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The Laboratory of Mathematical Education and the Initial Training of Mathematics Teachers

O Laboratório De Educação Matemática E A Formação Inicial De Professores De Matemática

El Laboratorio de Educación Matemática y la Formación Inicial de Maestros de Matemáticas

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ABSTRACT: *This article is the result of a qualitative research of the case study type which aimed to understand what conceptions that students of a Mathematics Degree course present, in their last semester of the course, in relation to the Mathematics Education Laboratory (LEM, in portuguese language) and its implications for their training and future professional practice. For data production, a questionnaire was used, with open questions, which were analyzed by Content Analysis, referring, above all, to Bardin (2009). For the theoretical foundation, authors were sought who discuss teacher training, especially those who teach Mathematics, playfulness and LEM, in their different perspectives, they were: Brougère (2002), Gatti (2019), Shulman (2005), Lorenzato (2010), Silva (2014, 2020a, 2020b), Cury (2011) and Alves (2001). The research signaled a recognition of LEM as an important space for initial training and future teaching practice. However, the participants were not guaranteed immersion in that space during the degree course.*

Conceptions. Teacher training. Mathematics Education Laboratory. Degree in Mathematics.

RESUMO*: Este artigo é resultado de uma pesquisa qualitativa do tipo estudo de caso que objetivou compreender quais as concepções que estudantes de um curso de licenciatura em Matemática apresentam, em seu último semestre do curso, em relação ao Laboratório de Educação Matemática (LEM) e as implicações do mesmo para as suas formações e futura prática profissional. Para produção de dados utilizou-se um questionário, com questões abertas, que foram analisadas pela Análise de Conteúdo, referenciando-se, sobretudo, em Bardin (2009). Para a fundamentação teórica buscou-se autores que discutem formação de professores, principalmente, dos que ensinam Matemática, ludicidade e o LEM, em suas diferentes perspectivas, foram eles: Brougère (2002), Gatti (2019), Shulman (2005), Lorenzato (2010), Silva (2014, 2020a, 2020b), Cury (2011) e Alves (2001). A pesquisa sinalizou um reconhecimento do LEM enquanto espaço importante para a formação inicial e futura prática docente. No entanto, aos participantes da pesquisa, não se garantiu vivências nesse espaço durante a licenciatura.*

Concepções. Formação de Professores. Laboratório de Educação Matemática. Licenciatura em Matemática.

RESUMEN: *Este artículo es el resultado de una investigación cualitativa del tipo estudio de caso que tuvo como objetivo comprender qué concepciones presentan los estudiantes de un curso de Grado en Matemáticas, en su último semestre del curso, en relación con el Laboratorio de Educación en Matemáticas (LEM) y sus implicaciones para su formación y futura práctica profesional. Para la producción de datos, se utilizó un cuestionario, con preguntas abiertas, que fueron analizadas por Content Analysis, refiriéndose, sobre todo, a Bardin (2009). Para la base teórica, se buscaron autores que discutan la formación del profesorado, especialmente aquellos que enseñan Matemáticas, lúdico y LEM, en sus diferentes perspectivas, fueron: Brougère (2002), Gatti (2019), Shulman (2005), Lorenzato (2010), Silva (2014, 2020a, 2020b), Cury (2011) y Alves (2001). La investigación señaló un reconocimiento de LEM como un espacio importante para la formación inicial y la práctica docente futura. Sin embargo, a los participantes no se les garantizó la inmersión en ese espacio durante la carrera de grado.*

Concepciones. Formación de profesores. Laboratorio de Educación Matemática. Graduación en Matemáticas.

Introduction

In view of the current educational scenario, permeated by constant changes demanded by contemporaneity, the process of teacher training is constantly questioned, above all, by the distance that exists between this training and the different Brazilian realities. As highlighted by Gatti (2010) and Gatti, Barreto, André and Almeida (2019) from research carried out in last 20 years, many undergraduate courses are excessively theoretical, in a curriculum construction often comes close to a bachelor's degree.

What was presented in the previous paragraph makes us think: how to train teachers without articulating this training strictly with the context of Basic Education, a space for future professional activity? We know that this distance, present in many courses, impacts the process of constituting the teaching identity. This, in a way, happens in some Mathematics' degrees, as highlighted by Santos (2002).

Teachers who teach mathematics in Brazil encounter a learning reality permeated by great difficulties, as signaled by the numerous external assessments and also by internal assessments. Many students of Basic Education perceive mathematics, as pointed out by D'Ambrosio and D'Ambrosio (2006), as a difficult and decontextualized science of everyday situations. The teacher, according to the authors previously mentioned, remains an important challenge in the search for a truly quality mathematical education: deconstructing this image.

We know, starting from what Silva (2020a) highlighted, that the difficulties we mentioned earlier result from a series of problems that historically were posed and that are directly related, in addition to the movement of teacher training that teach mathematics in the country. Many courses, according to the author, presented a training model that ranked the knowledge needed for teaching, placing some of that knowledge in disadvantage.

To demystify the image that mathematics has of difficult and decontextualized from everyday life, and to take on the challenge of changing this reality regarding the teaching and learning processes of this science, methodological strategies and the use of playful-manipulative resources can contribute very positively, as Silva (2014) pointed out. Such strategies and resources need to be well presented, linked to the context of Basic Education, even during the initial training of the future teacher.

Meanwhile, realizing the Playful and Playful and Pedagogical Knowledge of the Content (CLPEC) (SILVA, 2020b, in press), while necessary for their initial training and future pedagogical practice, some undergraduate courses in Mathematics make use of an important space in this process teacher training: the Laboratory of Mathematical Education (LEM). LEM, as they are known, are spaces present in universities and schools, which bring together diverse teaching materials, such as games, games, golden material, audio of songs with mathematical content, textbooks, software etc. (LORENZATO, 2010). In them, according to Silva (2014), future teachers can experience and (re) think teaching in the perspective

of contributing to learning in which the student understands and makes the studied concepts applicable to daily life, when possible.

Therefore, it is necessary for the teacher who teaches Mathematics to have an adequate training, enabling the use of this space and, as Silva (2014) asserted, of the different teaching methodologies, especially with regard to issues of creativity that permeate all of their use. Therefore, given all that we have presented so far, we have the following research questions: How do students in the Mathematics degree course conceive LEM? How was this space presented during your initial formation process? What is the influence (s) of the work done in this space for your training?

In this sense, therefore, we highlight as objective of this research: to understand which conceptions that students of the course of degree in Mathematics of the State University of Bahia (UNEB), Campus VII, present, in its last semester of the course, in relation to the Laboratory of Mathematical Education and its implications for your training and future professional practice.

This research is linked to the Laboratory of Studies and Research in Mathematics Education, a training space for the [future] mathematics teacher at the State University of Bahia (UNEB), Campus VII, in Senhor do Bonfim, which seeks to studies and research, as well as extension activities, contribute to the process of building the teaching identity. All the works developed in this space aim to broaden the look about the innumerable problems posed by Basic Education regarding the teaching and learning process of Mathematics.

This article is divided into four sections: i) the introduction, where we contextualize the researched theme and present the questions and objectives that guided this research; ii) the methodological path, where we will classify research and data production instruments, as well as analysis procedures; iii) the presentation and analysis of the data, where we will discuss, jointly the theoretical production carried out and the contents produced by the participants; and finally iv) the presentation of some end-of-text considerations.

1 Methodological Path

A priori, it is important to point out, starting from what Silva and Oliveira (2020) highlighted, that we believe it is necessary, in this training path for the future teacher who teaches mathematics, to discuss and work in the classroom as an important space for research and training, breaking with all the traditional research logic that disregards it, as well as the researcher's involvement with those surveyed. In order to develop the profile of a researcher professor of his own practice, something necessary in the initial training, it is up to the [future] teacher to understand his place in the research and his link with the other participants as important, contrary to the more traditional models of investigation.

In fact, the investigation built by the teacher himself makes his practice an object of research, which allows a movement of reflection on his action in the classroom or other training spaces, such as the Laboratory of Mathematical Education. From this close relationship established between the classroom (or LEM), the teacher and the students, the researcher leads the search for answers to the countless daily concerns that circumscribe his teaching practice. In other words: the research, resulting from demands perceived by the teacher in action, profoundly transforms his own practice through action-reflection-action (SILVA, 2014).

In this sense, starting from the role of the author of this research text in the space of initial training of teachers who teach Mathematics, especially in Mathematics Education Laboratories, we propose, for this work, a qualitative investigation, of the type field research, for understanding it as the most appropriate to broaden the view on the objective of this study (GIL, 2012).

In addition to the researcher and author of this research text, nine undergraduate students in Mathematics at UNEB, Campus VII, enrolled in their last semester of the course, participated in this study. It is worth mentioning that all ethical issues were respected and students who accepted to

participate voluntarily signed the Free and Informed Consent Form (ICF). In order to maintain the anonymity of the research subjects, we will call them by fictitious names.

For the production of data, with a view to broadening the look about the objective of this investigation (understanding what conceptions the students of the degree course in Mathematics at UNEB present in relation to the Laboratory of Mathematical Education and its implications for their training and future professional practice), a questionnaire was used containing seven open questions. They were: 1) Does the Mathematics Education Laboratory have a Mathematics Education Laboratory at your institution ?; 2) What is the Mathematics Education Laboratory for you ?; 3) What should you have in a space like this ?; 4) In what moments of the course did you use this space and for what purpose ?; 5) For your training and future practice as a mathematics teacher, what was the influence of the work done at LEM ?; 6) In the schools where you did the internship, for example, did you have LEM ?; 7) Do you consider this an important training space for mathematics degrees? Comment.

We understand, at this moment, based on Cury (1999, p. 37), that the conceptions are sets of ideas, built from the experiences that people had and "from the knowledge they built, from the opinions of their masters, in short, the socio-cultural influences that they suffered during their lives, influences that have been forming over the centuries, passing from generation to generation [...] ".

In view of the content produced by graduating students who participated in the research, from the answers presented in the questionnaire, we opted for the Content Analysis (AC) method, which consists of a set of communication analysis techniques that uses procedures systematic and objective description of the content of the message. It is worth noting that the AC is organized around three poles: 1. Pre-analysis; 2. The exploration of the material; and 3. The treatment of results: inference and interpretation (BARDIN, 2009, p. 121).

2 A Theorized Look at the Data Produced

In this section, starting from the methodological walk presented above, we will analyze the data produced by the participants from the answers presented to the questions present in the research questionnaire. We chose to present a theoretical discussion section articulated with the data produced. We consider that this movement of theoretical discussion, starting from the empirical data, signals what in fact should be deepened and discussed theoretically.

Following the steps presented by Bardin (2009) for the realization of CA, especially the initial stage of pre-analysis of the content produced in the participants' questionnaires, we established two categories of analysis, they are: i) What is the Laboratory of Mathematical Education ? and ii) How has the work done in this space influenced my education and future practice with Mathematics? Next, we will present the results of the other stages of exploration of the material and the treatment and interpretation of the results.

2 .1 What is the Mathematics Education Laboratory?

To start this section, we think it is pertinent to resume the concept of LEM that we presented in the introduction of this text and to expand it based on the answers presented by the research participants. As we said in the introduction, the Mathematics Education Laboratories, as they are commonly known, are spaces present in universities and schools, which gather different teaching materials. In them, mathematics teaching is experienced and (re) thought in a perspective that contributes to a meaningful learning of the studied mathematical concepts.

In this direction, therefore, LEM are important spaces for initial training because, as we have said throughout the text, in agreement with what highlighted Lorenzato (2010), Silva (2014) and Silva (2020b),

enable the approach of the future teacher with the different realities of teaching and learning mathematics. In this place, it is possible to know different teaching materials and, starting from situations such as supervised internship, or other real situations of insertion in the Basic Education classrooms, constitute different knowledge necessary for teaching, such as the pedagogical knowledge of the content (SHULMAN , 2005).

Starting from the perception of this training space as important, we questioned the research participants about the existence of the Laboratory of Mathematical Education in the institution that are studying for a degree. We noticed, in the responses presented, that all signal positively about its existence and, in some way, highlighted having visited it. Alicia, for example, points out that the LEM space was used as a classroom and that she has already visited it. Daniel, meeting what Alicia introduced, signals that he visited the space, but that he never used / manipulated the materials made available.

In order to get to know more about how these visits took place throughout the course, since it was unanimous that they happened in different ways, by the research participants, we asked them about which moments of the course they used the space and for what purpose. Let us observe what the students answered.

> "*I used it only as a meeting space for purposes that were not related to the laboratory's role of formation*" (LAURA, 2019, our highlights).
>
> "*During the subjects of Financial Mathematics and Calculus III, as there were no rooms available for their execution*" (CIRILO, 2019, emphasis added).
>
> "*In Calculus classes, because the teachers were out of class to teach*" (MARCELINA, 2019, emphasis added).
>
> "*Few times to attend classes*" (ALICIA, 2019, emphasis added).
>
> "*It was never used*" (MARIA JOAQUINA, 2019, emphasis added).
>
> "*I never used it*" (DANIEL, 2019, emphasis added)..

It is evident from the responses presented by the participants: Laura, Cirilo, Marcelina and Alicia, that the space of the Laboratory of Mathematical Education was used as a support for situations in which there were "no rooms available" or as "meeting space". As Laura pointed out, the activities developed at LEM "were not related to the laboratory's training role". Unlike these participants, which we mentioned earlier, Jorge and Renê had other experiences. Let's see:

> *"During Supervised Internship III, in order to build teaching materials for a workshop. In addition, I developed internship activities during the last semester of the course" (JORGE, 2019, emphasis added).*
> *"I used it during the Mathematics Laboratory curricular component. The main purpose was to create mathematical objects for application in the Basic Education classroom" (RENÊ, 2019, emphasis added).*

For Jorge and Renê, LEM occupied a place of training, such as what was expected by Alicia, "to build teaching materials for living in a workshop". We realized that these two students participated in activities that allowed, in agreement with what highlighted Silva (2014) and Lorenzato (2010), to think about the creation of "mathematical objects for application in the Basic Education classroom". In this direction, let us see the conceptions that the research participants presented about this space. Jorge, Laura, and Alicia point out that

> "*It is not just a place where materials are stored, it is a training space that contributes to the development of practices and experiences that are important for future teachers*" (JORGE, 2019, emphasis added).

> "*I think it is an environment where there are methodological objects to facilitate the teaching of Mathematics, where studies on methodological practices for the teaching of Mathematics take place*" (CIRILO, 2019, emphasis added).
>
> "*Useful space in teacher training*" (LAURA, 2019, emphasis added).
>
> "*A space to work in the teaching of Mathematics*" (ALICIA, 2019, emphasis added).

Let us observe, based on what the respondents presented, that there is a recognition of LEM as a "training space that contributes to the development of practices and experiences that are important for future teachers". There is also, in Jorge's speech, agreeing with what Lorenzato (2010) and Turrioni and Perez (2010) presented, advancing the understanding of this space as more than a "deposit of materials". On the contrary, by the answers presented, we understand LEM as a dynamic training space, both for future teachers and for their future students of Basic Education. In this space, as brought by Alicia, if "mathematics teaching works" and for this work it is important to know how these materials work and what role each one plays in the teaching and learning processes.

The work that Alicia referred to in her response leads us to an extremely necessary discussion: the establishment of relationships between didactic material and the mathematical object. We will take the use of games as an example. According to Brougère (2002, p. 6) "thinking about the relationship between gambling and education is more complex than it seems". This, in our understanding, is only possible for a professional who has adequate training.

In this direction, resuming the issues involved in the teaching of Mathematics, Alves (2001) presented this science as one of the most chaotic areas in terms of understanding the concepts. Therefore, even according to what the author presented, the use of different didactic materials would present itself as an aid in understanding many complex mathematical structures. Using different strategies and resources would be, as Silva (2014) pointed out, a possibility provided to students of Basic Education, to establish relationships between the concepts presented and their daily lives. For this, it is important to know in depth these materials in a movement of insertion in different educational realities. In the direction of this discussion, let us see what Maria Joaquina, Marcelina and Daniel answered.

> "*It is a space for the construction of knowledge, in which teachers can take their students, making the content more dynamic, and enriching teaching and learning activities*" (MARIA JOAQUINA, 2019, highlights).
>
> "*In my view, the Mathematics Education Laboratory is a space designed to support the realization of activities with the use of didactic materials, enabling a better process of teaching and learning mathematics*" (MARCELINA, 2019, emphasis added).
>
> "*An environment with materials that may assist in explaining content that is a little abstract*" (DANIEL, 2019, emphasis added).

Starting from the excerpts previously presented and agreeing with what highlighted Rêgo and Rêgo (2010) and Lorenzato (2010), the LEM needs to be perceived as a space to work with several didactic materials and where the basic education student is offered the possibility of establish relationships between the concepts presented by the teacher and his daily life. It is not an exclusive space of the University, on the contrary, its presence within schools is important to assist the work of teachers who teach mathematics. We perceive, at that moment, as highlighted by Civardi (2011) and Varizo (2011), an important relationship that intercrosses LEM as a collaborative training space, with the teaching and learning processes of Mathematics as the main work object.

To theoretically support this issue, we will use the speech of Lorenzato (2010), who defines LEM as "a place for the creation and development of experimental activities, including the production of instructional materials that can facilitate the improvement of pedagogical practice" (LORENZATO,

2010, p. 6). Therefore, LEM needs to be perceived as "the center of the school's mathematical life" (LORENZATO, 2010, p. 6). In this sense, therefore, let us see what Carmen and Renê answered.

> "*It is a place where it has pedagogical resources that aim to allow teachers to make their classes more didactic. It is a place where teachers and students can expand their creativity*" (CARMEN, 2019, emphasis added).
>
> "*It is essential for the formation of the mathematics teacher, as it allows the development of activities for teaching practices in the classroom. The activities of the Mathematics Education Laboratory make it possible to research strategies for teaching mathematical content in a playful way*" (RENÊ, 2019, emphasis added).

In the excerpts previously presented, we noticed that two categories are presented as a result of the work at LEM: expanding creativity and perceiving mathematical content playfully. Although it is possible to make some approximations between these two categories (playfulness and creativity) it is important to signal them as different. Therefore, we will do an etymological analysis.

The word "ludic", as Santos and Cruz (2011, p. 9) pointed out, comes from the Latin ludus and means to play. This includes games, toys, and amusements, as well as the conduct of those who play, who play and have fun.

The etymology of the word "creativity" refers to the term create, from the Latin creare, which means, as Pereira, Mussi and Knabben (1999, p. 4) present us, "to give existence, to come out of nowhere, to establish relationships that were not yet established through the universe of the individual, aiming at certain ends ". We can see from this look at what each of the terms means, that these are two different things.

In this sense, it is up to us to present some pre-categories that can be raised to highlight the issues of playfulness within the LEM space. Therefore, for the activities proposed in the laboratory space to be taken by students as playful, it is important to observe whether there is freedom, interest, pleasure, fun, joy, and well-being in participation. It is necessary to guarantee and value the different ways of mathematizing (SILVA, 2014).

It is worth pointing out, also according to Silva (2014), that the issues raised refer to both the work of the Mathematics Education Laboratory, in the movement provided by teacher training, and to the work of teaching and learning Mathematics with students of Basic Education . In view of these two questions, another pre-category is presented, that of creation, without fear of making mistakes, and that of making mathematics understandable.

According to Kamii and DeVries (2009, p. 18), "just as each child has to reinvent knowledge in order to appropriate it, each teacher will need to build his own way of working"; only then will the "creative mismatch" occur (FERNÁNDEZ, 2001, p. 43), that is, instead of the subject adapting to reality, he needs to unseat the thinking, creativity and intelligence. This creative maladjustment process can be seen as the possibility for the subject, by his own logical structure, to deconstruct and build his conceptions, which results in an autonomous teaching-learning process. The LEM allows that to happen and that it happens, above all, from the principle of playfulness, that is, with pleasure for what is done.

2.2 How has the work done in this space influenced my training and future practice with mathematics?

Based on the discussions undertaken in the previous section, when respondents were asked about what they conceive of as a Mathematical Education Laboratory, it is evident that there is a recognition by research participants that the LEM is an important space for their initial training and future teaching practices. . However, when asked how the work done in this space influenced their training and future practice with Mathematics, they signal that

"*None. Because we did not enjoy anything and nothing was taught about what it contained and its purpose*" (CIRILO, 2019, emphasis added).

"*I don't remember using LEM*" (LAURA, 2019, emphasis added).

"*None*" (MARCELINA, 2019, emphasis added).

"*None, because I never used it*" (DANIEL, 2019, emphasis added).

"*None*" (CARMEN, 2019, emphasis added).

"*Being very true: none*" (ALICIA, 2019, emphasis added).

"*The construction of some teaching materials, such as activities of the Laboratory components of Teaching I and II. Perhaps the lack of equipment meant that teachers did not use this space more often. Thus, it did not have much influence on my training*" (JORGE, 2019, emphasis added).

"*In my training, unfortunately, there was little influence due to the lack of trained teachers to enable practical activities in the Mathematics Laboratory. I only used the Mathematics Laboratory for monitoring, but without making use of the laboratory objects, as a good part of these objects were outdated or were unsuitable for teaching Mathematics*" (RENÊ, 2019, emphasis added).

Based on what the research participants answered, we identified that, although the university had a Mathematics Education Laboratory, it was not explored, for the most part, at least as part of the training and approximation movement with Basic Education schools.

Thus, in view of the non-immersion of the respondents in this space, throughout the course, they are not able to directly perceive the influence for their training or future practices. Even knowing what this space is and recognizing its existence, experiences that contributed to the constitution of the knowledge necessary for teaching were not promoted.

Jorge, in his reply, highlights that he participated in a movement of production of didactic material during the curricular components of the Mathematics Teaching Laboratory I and II. These components, in their menus, as highlighted by Bahia (2011), are responsible for presenting and discussing

> ... problem situations of the teaching-learning process of Mathematics in Elementary School, diagnosed from classroom practices, having as theoretical support the assumptions of Mathematics Education. It analyzes, discusses, and elaborates proposals for planning, evaluation, didactic resources, and other instruments of intervention in the teaching-learning process of Mathematics, in this teaching segment (BAHIA, 2011, p. 193).

The curious thing is that not all students meant working with these components in this way. Most students, on the contrary, were unable to perceive LEM influences for their training and future practice. This is often due to the way the curriculum components are meant. Although the menu is clear about classroom practices, the elaboration of intervention proposals and the creation of teaching resources, can take place in other spaces, such as the university classroom, even though the university has an LEM.

We decided, therefore, to ask them about what kind of materials this training space should have. Let's see what they answered:

"Resources that favor teaching and learning" (LAURA, 2019).

> "All materials that can be used for teaching and learning mathematics, examples: teaching materials, mathematical games, instruments built by students, etc." (JORGE, 2019).
>
> "Golden material; computer; purchase and sale simulation objects (fair, for example, to help teach the four fundamental operations); abacus, etc." (CIRILO, 2019).
>
> "Mathematical Games" (MARCELINA, 2019).
>
> "Computers, games and books" (ALICIA, 2019).
>
> "Research materials such as computers, Arduino boards for robotics, geometric solids, algebraic materials, etc." (RENÊ, 2019).
>
> "Tables with chairs, computer, whiteboard, bookcase, mathematical games, geometric materials, play materials and etc." (MARIA JOAQUINA, 2019).
>
> "Objects with representation of geometric figures (flat and spatial). Objects built from practical classes, etc." (DANIEL, 2019).
>
> Concrete materials involving mathematics (CARMEN, 2019).

It is visible, with the answers presented, what kind of resource is expected to be found in this space. The presentation of these different materials signals the type of training that is expected: one that relates mathematics to the various everyday situations and playful-manipulative materials, from physical to technological materials. In addition to industrialized materials, Daniel highlights the need for materials built by the group. In this direction, it is important to consider what highlighted Silva (2020b), about immersion in Basic Education schools for the construction or adaptation of materials that meet the learning needs and expectations of the class. This is, according to the author, a complex movement and, for that, the LEM plays an important role.

While recognizing the importance that LEM occupies in the teaching and learning movements of Mathematics, especially for Basic Education, all participants highlighted that in the schools where they developed supervised internships, throughout the course, there were no such laboratories. Some students reveal in their answers the great difficulty in finding materials that support them in the process of teaching mathematics.

Still in relation to what we discussed earlier, Jorge points out that "the use of materials in the laboratory can help in working with the contents". According to the student, due to the perceived continuity of his response, the university's LEM needs to make available materials that help intern students, for example, when planning and experiencing their classes. The construction of teaching materials, still according to Jorge, is an indispensable training activity for this space as it contributes to future practices to be developed in professional practice. All participants, therefore, consider LEM to be an important space for training, and this was stated verbatim.

Final considerations

This article, the result of a qualitative case study investigation, sought to broaden the perspective on the following research questions: How do students in the Mathematics degree course conceive LEM? How was this space presented during your initial formation process? What is the influence (s) of the work done in this space for your training?

In this sense, due to the very nature of the research carried out, the movement of the investigation itself is sought, to improve the work carried out in the Mathematics Education Laboratory of the

University, contributing to the training of future teachers and, consequently, to the teaching and learning processes of Mathematics. We need to consider that we only discover the nature of some things when we try to change them

Although the author of the text only took on the work with the LEPEM (Laboratory of Studies and Research in Mathematical Education) of UNEB only in 2019, it is pertinent to know what the students of the course perceive in this space and how the work was being developed. This, in a way, allows a movement of planning and action that, based on the reality of the academic community, means the training of teachers who teach mathematics, graduated from Campus VII of the university. It is important to meet the demands that are made by the research participants themselves.

In this sense, therefore, in view of the questions that guided the writing of this research text, we consider that the graduating students perceive the LEM as an important initial training space and, in addition, necessary for future teaching practice. They recognize it as a place that can contribute to the mathematization movement and to the construction of creativity and playfulness. The "classroom floor" and the different educational realities need to be considered for your activities.

Therefore, for the LEM to fulfill its training role, it is necessary that the university, in its collegiate instance of course, assume the commitment to establish the necessary relations with Basic Education and with the promotion of activities that insert future teachers in different developed practices. A point highlighted by the study is the need for students to get to know LEM throughout their degree and, above all, for it to be part of the different practices that take place in the course.

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