics' scenes and the finished comics.

In the first class, the text genre was presented to the kids through comic strips and books from Turma da Mônica. After this first contact with the reading and exploring of the material, the teacher mediated the structural analysis of this text type and its main characteristics. Observing a comic strip of four scenes, the teacher made the following questions: "Is this strip a story?", "Does this story starts with 'once upon a time...'?", "What is written in the balloons?", "Is the story also told through the drawings?".

Figure 2 shows an example of the comic strips used for reading and exploring this text genre.

Figure 2 – Comic strip from Turma da Mônica
Source: Sousa (1999, n. p.).

Through the conversation that emerged from the questions above, the children realized that the strip tells a story in a different way, as the writings always refers to the speech of the characters, and the drawings are of fundamental importance for the understanding of the text, mixing verbal and visual language. In this first meeting, the kids also received a homework to research about one of the Turma da Mônica's characters, highlighting its main characteristics to later share their findings with the classmates.

In the second class, the characters of Turma da Mônica, as well as its creator, Mauricio de Sousa, were made known to the kids through a presentation of the research made by them and presented to the classmates on the characters' main characteristics. Each kid researched one character and shared their findings to their classmates. To register this activity, the kids made a drawing of the characters.

During the third class, the kids were challenged to use their creativity and dress up as one of the Turma da Mônica's characters. The kids came dressed as the characters, as shown in Figure 3. Happiness took over the school: games, songs and a parade with the characters captivated everyone all throughout the afternoon. To register the experiences of this day, the kids created a phrase about their character and illustrated it with a drawing.

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Figure 3 – Fantasies of the Turma da Mônica's characters
Source: First author archive (2022).

During the fourth class, we developed an activity called mysterious reading. The teacher organized a dark room with many reading resources: words, phrases, comic strips, among others, all related to the Turma da Mônica theme. For this activity, the kids got flashlights. When they entered the room with their flashlights, they looked for everything there was to read. It was a magical moment, with a lot of discoveries, as shown in Figures 4 and 5.

Figure 4 – Mysterious reading 1
Source: First author archive (2022).

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Figure 5 – Mysterious Reading 2
Source: First author archive (2022).

Upon returning to the classroom, the teacher suggested the "'*[b]trainstorming'* [technique] [...], which is a strategy to stimulate creativity that works by generating many ideas, contributing to the improvement of fluency through oralization" (Conklin & Dacey, 2004 *apud* Fonseca & Gontijo, 2021, p. 40). The kids would say words and ideas related to what they have experienced during the mysterious reading. While they shared their ideas, the teacher wrote them down on the board. Some of the words and expressions shared by the kids were: *reading*, *dark*, *surprise* and *it was really cool*.

During the fifth meeting with the students, the teacher gave them a group challenge: the creation of mathematical problems. Problem solving is a teaching methodology in which, according to Smole *et al*. (2001, p. 6), "the students are involved in 'doing' math, that is, they become capable of formulating and solving math questions by themselves, and acquire, relate and apply math concepts through the possibility of raising questions and hypothesis."

Later, we divided the classroom in six groups. Each group had to create a math problem. They could use any context, granted that the group members would be the characters in this problem. The groups met in the school yard, as shown in Figure 6. Some were fast, others not so much, but all of them could create and register the problem in paper.

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Figure 6 – Creation of the math problem
Source: First author archive (2022).

During the sixth meeting, it was the moment for the groups to transform the problem developed in the previous class into a comic strip with four scenes. For this step, they made a simple sketch to organize the characters and their lines in each scene, as shown by the example in Figure 7. The students also thought about the other visual elements that would compose each of the comics in their stories.

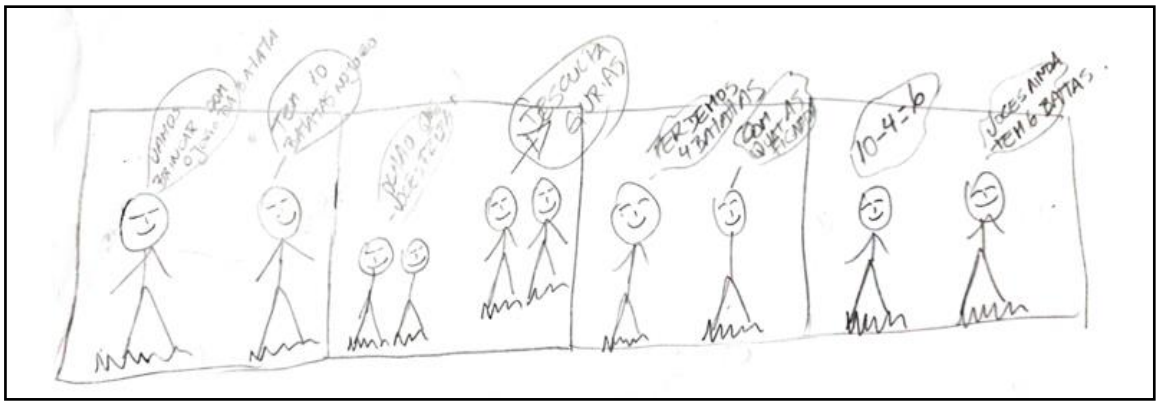

Figure 7 – Comic strip sketch
Source: First author archive (2022).

The development of a story with drawings and short texts is important in this age group, during the literacy period, because according to Rangel (2008, p. 74):

> One of the major problems when writing essays during the first grades is the fact that students find it very difficult to write. When done in a slower pace, as it is common in this school grade, it makes maintaining the work memory harder, [...]. In this sense, comics constitute an interesting activity.

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Also, as emphasized by Cândido (2001), it is essential that students at all levels of Basic Education learn to communicate mathematically, that is, that the teachers encourage them to think, question and expose their ideas. The author also highlights three resources for the development of communication, namely: orality, pictorial representations (drawings) and writing, that corroborate with the reason to create comic strips.

The seventh meeting was the day to take pictures of the characters. The kids were photographed as the characters according to the scenes elaborated in the draft from the previous class. An empty classroom and a white background wall were used for this. One group at a time reproduced the characters' poses and were photographed by the teacher, as shown in Figure 8.

Figure 8 – Photographing the characters
Source: First author archive (2022).

The focus in this moment was the posing of the students according to the story's purpose, their interpretation of the facts, even with the possibility of costumes and props not being discussed with the students. All of them wore the school uniform.

During the eight meeting, they finished the comics. The pictures were printed and cut out (only the kids') e later glued to an A3-sized paper according to what had been planned in the sketch in the previous class. Each scene (strip) was represented in a piece of paper. Balloons with the characters' lines were also glued so that the story could be readable. After that, each group finished their stories with drawings that represented the problem situations. We can notice a result of the comic strips illustrated in Figure 9.

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Figure 9 – Finishing the work
Source: First author archive (2022).

It was a magical moment! The kids loved the result, perceiving themselves as characters of a comic strip. This time, it was not the Turma da Mônica, it was them. It is incredible to notice the enthusiasm of the kids, demonstrating a true engagement with all the comic developing process, also related to "mathematical engagement" (Boaler, 2018).

The strips with four scenes in large scale were hung. A couple of days later, they were exposed in a school event where all the community could appreciate them.

During the nineth and last meeting, the teacher brought the comic strips developed by the groups on paper, representing the solution for the problem situations through calculations. When receiving these strips, the kids read them and were later challenged to solve the problem using another strategy that was not the calculation, because it was already part of the initial context of the strip. This was the moment to explore the creativity in problem solving, showing that the connection between Math and literature can promote the learning of new concepts, as well as using the ones that had already been learned (Smole *et al*., 2001).

Results and analysis

Considering the total of classes involved in the practice with comics, we can separate the results of the analysis in two moments: first, the development of the strips, and second, the rereading of the strips by the students, presenting new possible solutions.

In the context of the analysis, it is highlighted that these two moments appeared "*a posteriori*", i.e., they have emerged from the research. Specially the second moment, referring to the rereading of the strips with new possibilities of solution, was thought to see how the students could show their creativity from the analysis of their classmates' stories, since the project was shared in groups.

Result 1: production of six comic strips

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After all the work developed with the class, exploring comics through different reading strategies, elaborating a math problem and creating an comic strip in which the kids were the characters, six strips were produced explaining the core of the math problem built, and they are shown in the following figures:

Figure 10 – Strip 1
Source: First author archive (2022).

The Strip 1 (Figure 10) presents a problem that involves subtraction and, according to Ramos (2009), it can be classified as simple, because only one mathematical operation was used (10 – 4 = 6). This is a "taking" problem, because the amount of four (4) was subtracted from the total (10). According to Ramos (2009, p. 70):

> In the acts of taking, you can observe that there is a part that gets taken out of a whole, and that the remaining part is kept smaller. The story presents three moments: an initial state, the action that transformed the initial amount, and a final state. In subtraction situations, the action is explicit, the verb declares the action; the act of subtracting constitutes the opposite of the act of adding.

Figure 11 – Strip 2
Source: First author archive (2022).

The problem in the Strip 2 (Figure 11) involves an addition situation, that, according to Ramos (2009, p. 69), suggests an act of "gathering", because "there is no temporality, everything was already there, it was just gathered; in the final amount there is an inclusion of classes." The class used by the students is the "toys" one, gathering dolls and carts in the operation "10 + 20 = 30."

According to Ramos (2009), this kind of problem may require skills that first-year children have not yet developed, as the idea of "addition" would be more adequate to this age group, since it works with the same kind of element (doll-doll or cart-cart, in this case). In this way, we notice that this group has already mastered different mathematical concepts about addition, because "to be creative, it is necessary to have solid knowledge in the domain

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field, that is, in Mathematics, and flexibility of thought" (Haylock, 1997 *apud* Fonseca & Gontijo, 2021, p. 34).

Figure 12 – Strip 3
Source: First author archive (2022).

The Strip 3 (Figure 12) presents a subtraction problem that, according Ramos (2009), can be classified as complex, because it involves more than one action. In this case, it refers to performing two subtraction operations (21 – 5 – 5 = 11). It can also be classified as a "taking" problem.

Figure 13 – Strip 4
Source: First author archive (2022).

The Strip 4 (Figure 13) presents a simple addition problem that has an idea of "adding" elements (Ramos, 2009). We highlight that the calculation performed is the same as in the Strip 2, that being, 10 + 20 = 30, but the idea is different. In the first example, the proposal is to gather different elements, forming a new class as an answer and, in the second, the proposal is to add an amount of the same element (balloons).

We can also notice, in this strip, the importance of graphic language, especially in the third strip, in which the characters are formulating the question for the problem. According to Vergueiro (2022b, p. 31), "comics constitute a narrative system composed by two codes that act in constant interaction: the visual and the verbal." A visual metaphor was used in this strip.

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Figure 14 – Strip 5
Source: First author archive (2022).

The Strip 5 (Figure 14) also shows an addition situation with the idea of "adding" elements (stones), but the complex kind, because it involves more than one mathematical operation (Ramos, 2009), represented by the calculation "10 + 4 + 20 + 50 = 84."

Figure 15 – Strip 6
Source: First author archive (2022).

The problem in the Strip 6 (Figure 15) is the only one to have five scenes, because the students opted to do one calculation for each. It demonstrates actions of "taking", according to Ramos (2009). The author claims that this situation is complex because it shows more than one mathematical operation to solve the problem.

We can highlight that the groups did not have any contact with each other during the elaboration of the math problem, so there was no influence in choosing the operation (addition or subtraction), nor in the amount of calculations involved (simple or complex). It is important to emphasize the ideas presented and the elements chosen, that are part of the students' daily lives. The Board 1 synthesizes these information.

Board 1 – Information about the problems

Operation	Idea	Type of calculation	Quantity	Element(s)
Addition	Adding	Simple	1	Balloons
		Complex	1	Stones
	Gathering	Simple	1	Dolls and Carts
Subtraction	Taking	Simple	1	French Fries
		Complex	2	Candies Carts

Source: Elaborated by the authors (2022).

All the strips created by the students presented a solution for the problems through calculations. So, the research and teacher of the class reproduced each strip, printed, and

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delivered them to the children proposing a challenge: introducing new possibilities to solve the problems.

Result 2: new solving possibilities for the classmates' stories

From the reading of the strips made by the classmates, the kids should solve the problem using a different strategy, since the numerical solution is already on the text. "Besides asking the student to draw ideas, methods, solutions and problem, the teachers have to always correlate visual representations with numerical or algebraic strategies and solutions" (Boaler, 2018, p. 160).

Figure 16 – Solution presented by Student 18
Source: First author archive (2022).

Figure 16 shows how Student 18 solved the problem from the Strip 1. He drew ten balls, referring to the total amount of potatoes, and crossed the four that were lost, showing comprehension of the problem situation. He used the act of "taking" (Ramos, 2009) through the drawing. "Using representations of mathematical thinking is immensely useful to the students both in their math school work and in life" (Boaler, 2018, p. 161).

Another aspect to highlight is the visual element that was used, the "balls" (or "circles"). Since the object of the story were the "French fries", the student could have opted for the representation closest to a real and common situation, that being, vertical rectangles that would resemble "potatoes" in the story's drawing. Maybe because of this similarity and the proposal of doing something different, he ended up choosing this visual representation (the balls), correlating it to other kinds of existing potatoes, like the "Smile" potatoes, for example.

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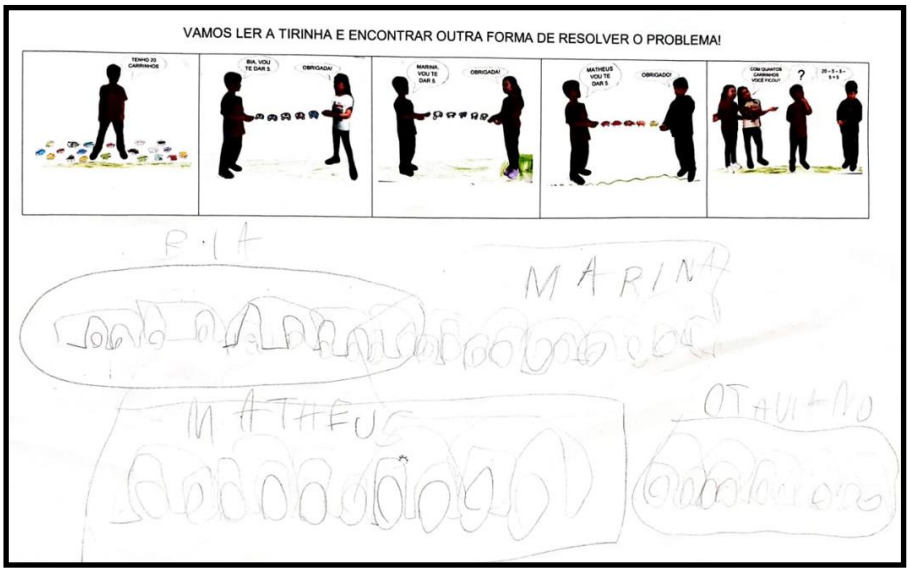

Figure 17 – Solution presented by Student 12
Source: First author archive (2022).

Figure 17 shows how Student 12 solved the problem in Strip 6. It was a complex subtraction problem, with more than one mathematical operation. The problem above (Figure 17) represents a character with twenty carts. This character gives give carts to other three kids. The question is: "with how many carts each characters stayed?". To solve the problem situation, Student 12 divided the carts among the four children, drawing five carts for each. This student used the idea of the division of elements, even if he had not developed this competence yet as a school subject, perhaps because he realized that each of the four classmates had the same amount of carts in the end, that is, five carts.

We can say that Student 12 was creative in his way of representing it, because "the creativity in Mathematics allows the subject to present unusual ideal that lead him to adequate ways of solving different problems, or even that contribute to finding different solutions for the same problem" (Fonseca & Gontijo, 2021, p. 22).

> Often, the pictorial record of a strategy that the student uses brings much more detail than the mathematical record, for example. In the same way as the written record – in current or mathematical language –, the pictorial also needs to be encouraged and valued (Nacarato *et al*., 2021, p. 41).

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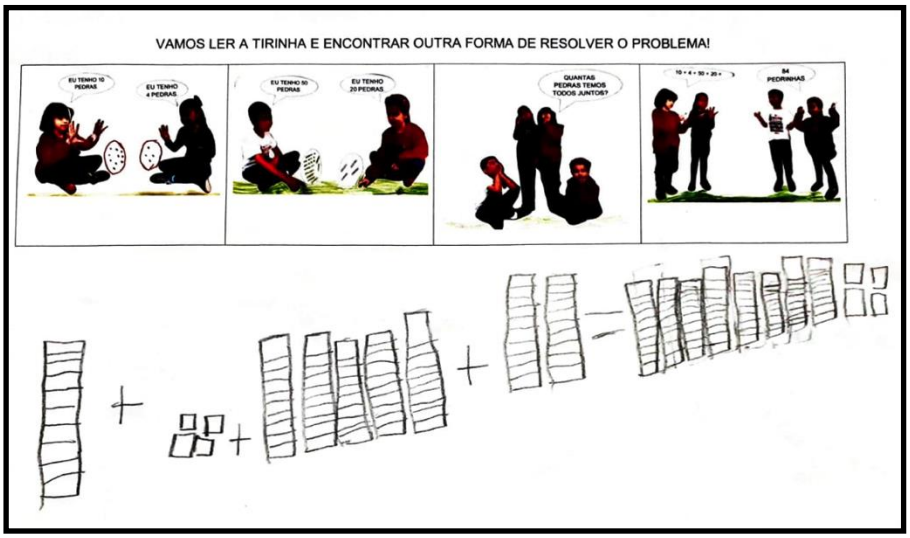

Figure 18 – Solution presented by Student 21
Source: First author archive (2022).

Figure 18 shows how Student 21 solves the problem on Strip 5. It was a complex problem, with more than one mathematical operation, in which he had to gather elements. This student used the drawing of the "golden material" in his representation, a material that he uses in the classroom, in which the bar represents the tens, and the cube, the units. He performed the addition "10 + 4 + 50 + 20 = 84." Besides finding another strategy to solve the problem, the student looked for a reference in another experience, showing mastery of mathematical skills.

By analyzing Figures 16, 17 and 18, we realized that "stimulating creativity favors the generation of multiple ideas that can contribute to solving different problems" (Fonseca & Gontijo, 2021, p. 26). So, we can claim that the school and the classroom are Spaces Where mathematical creativity can happen.

The visual representation was distinct in the three examples aforementioned, considering, in the first one, a classical representation with balls; the second with the drawing of the element in question (cart); and the third one with the golden material used in the classroom. Even with all the new solutions being visual, the proposals were different. But we can say that they were complimentary.

Considerations

Working with children in the literacy process is fantastic, and the practice done in the classroom showed that it is possible to create strategies that allow a contextualized learning and a creative math.

When literature is taught in the classroom, it brings a universe of possibilities for the development of mathematical skills, among them, problem solving. The comic strips, through its peculiar narrative form, were proven favorable in the development of the activities proposed. The graphic language proved to be important in the visualization of Mathematics.

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The elaboration of problems by the students and the transformation into comics, in which the children were the characters, provided the students with protagonism in their learning process and favored the development of creativity, corroborating with the referenced authors regarding the theme ‘mathematical creativity’.

Solving problems posed by classmates using different strategies showed mastery of mathematical skills and how the kids use their own experiences to solve the questions. It has also shown how a drawing can be rich in detail and serve as a record of the mathematical knowledge built by the child.

This article presented the results of a proposal applied in a classroom with children in the first year of Elementary School and will serve as a support for a larger research in progress, involving children’s literature and the teaching of Mathematics. Mathematical creativity is a possibility.

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