

THE TRAINING OF EARLY CHILDHOOD EDUCATION TEACHERS TO TEACH MATHEMATICS IN PNLD 2019 TEXTBOOKS

A FORMAÇÃO DE PROFESSORES DE EDUCAÇÃO INFANTIL PARA ENSINAR MATEMÁTICA EM LIVROS DIDÁTICOS DO PNLD 2019

FORMACIÓN DE PROFESORES DE EDUCACIÓN INFANTIL PARA ENSEÑAR MATEMÁTICAS EN LOS LIBROS DE TEXTO PNLD 2019

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ABSTRACT: In recent years, the educational context has undergone several transformations, especially regarding the production of new materials for Early Childhood Education. Thus, this article aims to discuss how the didactic authors and editors of the books of the 2019 National Program of Books and Teaching Materials (PNLD in the Portuguese acronym) present the teaching of mathematics to teachers. To this end, this is a qualitative research of documentary nature. Based on the study, it was possible to infer that the Mathematics Teacher Specialized Knowledge (MTSK) is present in one of the PNLD books produced for teachers of Early Childhood Education. However, it still presents a weakness regarding the MK domain, something that needs to be questioned and reflected upon.

KEYWORDS: Early childhood education. Book. PNLD. Mathematics.

RESUMO: Nos últimos anos o contexto educacional vem sofrendo várias transformações, principalmente, quanto à produção dos novos materiais destinados à Educação Infantil. Assim, este artigo tem por objetivo dissertar como os autores didáticos e editores dos livros do Programa Nacional do Livro e do Material Didático (PNLD) de 2019 apresentam o ensino de matemática aos docentes. Para tanto, esta é uma pesquisa qualitativa de cunho documental. Sendo que, com base no estudo realizado, foi possível inferir que o Conhecimento Especializado do Professor de Matemática (MTSK) encontra-se presente em um dos livros do PNLD produzidos para os professores da Educação Infantil. No entanto, ainda apresenta uma fragilidade quanto ao domínio MK, algo que precisa ser questionado e refletido.

PALAVRAS-CHAVE: Educação infantil. Livro. PNLD. Matemática.

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RESUMEN: *En los últimos años, el contexto educativo ha sufrido varias transformaciones, principalmente en lo que respecta a la producción de nuevos materiales para la Educación Infantil. Así, este artículo pretende discutir cómo los autores didácticos y editores de los libros del Programa Nacional de Libros y Material Didáctico (PNLD) de 2019 presentan la enseñanza de las matemáticas a los docentes. Para ello, se trata de una investigación cualitativa de carácter documental. Con base en el estudio, fue posible inferir que el Conocimiento Especializado del Profesor de Matemáticas (MTSK) está presente en uno de los libros PNLD producidos para maestros de educación infantil. Sin embargo, todavía presenta una fragilidad con respecto al dominio MK, algo que debe ser cuestionado y reflejado.*

PALABRASCLAVE: *Educación infantil. Libro. PNLD. Matemáticas.*

Introduction

In recent years, the educational context has undergone several transformations, especially regarding the production of new materials for Early Childhood Education, which aim to support the pedagogical practice and, consequently, help in the training of teachers.

Thus, being aware that

Several studies point out that it is very common for teachers to "follow" books to structure their classes. [...] it is important to analyze them carefully, avoiding stereotyped judgments that do not contribute much to improve their use or the educational practice (ZABALA, 1998, p. 169, our translation).

For it is necessary to understand that these materials help in the educational context, however, it is important to reflect carefully on their proposals in order to adapt them to each reality in which they will be worked.

In view of the above, and understanding the teacher's book as a resource formed by concepts and paradigms of the current moment in which it was built, this article aims to dissect how the didactic authors and editors of the books of the 2019 National Program of Books and Teaching Materials (PNLD in the Portuguese acronym) present the teaching of mathematics to teachers.

To this end, the study carried out here had the qualitative approach as its methodological basis. It was used because it does not seek to quantify something, nor is it subject to the proof of facts, since the data collected and analyzed make use of different approaches and is not metric, which leads the research to pay attention to real issues that cannot be measured, since it focuses on understanding and explanation. Moreover, it is used because the study includes some characteristics that belong to this approach, such as, for example, the organization of some actions, including reporting, understanding, and

explaining; understanding the interactive character between the purposes sought by the researchers, their theoretical foundations, and the empirical data, and searching for the most accurate results possible (GERHARDT; SILVEIRA, 2009).

We also used the documentary methodology, which according to Fonseca (2002) follows the same paths of the bibliographical research, but appropriates the most varied and disperse documents that have not yet undergone an analytical process, and in this research we will analyze the textbooks for early childhood education of PNLD 2019 and the guiding documents.

We have chosen to use as theoretical support the studies of the theoretical model called Mathematics Teachers' Specialized Knowledge - MTSK. With this, it is not intended to exhaust the knowledge of teachers in the area of mathematics, nor to fragment it, but to reflect on this method that lists a series of knowledge that the educator must master to teach and make students learn mathematics. Therefore, the next section will bring the reader closer to the theory that supported the analysis of some of the math activities in the PNLD book.

Approaching the theoretical field

Studies involving the knowledge of mathematics teachers have been gaining space in recent times. In the year 2014 was launched by a group of researchers, more precisely by Spanish professor José Carrillo and collaborators, who belong to the University of Huelva, the titled in English language Mathematics Teachers' Specialized Knowledge (MTSK) (MONTES; CONTRERAS; CARRILLO, 2013).

According to Flores-Medrano *et al.* (2016), this theory emerged from pre-existing models and with the aim of not being concerned with topics of knowledge that belong to professionals who work in diverse areas, but rather, with those that are proper of the mathematics teacher. This is because, according to Flores, Escudero and Aguilar (2013) it serves to carry out studies, in an analytical way, of the knowledge belonging to educators who work with this field of knowledge.

This brief contextualization, demonstrates that this method is relevant to education and deserves to be studied and reflected on in various researches, especially when it comes to Mathematics Education.

For this, it is necessary to know the organization of the MTSK, which is systematized in two major domains of knowledge: Mathematical Knowledge (MK) and Didactic Content Knowledge (PCK). Therefore, the teacher's knowledge goes beyond the idea that it only

involves the mathematical domain, because it also includes the didactics of the content (FLORES-MEDRANO *et al.*, 2016), which plays an essential role in the teaching and learning process.

Each of these two domains has three subdomains. In the MK, which provides meaning to the mathematical knowledge of the teacher of this area, there is the Knowledge of Topics or Themes (KOT). In this domain, as Flores-Medrano *et al.* (2014) points out, the educator must possess knowledge of the mathematical content that he or she is going to teach to his or her students, but in addition to mastering it, it is important that the knowledge be of a higher degree of complexity than that foreseen for the students.

Moreover, this sub-domain encompasses five categories. One of them is the category called Phenomenology, which, on the one hand, considers the knowledge of the phenomena that can help in the production of mathematical knowledge, considering even those that are in the genesis of the concept and, on the other hand, also includes the knowledge that one has about the applications of a subject. On the other hand, the second category is the knowledge of the Properties and their Foundations granted to a certain topic or action, where the properties are the particularities of the topic being developed and the foundations are the mathematical supports. There is also the category Representation Register, which includes the knowledge of the different ways that one can demonstrate what is being studied, as well as the knowledge of the notational and lexical part that is adequate and related to these forms of representation. The other category is Definitions, this corresponds to the knowledge of the properties that place the object as something definable, as well as the numerous ways that the educator uses to define something. Finally, the Procedures category is identified, in it the teacher's knowledge regarding "How is it done?", "When can it be done?", "Why is it done this way?" (FLORES-MEDRANO *et al.*, 2014).

Next is the subdomain Knowledge of Mathematical Structure (KSM), which integrates knowledge of the connections between various contents, which can be a relationship from elementary topics to more complex ones or vice versa (FLORES-MEDRANO *et al.*, 2014). This has four categories. The first is called Connections and Complexity, which refers to the idea that the teacher should be aware that the content taught can be linked to the next content. Then there is the category Simplification Connections, which highlights the knowledge that the content taught can be connected to what has been worked on before. The category Cross Content Connections, which are the relationships that exist between simpler or more complex content, and the category Auxiliary Connections, which are those that, as the name implies, play the role of auxiliary (FLORES-MEDRANO *et al.*, 2014).

Moreover, in the MK domain, according to the aforementioned authors, there is the subdomain Knowledge of mathematical practice (KPM), which highlights the relevance of the teacher knowing the characteristics and the mathematical process to reach conclusions, thus transposing the idea of knowing only the results.

Carrillo-Yañes *et al.* (2018) point out that the KPM does not yet have categories, because it is in the process of study and construction. But, even so, it can be either General or Specific KPM. The first, Practices connected to Mathematics in General, comprises the knowledge of how mathematics occurs independent of any topic worked on. The second, on the other hand, is something that belongs especially to the general KPM, only related to the singularities of the topic under study.

In the PCK domain, according to Flores-Medrano *et al.* (2014), the teacher must understand the importance of mathematical content as a content that must be taught, there is the subdomain Knowledge of Learning Characteristics (KFLM), which involves the teacher's knowledge regarding the aspects of learning pertaining to the content of mathematics. Thus, it places "[...] the focus on the mathematical content [...]" (CARRILLO-YAÑES *et al.*, 2018, p. 11, our translation).

Regarding the KFLM categories, Flores-Medrano *et al.* (2014) describe that this subdomain has the so-called Learning Theories, which includes the teacher's knowledge about the possible ways to learn mathematical content. They also mention the category Strengths and Difficulties Associated with Learning, which shows the knowledge of the mistakes, obstacles, and failures related to the mathematical field. Next, the category Ways of Interacting with Mathematical Content, which encompasses the knowledge of the path and ways adopted by students, as well as the set of terminologies used to deal with a certain content. And, finally, the category of Students' Conceptions of Mathematics, since it addresses knowledge of the expectations and desires that students have about mathematics.

Subsequently, the subdomain Knowledge of teaching mathematics (KMT) is identified, which according to Flores-Medrano *et al.* (2014) involves knowledge closely related to the mathematical field, just as occurs in KFLM. Moreover, it covers knowledge of instruments, ways of presenting the topics, among other issues.

For the KMT three categories were listed. As Flores-Medrano *et al.* (2014) emphasize, initially, one observes Personal or Institutionalized Teaching Theories, given that, in them, the teacher can master the teaching theories corresponding to Mathematics Education, as well as know how to exemplify, make analogies, explain, among other actions that are judged as significant. Subsequently, there is the category that covers the knowledge of Material and

Virtual Resources consistent with the content developed, and then the multiple materials are mentioned, such as textbooks, rulers, software, and others. And, furthermore, the category that according to Cabanha (2018) is called Teaching Resources is identified, since it includes tasks, aids, and others.

Finally, the subdomain Knowledge of Mathematics Learning Standards (KMLS) is identified. Carrillo-Yañes *et al.* (2018) state that it involves the prescribed curriculum, but is not limited to it, for it is also the mathematics teacher's knowledge about the factors that interfere with the teaching that he will make available to his students. Therefore, in addition to the official documents, his acquired knowledge, such as through research, is also something that conditions the teaching (CABANHA, 2018).

In addition to what has been described, in KMLS it is possible to see three categories. The first refers to Expected Learning Outcomes, as it contains the knowledge that the teacher must appropriate in order for it to be taught at the school moment in which the students are. The second category is the knowledge of the Expected Conceptual and Procedural Development Level, which encompasses what students are expected to develop in a more intense way. And to conclude, there is the category Topic Sequencing, which, as its name implies, consists of a sequence of topics to be used to develop teaching (CARRILLO-YAÑES *et al.*, 2018).

It is based on what was discussed about the conceptualization and systematization of the Mathematics Teacher's Specialized Knowledge (MTSK) that some mathematics teaching proposals presented by one of the PNLD books of the year 2019 were analyzed.

Research Itineraries

We emphasize that this research is qualitative in nature and uses document analysis as methodology. Therefore, based on what has been discussed, in order to carry out this article, first of all, the two PNLD books that are circulating in public schools in Brazil and that are intended for pre-school teachers, the "*Aprender com a Criança: experiência e conhecimento*" by Priscila Monteiro, Monique Dsheinzelin and Ana Flávia Castanho and the book "*Pé de brincadeira: Pré-escola*" by Angela Cordi, the latter was elected, for the data display of this article, because it was built especially for teachers who work with children who are in the mandatory age group of schooling, because its tasks are for the little ones from 4 to 5 years and 11 months of age.

When checking the material in general, it was observed that it is structured in six chapters, but for this study we will analyze chapter four, which presents and describes possibilities of pedagogical intervention.

In this chapter there are ten sections, each with 20 activity options, ten for 4-year-old children and the other ten for 5-year-old children. However, due to the infeasibility of exploring all the educational ideas related to the teaching of mathematics, we chose the ones in section Theme 9, called 4.9 Science and Technology. This cut was made because it is where there are more tasks with mathematical intentionality, in other words, that highlight the field of experience of the Common National Curricular Base (BNCC) "Spaces, times, quantities, relations and transformations" (BRAZIL, 2018), which mainly aims to trigger and/or enhance mathematical skills in children.

Pedagogical practices in early childhood education aimed at teaching mathematics

Based on these reflections, the following analysis will show how the subdomains of the specialized knowledge of the mathematics teacher are presented in pedagogical actions of mathematics proposed in a teacher's book for early childhood education.

When analyzing all the activities described in the selected material, it was found that they are organized in such a way that, initially, they present the time suggested for the accomplishment of the task, along with its nomenclature. Then there is the BNCC field of experience, the learning and development objective, the prepare moment, the development, the socialization of the discoveries and self-evaluation and, finally, the evaluation.

Thus, among the pedagogical tasks located in the teacher's book, seven proposals that belong to the field of mathematics and are in section 4.9 Science and technology were chosen for investigation, as shown in the chart below.

Chart 1 – Pedagogical proposals with mathematical intentions presented in chapter 4, theme 9 of the book *Pé de brincadeira: Pré-escola 4 to 5 years and 11 months old*

Activity Name	Target age group
Antique Toy Factory	4 years old
Pencil factory	4 years old
Car factory	4 years old
An Eye to the Past	5 years old
An invention that got the word out	5 years old
Hello? Who is this?	5 years old

Calculating

5 years old

Source: Research data. Prepared by the authors based on the book *Pé de brincadeira: Pré-escola 4 to 5 years and 11 months old*

When analyzing the selected pedagogical ideas, it is noted that all present the BNCC field of experience (BRAZIL, 2018) that enables the teaching of temporal notion, numbers, quantification, comparison among other mathematical concepts. Therefore, the explicit presence of the KMLS subdomain is observed.

In this sense, this part, which deals with a legal document, should not only serve for the educator to have contact and knowledge of the current regulations, but also involves knowing what the students need to learn.

Thus, teachers must know and appropriate this knowledge, because this is where all the legal apparatus of the teaching and learning process that must be carried out is found.

In the sequence, the activities describe the learning and development objectives of the BNCC (BRASIL, 2018) along with the codes corresponding to them. In the first, second, third, and fifth activities, the intention is to work on the concept of comparison. The fourth proposal aims to develop teaching about classification from the identification of similarities and differences. The sixth task aims to teach the number system and quantification. And, the seventh pedagogical action aims to teach the notions of measures. To demonstrate, the following chart shows the objectives with their respective codes.

Chart 2 – BNCC objectives and codes corresponding to the activities chosen for analysis

Learning and development objective	BNCC Code
Establish relationships of comparison between objects by observing their properties.	(EI03ET01)
Observe and describe changes in different materials, resulting from actions on them, in experiments involving natural and artificial phenomena.	(EI03ET02)
Classify objects and figures according to their similarities and differences.	(EI03ET05)
Relate numbers to their respective quantities and identify the before, after and between in a sequence.	(EI03ET07)
Record observations, manipulations and measurements, using multiple languages (drawing, recording by numbers or spontaneous writing), in	(EI03ET04)

different media.

Source: Research data. Prepared by the authors based on the book *Pé de brincadeira: Pré-escola 4 to 5 years and 11 months old*

When investigating this moment in the activities, it is possible to see that the intention to teach the mathematical content comparison prevails, and then the other contents appear. However, it should be noted that in the first stage of basic education there is an immensity of content to be explored and all of them are equally important, such as working with measures.

Moreover, although the objectives show what is intended to be taught with certain pedagogical actions, it is up to the teacher

Knowing the potential and limitations of each resource associated with mathematical exploration and discussion of each of the topics that can and should be explored in the context of each of the games with mathematical intent (RIBEIRO, 2021, p. 115, our translation).

Therefore, the educator should not be limited to what is written in the books.

Given this, once again the presence of KMLS is observed, because the objectives belong to the BNCC (BRAZIL, 2018), which is highlighted in Brasile belongs to the set of documents that signal the time when each content should be worked, as well as the level of complexity.

Subsequently, in the educational proposals raised for investigation, the presence of the moment prepare was verified. In it, all the activities list the materials that must be made available to students in order to carry out the tasks. This idea can be seen in the following excerpts, the first found in a proposal designed for 4-year-olds and the second for 5-year-olds:

Chart 3 – "Get ready" section corresponding to two activities chosen for analysis

Provide jars of different sizes, small boxes, and paper packets (CORDI, 2021, p. 204).
Provide cardboard boxes (cereal and toothpaste boxes-one for each child), colored papers, tape, string, sulfite paper, and felt-tip pens (CORDI, 2018, p. 214).

Source: Research data. Prepared by the authors based on the book *Pé de brincadeira: Pré-escola 4 to 5 years and 11 months old*

Based on the analysis of this topic, it can be seen that the mathematical proposals in the book under analysis are based on games and play. These actions are loaded with a very significant value, as they break with practices in which students are seen as passive beings. However, for them to really have a valuable function in the teaching and learning process, they need to have defined which mathematical concepts it is desired that the student learns,

such as, for example, counting, sorting, classification, complementary set, spatial notion, temporal notion, measures and magnitudes, fraction as part-all, serialization, among others:

In this way, as it is the moment in which it presents the objects to be used it is possible to ascertain the presence of the knowledge belonging to the KMT subdomain, which covers knowing the relevance of working with several ways of representation.

When we check the next topic, called development, we notice that it contains all the strategies that can be applied to perform the tasks, because there are step by step, as well as songs, information, curiosities, images, games, and procedures for making the necessary materials. To illustrate, we take as a reference the development of two practical ideas, the first one for 4-year-old children and the second one for 5-year-old children.

Chart 4 – Development" section corresponding to the two activities chosen for analysis

Development: Form a circle with the children and place several types of crayons in the center. Ask them to hypothesize about how the crayon is made and how the color inside is produced. Ask them to record their hypotheses on a sheet of paper and then share what they thought with the large group. At this time, it is important that the children take care to speak in a way that others will understand them and that they make an effort to understand their peers. After socializing the children's hypotheses, present the following information. How do you put the graphite inside the pencil? To make the pencils, grooves are dug in a wooden board. Then a black graphite paste for colored pencils is poured into the grooves. A second wooden board is then glued on top of the first. When the glue dries, the plates go through a mechanical planer that separates the pencils and gives them their shape. (LAROUSSE, 2008, p. 62)
If possible, bring several boxes of crayons into the classroom and discuss how to organize them. Then propose the construction of a make-believe Pencil Factory. Agree on what materials can be part of the game and prepare the room's environment. When everything is ready, invite the children to play pencil factory (CORDI, 2018, p. 204).

Development: Gather the children in a circle and introduce them to the abacus and the calculator. Ask if they know these objects and have used them before. Ask what they think they have in common. Tell the children that the abacus is a very old tool used to do math. The evolution of the abacus is the calculator, so common in our day to day life. Tell them that nowadays there are also digital calculators in different supports, such as cell phones and computers. Ask the children if they have ever seen a calculator. Have they ever handled them? In what situations do people use calculators? And without calculators, how do people do math? Let them freely handle the calculators. Finally, invite them to build their own calculators out of scrap materials, and then choose a situation where they can play with them - for example, playing supermarket, beauty salon, barbershop, etc. (CORDI, 2018, p. 219).

Source: Research data. Prepared by the authors based on the *book Pé de brincadeira: Pré-escola 4 to 5 years and 11 months old*

In the first development we can see the purpose of teaching the mathematical concept of classification. However, it is worth remembering that this part of the activity does not clearly describe the work with this content, but in its objective this is evident and brings the idea that this topic is significant for this age group.

In the second development, it is possible to recognize the work with counting and recognition of numbers. This should lead educators to understand that working with numbers should not be limited to knowing how to write them.

Thus, making use of play, a resource present in the proposals analyzed, is something significant, because it is different from conventional teaching and goes beyond the shallow teaching in which counting and identifying numerals prevail.

In view of the above, in this section we understand the presence of the dimensions of the KMT subdomain, because it refers to the teacher's knowledge in different ways of teaching and various tasks of mathematical content. In the second excerpt presented, we notice that the teacher is encouraged to learn a little about the history and functionality of the abacus.

Moreover, when exploring the activities, we find the step Socialization of discoveries and self-evaluation. Here educators are directed to question the little ones and, consequently, lead them to interact with the group, exposing their wishes, impressions, ideas and thoughts about what is being worked on with that particular pedagogical action. Moments like these make the teacher get to know more about the students' resolutions and reflections, which characterizes the KMLS. To demonstrate, two of these moments were selected, one belonging to a pedagogical proposal built for 4 year old children and the other, to a task directed to 5 year olds.

Chart 5 – Section "Socialization of the findings and self-evaluation" corresponding to the two activities chosen for analysis

Socialization of the discoveries and self-evaluation: Ask the children how it was playing top, leading them to share their impressions with the large group. Who enjoyed the game? How do you make the top spin longer? (CORDI, 2018, p. 204).

Socializing discoveries and self-evaluation: The children may be surprised by the phone models presented. If they can manipulate these models, they can share their impressions with their classmates, commenting on the size of the object, for example, the weight of the device, the shapes that are so different from the current ones, etc. (CORDI, 2018, p. 214).

Source: Research data. Prepared by the authors based on the book *Pé de brincadeira: Pré-escola 4 to 5 years and 11 months old*

When investigating this step of the tasks found in the book, it is possible to identify that there can be the exploration of several mathematical concepts, such as temporal notion, comparison, weight, shape, identification of numbers, arithmetic thinking, and others. However, as it is a moment that requires the interaction of teachers, because they are the ones who must conduct the questioning, it is crucial that these professionals master certain pedagogical knowledge that belongs to the practice.

In this way, it can be said that the knowledge of the KFLM sub-domain is evidenced, because when exploring orally the task performed in the previous topic it is necessary for the

educator to have knowledge regarding the students' understanding of the contents and the language related to the concepts.

Finally, the proposals have an evaluation step. However, since this is a material for teachers of early childhood education, it is important to remember that the act of evaluating is not intended to measure and/or classify children, since its purpose in this first stage of basic education is to make teachers capable of reflecting on and improving their teaching practice in order to get closer to a quality education. The chart below shows two moments from this section, the first in a task designed for 4-year-olds and the other in an activity designed for 5-year-olds.

Chart 6 – Section "Evaluation" corresponding to two activities chosen for analysis

Evaluation: Observe whether, in the round of conversation, the children reported what they know about cars and noticed the changes that have occurred in this technology up to the present day (CORDI, 2021, p. 205)

Evaluation: Look to see if children notice the changes in the models with regard to shape, size and weight. They may notice, for example, that the phones have changed size, becoming smaller and lighter. There is certainly no need to go into detail about what made this possible. They can intuit that ever-smaller parts and components have been researched and developed, making for more compact equipment. (CORDI, 2018, p. 214).

Source: Research data. Prepared by the authors based on the book *Pé de brincadeira: Pré-escola 4 to 5 years and 11 months old*

In this context, the educator will have the opportunity to probe what the children have learned about the mathematics content worked in each pedagogical proposal.

Once again, we can see the presence of KMLS, because for educators to make a relevant assessment they need to master the knowledge about what it is desired that students learn in the field of mathematics.

Final remarks

With this article it was possible to show that the Mathematics Teacher's Specialized Knowledge (MTSK) is present in one of the PNLD books produced for kindergarten teachers.

Thus, in the analyzed tasks, it was evident that only one domain of the MTSK is explicit in the described tasks to guide teachers in their pedagogical practice, because in them the Didactic Content Knowledge (DKK) prevails. This occurs because the textbook has as its primary intent to describe the activities emphasizing their didactic issues, since, when presenting them, it mentions the documents that guide education, the materials to be used in performing the tasks, the procedures that need to be put into practice, the questions that can be raised and the evaluation process that the teacher must do.

Thus, the Knowledge of Mathematics (MK) does not stand out with so much emphasis in the proposals discussed throughout the material, because only the subdomain KPM was found, while the subdomains KOT, KSM were not identified. However, this does not mean that they are not relevant, on the contrary, in order to put into practice activities with mathematical intentionality, it is crucial for educators to master this knowledge, which serves as a basis for carrying out the tasks. This situation is opposed to the Didactic Content Knowledge (DKK), because this is in vogue in the tasks, since all its subdomains, the KFLM, KMT and KMLS were found in the activities, the last one being the one that stood out the most throughout the analysis.

Finally, it is possible to infer that the material analyzed here is relevant to identify the knowledge that belongs to MTSK, because despite presenting a weakness regarding the MK domain, it makes it possible to reflect on this situation, which needs to be thought about by everyone involved in the teaching and learning process, since this subdomain involves fundamental knowledge to achieve a good work, because teachers need to know the mathematical concepts, relationships and the whole path that is used to reach the conclusions.

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