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ARTIICLE

1+1+1 STRUCTURE IN MATHEMATIC'S TEACHER TRAINING COURSES: A NEW TREND?[1]

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ABSTRACT: This work aims to present one of the main results obtained at a master's level (SILVA, 2020), alongside recent studies related to the theme. Our research had as its scope the study of statements about the permanence and the non-permanence of students in the Mathematics Teacher Training course (LM) at UFRGS. Michel Foucault's Discourse Analysis (2013) structured the research theoretically and methodologically. The research data was constructed through questionnaires and interviews with students and former students of that course. When investigating these speeches, we noticed the manifestation of the existence of three lines of training promoted by the same LM course, which we call: theoretical training in mathematics, theoretical training in education/mathematics education, and practical training; each one with its statements and discourses on education (mathematics), which could even be excluded (SILVA, 2020). Despite referring to a specific context and originating from the application of Discourse Analysis, this result speaks to one of the findings of Zaidan et al. (2021) study, based on Pedagogical Projects of LM courses from various public higher education institutions in Brazil: that Mathematics Degrees seem to be divided between mathematical training, didactic-pedagogical training and professional practice; and with the observations of Moreira (2012), regarding aspects that also characterize the presence of the "3+1" structure in LM courses.

Keywords: teacher training lines, "3+1" teacher training structure, discourse analysis.

FORMAÇÃO 1+1+1 EM CURSOS DE LICENCIATURA EM MATEMÁTICA: UMA NOVA TENDÊNCIA?

RESUMO: Este trabalho tem como objetivo apresentar um dos principais resultados obtidos em uma pesquisa em nível de mestrado (SILVA, 2020), ao lado de estudos recentes relacionados à temática. Nossa

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pesquisa teve como escopo o estudo de enunciados acerca da permanência e da não permanência de alunos no curso de Licenciatura em Matemática (LM) da UFRGS, com embasamento teórico e metodológico na Análise do Discurso de Michel Foucault (2013). Os dados da pesquisa foram construídos por meio de questionários e entrevistas junto a alunos e ex-alunos do referido curso. Ao investigar essas falas, percebemos a manifestação da existência de três linhas de formação promovidas por um mesmo curso de LM, que denominamos: formação teórica em matemática, formação teórica em educação/educação matemática, e formação prática; cada uma com seus próprios enunciados e discursos sobre educação (matemática), que poderiam até mesmo se excluir (SILVA, 2020). Apesar de referir a um contexto específico e de ter origem na aplicação da Análise do Discurso, este resultado conversa com uma das constatações do estudo de Zaidan e outros (2021), a partir da consulta a Projetos Pedagógicos de cursos de LM de várias instituições públicas de ensino superior do Brasil: a de que as Licenciaturas em Matemática parecem estar divididas entre formação matemática, formação didático-pedagógica e a prática profissional; e com as observações de Moreira (2012), quanto a aspectos que caracterizam ainda a presença da estrutura "3+1" em cursos de LM.

Palavras-chave: linhas de formação de professores, formação 3+1, análise do discurso.

FORMACIÓN 1+1+1 EN CARRERAS DE GRADO EN MATEMÁTICAS: ¿UNA NUEVA TENDENCIA?

RESUMEN: Este trabajo tiene como objetivo presentar uno de los principales resultados obtenidos en una investigación a nivel de maestría (SILVA, 2020), junto a estudios recientes relacionados con el tema. Nuestra investigación tuvo como alcance el estudio de los enunciados acerca de la permanencia y la no permanencia de alumnos en el curso de Licenciatura en Matemáticas (LM) de la UFRGS, basado en teoría y metodología del Análisis del Discurso de Michel Foucault (2013). Los datos de la investigación se construyeron mediante cuestionarios y entrevistas con alumnos y ex alumnos del curso. Al indagar estos discursos, identificamos la manifestación de la existencia de tres líneas de formación promovidas por el mismo curso de LM, que denominamos: formación teórica en matemáticas, formación teórica en educación/educación matemática, y formación práctica; cada una con sus propias enunciaciones y discursos sobre la educación (matemática), que podrían incluso excluirse entre sí (SILVA, 2020). A pesar de referirse a un contexto específico y de provenir de la aplicación del Análisis del Discurso, este resultado conversa con uno de los hallazgos del estudio de Zaidan et al. (2021), basado en la consulta de Proyectos Pedagógicos de cursos de LM de varias instituciones públicas de educación superior en Brasil: el de que las Licenciaturas en Matemáticas parecen estar divididas entre la formación matemática, la formación didáctico-pedagógica y la práctica profesional; y con las observaciones de Moreira (2012), en cuanto a los aspectos que también caracterizan la presencia de la estructura "3+1" en los cursos de LM.
Palabras clave: líneas de formación docente, estructura "3+1", Análisis del Discurso.

A PRESENTATION OF OUR RESEARCH

This article aims to present one of the main results obtained in research carried out at the master's level (SILVA, 2020), alongside recent studies related to the topic. The research aimed to answer the following question: "What statements arising from the circumstances of taking the Degree in Mathematics course at UFRGS, based on the statements of its students and former students, permeate the permanence and non-permanence of undergraduates in the course?" (SILVA, 2020, p. 12). To do this, we took Foucault's Discourse Analysis (2013) as a theoretical and methodological basis, from which we analyzed data obtained through an online questionnaire and interviews. We expose, below, the appropriation we made of Discourse Analysis, concerning Foucault (2013) and Fischer (1996, 2013), and the construction and analysis of data, to then bring the results that we will focus on.

Discourse Analysis assumes that discourse is not a synonym for what is said, which is expressed in a text or a language, but as a practice. Discourse is what gives meaning to what is said, the truths that support what is said, which represents what is allowed to be said at a certain time, a certain place, and a certain situation (FOUCAULT, 2013). In Fischer (2013), we see that discourse can be understood as a struggle: "struggle for the imposition of meanings, for the interpellation of subjects, for the conquest of voice or economic advantage" (p. 146). In other words, the interest in maintaining a current discourse can have several origins, and, more than that, it allows us to understand that the discourse is not random or without purpose but is always linked to one (or more) intention(s).

> It is necessary to renounce all these themes whose function is to guarantee the infinite continuity of the discourse and its secret presence in the game of an absence that is always renewed. It is necessary to be ready to embrace each moment of the speech in its irruption of events, in that punctuality in which it appears and in that temporal dispersion that allows it to be repeated, known, forgotten, transformed, erased even in the smallest traces, hidden far from all eyes, in the dust of books. There is no need to refer the speech to the distant presence of the origin; it is necessary to treat it in the game of its instance (FOUCAULT, 2013, p. 31).

Thus, questioning what is said, becomes a priority for our analysis to arrive at different ways of meaning a message. We understand that the search for the meanings of what is expressed can present an endless number of paths and possibilities, which has put us in a position to recognize the limitations of our analysis given the complexity of the study of discourses, which requires rigorous argumentation and, to so, diverse and extensive source of speeches (utterances). Therefore, we chose to be guided by the construction of statements, since these can constitute smaller units that make up the discourse and offer contributions to their identification, when together with other statements that relate to a given object. Regarding the relationship between the unity of discourses and the object of the discourse (or the statement), we can bring the following excerpt from Foucault (2013), referring to his studies of discourses on madness, one of the backgrounds for the development of his theory:

> [...] the unity of discourses on madness would be the game of rules that define the transformations of these different objects, their non-identity through time, the rupture that occurs in them, the internal discontinuity that suspends their permanence. Paradoxically, defining a set of statements in terms of their individuality would consist of describing the dispersion of these objects (FOUCAULT, 2013, p. 40).

The search for statements and discourses follows paths of unraveling speech, which starts to be treated as an event that occurs through a set of circumstances, and which can then have its meanings multiplied.

In our analysis of written and spoken reports from students and former students of the Mathematics Degree (LM) course at UFRGS, we question the meaning of what is said, its assumptions, and its chains. We look for other possibilities of enunciation and statements and we also consider the choices made by speakers when saying what they said, the words and paths used and not used in their speech, which can lead us to something that they exclude, that they fail to mention and that it says something by itself. In the analysis of the discursive field, according to Foucault (2013),

> [...] it is about understanding the statement in the narrowness and singularity of its situation; to determine the conditions of its existence, to set its limits most fairly, to establish its correlations with other statements to which it may be linked, to show that other forms of enunciation it excludes (p. 34).

Questioning what is said does not mean doubting the speaker. On the contrary, we give such importance to its truths and the objects that appear in it, that we look for what sustains them, their conditions of existence and appearance (FISCHER, 2013, p. 137). Regarding the object of discourse, we can clarify that the external relationships and institutions interested in maintaining a discourse "do not define the internal constitution of the object, but what allows it to appear, to be juxtaposed with other objects, to be situated with them, define their difference, their irreducibility and, eventually, their heterogeneity" (FOUCAULT, 2013, p. 55). Thus, we conducted our analysis by searching for the "how". We ask how these truths and objects, and everything we discover about them, relate to those of other speakers and how they establish their conditions of existence, appearance, juxtaposition, difference, irreducibility, and heterogeneity, among others that can be observed. Since it is possible to build one or more networks between objects and events of speech, we look for regularities, repetitions, cause and effect relationships that can lead to utterances.

It is not, therefore, a question of investigating an "origin" of speech, what is "behind" speech, or even assuming it is a fact that is reproduced over time, but of considering what is in the complexity of speech, what it is constituted of and in what form.

To conclude our approach to our theoretical-methodological support, we bring an excerpt from the opinion written by Fischer (2020), which succinctly explains our intentions for the analysis carried out:

> [...] Enunciative Analysis multiplies the things said and extracts statements, most of which are very rare. But never clean, pure, not used to fights and clashes. When describing them, we form provisional units and then undo them, to make them more complex, problematizing what, at first glance, seemed so "clear" and defined. Also, the idea is not to find units and then interpret them: the idea is to describe this complex network of discourses, to refer to the episteme of a time, to the strength and power of certain discourses that constitute truths, and that at times it is so difficult to undo (FISCHER, 2020, p. 2, 3).

Based on the basis exposed above, we systematized the performance of our analysis in the form of questions directed to the statements, and speeches of students and former students of LM at UFRGS that consisted of research data to facilitate the understanding of the process that culminated in the consolidation of results:

- What objects are brought up in this speech?
- What assumptions/truths/meanings are assumed in this speech, concerning these objects? And what assumptions/truths/meanings are not assumed in this speech, about these objects?
- What set of assumptions/truths/meanings about a given object can we gather from the analysis of the statements? What does the variety of assumptions/truths/meanings gathered in this set tell us?
- Is it possible to identify what the appearance of assumptions/truths/meanings or objects found in the statements is related to? In other words, is there any specific circumstance (regarding the speech, the question asked, the subject, the moment of speech...) that governs its appearance in the speeches? Which one?
- Are there assumptions/truths/meanings that appear in the network of meanings of more than one object in the statements? How do they relate?

- What statement(s) can we extract from a set of assumptions/truths/meanings associated with an object or more objects, considering everything that has been studied about their conditions of appearance, repetition, and exclusion in the previous questions?

The analysis data was constructed after approval of the project by the UFRGS Ethics and Research Committee, through an online questionnaire and interviews with students and alumni of the UFRGS LM course. Before that, some studies were carried out that included: notes on the constitution of the LM course at UFRGS; references about student dropout from the course in institutional publications and research; and interpretation of quantitative data on permanence, non-permanence, and the flow of students on the course (SILVA, 2020), which helped us understand our research scenario.

The questionnaire consisted of objective and essay questions, prepared based on studies on evasion by the American researcher Vincent Tinto (1975, 2017) and Brazilian research in the area: Barroso and Falcão (2004), Silva Filho and others (2007), Araujo and Vianna (2011) and Lima Junior (2013), as detailed in Silva (2020). The enunciative analysis supported by Foucault (2013) was based on the answers to the questionnaire's essay questions: "How do you describe UFRGS?"; "What are the successes you had in the mathematics degree course?"; "Why did you have difficulties in the Mathematics degree course?"; "At any point did you have difficulty leaving the Mathematics Degree course? Why?"; "How do you describe the Mathematics Degree course?"; and "If your academic career were a movie, what movie would it be? Why?" (SILVA, 2020), and about the interviews. With the support of the UFRGS Mathematics and Statistics Undergraduate Committee (Comgrad Mat/Est), the questionnaire was sent to 412 people with an active connection with the course, 911 dropouts, and 213 graduates from the course. We considered 190 completed questionnaires. Each questionnaire was cited with the code "Q+number assigned to the questionnaire", according to the order of participation in the research. We emphasize that the italics made in direct quotations are always ours, and not those of the participants.

In total, we had four interviews: with a graduate of the LM course at UFRGS; with a former student who did not complete the course; with a former student who did not complete the course and did not attend any classes; and with a student. Each of the interviews was carried out individually, with authorized audio recording and lasting one to two hours. Each person interviewed received a fictitious name, and their statements are occasionally quoted with our emphasis. The questions (open questions that encouraged the participant to tell about their trajectory, focusing on the proposed subjects) were organized into four moments: the one that focuses on the approach of a period before entering the course (training in basic education, study habits, choice of undergraduate course, expectations regarding the course and profession); what focuses on admission and the beginning of the course at UFRGS (student's arrival at the course, learning, relationship with teachers, colleagues and staff, study habits, participation in activities outside the course, interaction with the social and cultural environment of the University, opportunities and participation in activities internal to the course and about attending the course: travel and schedules); which proposes that the participant tells about their academic trajectory in the course (resuming previous aspects, discussed with a focus on entry and beginning of the course, for the course of the course trajectory); and which asks the participant to read the current description of the Mathematics courses, taken from the UFRGS website, and comment on its suitability for the Mathematics Degree course undertaken and on possible modifications to the course.

1+1+1 TRAINING AS A RESULT OF RESEARCH

When investigating the statements in the speeches of students and former students of the LM course at UFRGS, we noticed the manifestation of the existence of three lines of training promoted

by the same LM course, which we call: theoretical training in mathematics, theoretical training in education/mathematical education and practical training. We attribute the name "1+1+1 training" to this structure, in which each "1" corresponds to one of the training lines but is not related to the portion of disciplines associated with each of them within the course, as in the name of the structure "3+1". About this "3+1" format, already widely known, we bring an excerpt from Moreira (2012):

> As we know, 3+1 was the nickname received, at the birth of teaching degrees in Brazil (mid-1930s of the 20th century), the following structure for the schoolteacher training process: three years of training in specific content (Mathematics, in our case), followed by a year of Didactics (teaching). Sometimes, this structure is also referred to by the (perhaps not so popular) formula Licentiate = bachelor's degree + Didactics [...] (p. 1138).

In this statement, it becomes clear that the expression was not only used in the context of mathematics degrees, or at UFRGS. The author also mentions the conditions of existence of the term, based on the concepts associated with teaching and learning, at the time it was created: "Teaching was seen, essentially, as transmitting knowledge from the teacher to the student. Learning was receiving this transmission without much noise" (MOREIRA, 2012, p. 1138, 1139). Thus, it would be necessary to train the teacher first on the content to teach and then on how to "transmit".

Although it is common to set up LM courses according to training lines (the interlocution of which would occur, in many course proposals, through integrative disciplines (MOREIRA, 2012; GARCIA, 1995; ZAIDAN et al., 2021), we notice and want to highlight that each of the lines that we identify and the one we constitute the "1+1+1 formation" is constituted independently, which ends up promoting its statements and discourses about education (mathematics) and these can even exclude each other (SILVA, 2020). We make a joke or play on words with an expression already consecrated in another time, without referring to the years of duration of the course or the set of disciplines gathered there, but rather to the existence of independent training lines.

The option for the expression "1+1+1", using a simple "arithmetic construction" as a visual resource, manages to summarize many of the ideas contained in its formulation, without failing to rescue the origins of its structuring. Furthermore, as we reflect from Zaidan et al. (2021), this arithmetic format, to which other particularities of the course studied in our research are not attributed, can apply to training offered by other LM courses in Brazil, even if there is not a systematic distribution of these courses across the country and that each course assumes its way of articulating the Guidelines in Pedagogical Course Projects (PPCs), as we will comment below.

We begin by exposing what we understand to constitute a line of training within the UFRGS LM course: a set of academic disciplines/activities that share the same approach to student training, which should, together with others, consolidate mathematics teacher training. The training lines we constitute here do not come from the Pedagogical Project (UFRGS, 2018) or the course curriculum (UFRGS, 2022), but, as we said, they are outlined based on the perceptions expressed by students and former students who contributed to our research. Although, in each line of training constituted in this way, we can recognize certain subjects in the curriculum, it does not exactly characterize each approach. Furthermore, we can signal that we consider possible the contribution of groups of teachers who are also identified with each of these approaches along the lines that we recognize from the students' statements. This aspect, however, was not the object of the research and can be considered in subsequent studies, in continuation of the investigation discussed here.

The identified training lines are established:

> [...] theoretical training in mathematics[2] (associated with the course's mathematical training subjects), theoretical training in education/mathematics education[3] (offered by subjects at the Faculty of Education), and practical training (offered by the Teaching-learning Practice Laboratory subjects in Mathematics, Internship in Mathematics Education and, based on the curriculum implemented in 2017, Mathematics Education and Teaching) (SILVA, 2020, p. 190-191).

Reaching the statement of the existence of a 1+1+1 training became possible through manifestations that assume as truth an independent existence of each of the training lines, that is, the participant's possibility of referring to one of these lines, without talking about anything else, such as:

> "[At any point did you want to leave the mathematics degree course? Why?] Yes. It is a course that does not encourage its students to try teaching practice, since, upon having the opportunity to teach, the graduate is prevented by his teachers from continuing with the experience of making mistakes and getting things right, of visualizing the difference. Furthermore, I think that **pedagogical chairs** should be at the end of the course, as they contribute to teacher training and end up being forgotten in the classroom." (Q26).
> "[How do you describe the Mathematics Degree course?] Good course. Good **education subjects and mathematics education**. Inflexibility in the face-to-face nature of **technical** subjects harms the progress of the course." (Q52).
> "[How do you describe the Degree in Mathematics course?] Difficult, complete in the **educational practical** and extensive in the **pure mathematics**." (Q61).
> "A very complete course, very focused on the development of a human teacher interested in **teaching** and not just **technical**" (Q154).

This distinction persists, even though the corpus of analysis is composed of people linked to different curricula of the LM course at UFRGS. Only two research participants were linked to curricula in force until 1999 (SILVA, 2020, p. 107), and mentions about the curriculum or training offered by the course were more frequent among more recent entrants to the course.

As we mentioned in Silva (2020), in the questionnaires brought above, we have examples of how we highlight "pedagogical" disciplines, "education and mathematical education" (which compete with what we call theoretical training disciplines in education/ mathematics education), "part of practices in education" (which corresponds to what we call practical training subjects), "technical subjects" and "pure mathematics" (which correspond to what we call theoretical training subjects in mathematics) state that there is a characterization that is specific to each of these terms. However, this aspect is not enough to say that each of these lines promotes distinct statements or offers distinct training to mathematics graduates. Nor are statements like that of Q154, a 2017 entrant, sufficient to accept the homogeneity of training, since, as we saw in Foucault (2013), the subject is not capable of considering the totality of discourses (and, consequently, of statements) that cross it. Thus, we seek to support the statement of the existence of 1+1+1 training in the course, based on the presentation of statements related to each of the so-called training lines.

The first line of training we will talk about is theoretical training in mathematics. In our first chapter of analysis, we came across several statements that helped us construct this line, that is, that took it as their object of discourse, which we now expose in its dispersion.

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[2] Although, due to the way we chose to establish the names, subjects from departments other than Faced, such as Physics, could have been included under the heading of theoretical training in mathematics, we did not do so, since subjects from these departments were not characterized in the participants' statements. The silence regarding these subjects, however, may indicate a lack of prominence in the academic trajectories of the course by those who reach the stage where they are included in the curriculum.

[3] Although this association was expressed by students linked to different course curricula, we chose to use the current nomenclature of the subjects, according to the curriculum implemented in 2017.

Despite not being a course that trains mathematicians, the Degree in Mathematics has its relationship with mathematics evident, especially in the way in which its students can characterize their performance in the course when mentioning their successes: "At a good foundation in basic mathematics during high school and notions of pre-calculus" (Q169) and his difficulties: "I didn't like the math [mathematics] subjects to demonstrate, and that's the basis" (Q64); as well as when describing the course: "Difficult, massive, very theoretical [Course] and extremely different from the mathematics subject we have at school [...]." (Q90). These examples include perceptions about mathematics, mathematical knowledge, and mathematics learning taking on positions of reference for students on the course, on which they base themselves to assess whether they satisfy certain criteria of prior knowledge, aptitude, and taste for the course.

In mathematical training subjects, it is possible to identify other forms of enunciation that outline a particular way of looking at mathematics as an area of research, teaching, and learning. Difficulties in studying mathematics are highlighted in response to different essay questions:

> "[Difficulty in the course] **Excessive demands on demonstrations** and little practical application! **Memorize proofs of theorems** for what!!!! If you're not strong, you'll get sick!" (Q144).
> "[At any point did you want to leave the mathematics degree course? Why?] Yes. I found some of the **initial classes**, with **demonstrations**, very **difficult**." (Q137).
> "[...] **difficulties** already **rooted** in me in certain areas of mathematics" (Q32);
> "With serious mathematical **difficulties**" (Q71);
> "**Difficulty** in the exact area." (Q107).
> "I was **unprepared** for Mathematics, but **I did well** in my degree in **Pedagogy**." (Q90).
> "The fact **that I don't have a general understanding of mathematics**, demonstrations, conjectures, axioms, etc." (Q174);
> "**Weak foundation** in mathematics in elementary school" (Q5).
> "**I didn't study at home**...I didn't do exercises...**I just went to class**...I did that **until calculus three,** then that wasn't enough..." (Q111).

From these statements, we see that mathematics not only occupies a prominent place in the course, in comparison to other areas of knowledge that it encompasses but is also stated as a factor of difficulty for the student. The naturalized repetition of the association of mathematics with difficulty can contribute to the perpetuation of this statement among students as teachers trained in the course working in their classrooms, influencing their perception of various aspects of the activity and their teaching practice.

The following statements bring aspects that the respondents attributed to the successes in the LM course at UFRGS:

> "**Facility** with exact sciences" (Q75);
> "**'Innate'** aptitude for exact sciences" (Q100);
> "**Ease** with Mathematics" (Q103);
> "**Dedication**, **study and persistence**" (Q10);
> "**I'm good at mathematics**, and **I've always put a lot of effort** into the subjects" (Q1);
> "**Dedication** and **ease** of reasoning" (Q65).

Again, LM appears to represent and evaluate, as well as the student's performance in the course in training in mathematics (SILVA, 2020). Success is attributed to the student's innate talent or ability to learn mathematics (which can be characterized by different means: results in assessments or approval in subjects, for example), but also intense effort and dedication, comparable to exclusive dedication. This is associated with the statement of an area of knowledge that does not have space for everyone, or that initial difficulties in the course are decisive for the possibility of graduating. In promoting this statement, these mathematics training subjects end up excluding the statement that

mathematics learning could be understood as a continuous process, in which everyone is capable of learning.

The following statements talk about the teaching environment and practices in subjects in the theoretical training line in mathematics:

> [...] Another thing is that they have this capacity for innovation so much, they blame the traditional class so much, and te**achers who are not from the education field also teach traditional classes** [...] **math classes with**… which has to do with this content, the **content classes**, in a way they... they teach a plus, you know, what the math teacher has **to know more than the student**. These classes are usually taken with people who are studying **engineering**, studying a **bachelor's degree in mathematics**, it is not expressly an undergraduate degree. So, they are classes with different dynamics. These are classes with an **extremely traditional dynamic**, you know, a dynamic that I like.
> [...] I would describe [traditional classes] as **aligned classes**, everyone **sitting, looking straight ahead**. The teacher explains, **after the teacher's explanation**, **he opens a moment for doubts**, and then, uh... he gives **fixation exercises**, it would be the **homework topic**. (Interview with Bernardo).
> "The **pure mathematics** part could be explored in another way, for example, calculation could be taught in other ways, with **new resources**." (Q33).
> [...] rigidity of teachers in charging calls, even in more technical subjects. As I have a degree in **Civil Engineering**, many subjects are relatively easy for me, but what makes it difficult is the face-to-face nature of all of them and the inflexibility of the teachers in this regard" (Q52).
> [...] **we didn't have much time to study**, so we ended up now and then, at the weekend, getting together at someone's house to study, like, a week or two before the **test**, and we were **very busy to return the lists**, a question of doing the work, because most of us, at least of the group of friends I had there, which was maybe 7, 8 people, uh, worked a lot, **so there was no a time** (Interview with Augusto).
> "[the course] **was nothing like what I imagined** and, at the beginning, without support from teachers and the university. **The subjects were completely different** and with **a mathematical language unknown to most of us**, as it was the beginning of many of us at the university." (Q62).

Regarding the forms of teaching, assessment, and learning in theoretical training subjects in mathematics, the speeches consolidate an environment of predictability, with expository classes, rare spaces for dialogue (reserved for moments of solving exercises or clarifying doubts), and a focus on the mathematical content, which also appears to be static: once learned in an Engineering or Bachelor of Mathematics course, nothing new would be expected to be learned in the LM course. Despite this, the approach to mathematics in undergraduate courses appears to be different from that experienced by students in basic education.

The teacher-student relationship also appears in the statements and is characterized by decisions that are made unilaterally by the teacher and focused on the exposure and evaluation of the content covered.

The second line of training addressed is theoretical training in education/ mathematics education. This line was stated by the participants as specifically related to subjects promoted by the School of Education (Faced)/UFRGS.

> "[...] I remember **Faced subjects**, in which there was a **whole discussion** about [...] **the teacher explaining** what that was, which would be the best nowadays or not, but the class was there in the **traditional** way as always, in **banking education**, for example. So, there was this example that was shown, **a new perspective of education**, of teaching, was shown, **while an old one was used to show this new one**, right? Of course, sometimes there was, sometimes there was a justification that, well, in that part... And **I understand nowadays that the issue is not just using a new one, but diversifying**, but some people don't even have this diversification. So, this is the criticism I have in **some teachers that preached a way of teaching and when they arrived in the classroom, it was that way that they criticized so much**." (Interview with Augusto).

> "The **Faced subjects**, in the first semester [pause] which were quite complicated, right [pause], which I thought were kind of innocuous, let's say, that didn't interest me that much [pause]. [Researcher asks: what failed your expectations at the beginning?] Well, firstly, they were preparing me to teach, **but I only entered the classroom in the third semester**. And I went with a partner, with a colleague, to the Colégio de Aplicação. That was something that made me a little irritated [...]. I've already had contact with classes, so **I'm able to take a class** and they also left me with my hands tied, that **we can't get the student's attention in a certain way**, **we can't be the holders of knowledge**. In the first semester, they came, in the first and second, with the things of Piaget, Vygotsky, and Paulo Freire **and this was the opposite of what I had experienced at school.** They applied the opposite to me and it's the way I learn the most, these games... **These dynamics that are done in the classroom**, I always... even since I was a child, when the teachers did it, I found it a bit boring. **I wanted a formal explanation from the teacher**, **fixation exercises at home**, so I know what I'm doing, a topic, that they ask us not to give, and proof, to evaluate what you learned, and what you didn't learn. **At UFRGS, it's a different proposal, like breaking standards**, you know? My first school tried to do this, and the education was very outdated, compared to private schools, I remember that... So, in a way... T**hey also ask us to innovate, innovate, innovate and they don't tell us how this do, right [...] as if the traditional class wasn't good**, it was **horrible**, **the students didn't learn**. **As if the tests applied also had no value** [...] so that was what drew a lot of attention, negatively, to UFRGS.
>
> [...] **we see Piaget, Vygotsky, Paulo Freire** and who… uh, try them to teach things that, as I said before, not even UFRGS applies. So, **it's normally a class that we**... uh, **we make an oval around the room**, **we make a circle, it's a more open class**, it's a class that **normally doesn't have a written test** [pause], it's a class... So, if you see, **the structure** [of the traditional mathematics class] **is completely different**, from beginning to end, and many, many proposals are also presented in these classes, very different proposals" (Interview with Bernardo).

In general, the statements show that "Faced" subjects state, through the content covered, "new" and "diversified" ways of teaching, of "breaking patterns" and "innovating", which "depend on the student" and, therefore, oppose the practice of "banking education" (as used by Paulo Freire) or a "traditional" form of teaching. In addition to the theoretical content covered, based on the statements that mention the holding of "debates", "discussions" and, in Bernardo's words, a class in which "an oval is made around the room, a circle is made, it is a more open class, it is a class that normally does not have a written test" as a characteristic way of conducting "Faced" classes, there is a reference to opposition between "traditional teaching" associated with training subjects in mathematics and teaching in theoretical training in education/ mathematics education. We recall that teaching in the "traditional" modality is described by Bernardo as: "classes lined up, everyone sitting, looking straight ahead. The teacher explains, after the teacher's explanation, he opens a moment for doubts, and then, uh, he gives fixation exercises, it would be the homework topic" (SILVA, 2020, p. 194).

These statements seem aligned as theoretical training in education/mathematics education offered to undergraduate students, as well as bringing elements of the promotion of a statement for the training of an innovative teacher-researcher (according to the combined description of the LM and Bachelor of Mathematics courses at UFRGS, in the University webpage[4]), especially given the search for "diversification" of classes and their student-centeredness (SILVA, 2020, p. 163,178).

It is no coincidence that we use the term "theoretical" in the name of two of the training lines found. This choice comes from the frequent opposition between theory and practice, in the statements of research participants, and the meanings attributed to each of these terms. While mathematical theory or education/ mathematical education is placed in a position far from teaching, practice is perceived as capable of contributing to teacher training. This aspect not only highlights the difficulty in perceiving the applicability of the theoretical knowledge developed during the course, but it is also perceived as possible to renounce theory to practice teaching. In other words, the teacher's role

[4] UFRGS webpage: http://www.ufrgs.br/ufrgs/ensino/graduacao/cursos/exibeCurso?cod_curso=335.

moves away from being described as a professional activity that requires specialized knowledge. At the same time, reducing teaching activity to classroom practice detaches it from moments of planning, evaluation, and the performance of a teacher-researcher, relegating it to an execution-only activity.

> "[How do you describe the Mathematics Degree course?] It is a well-structured course, but we have subjects that must be changed, we must rethink the **usefulness of FACED** (or its teachers) in the curriculum and **implement the use and encouragement of technology** in classes in addition to mathematics and technology education. The computer class in elementary mathematics contains software that should be replaced." (Q8).
> "The course is good, the problem is FACED, as they are very biased towards philosophy. **Education could be more applied**." (Q15).
> "**Professional training is traditional**: the authors mentioned are foreigners and from a long time ago, there is no mention of the important Brazilian educators (apart from a few mentions of Paulo Freire and Darcy Ribeiro), nor the important Brazilian schools of the 20th century and XXI, and **the paradigm used in classes is still that of instruction**" (Q37).
> "[If your academic trajectory in the Mathematics Degree course were a movie, what movie would it be? Why?] I don't remember any movie title, but the trajectory had a script. At first, I was very interested in calculations, performing, and understanding mathematical questions. Over the years, **from the moments of practice with students**, I became more interested in education and **started to miss the initial courses in education**. It was little used by me. **The subjects related to the area of mathematics** were no longer so important since **I would not use those calculations in my profession** as a primary school teacher." (Q61).
> "[UFRGS:] an institution **that prioritizes research over education** and therefore its **undergraduate courses prioritize training a researcher rather than a teacher**. [...] Great course [Degree in Mathematics], but it didn't work for me because it's a course **that seeks to train mathematicians** before teachers." (Q80).
> "[Course] **Difficult, massive, very theoretical** and extremely **different** from the **mathematics subject we have at school**." (Q90).
> "[How do you describe the Degree in Mathematics course?] **It prepares the student** to be a **great teacher** who is up to date with teaching and learning trends" (Q156).

In addition to the misunderstanding about the contribution of theoretical training subjects for mathematics graduates, the geographical distance (subjects offered on campuses in different and distant areas, in Porto Alegre/RS), the theoretical and methodological distance between mathematics training subjects and subjects of the educational field are manifest as contributing to the misunderstanding of the course objectives by students. The statements also bring the practical nature attributed to the teaching profession and expected by students in the training of this professional, a criterion that they evaluate the potential of the course for the preparation to practice for the profession, as is noticeable in the statement "it didn't work for me", by Q80 (SILVA, 2020, p. 195).

There is also, in the previous statements, the aspect of the search for usefulness of what is learned and the misunderstanding of learning objectives, both in mathematical theories and theories in the field of education. However, it is noted that mathematical theories carry the weight of a single, unquestionable, static and definitive truth (as seen in previous paragraphs on theoretical training in mathematics) and, therefore, immune to ideologies (although we understand that this perception is already an ideological position regarding mathematics); while theories in the field of education (mathematics) are questionable, replaceable and likely to become obsolete, as well as giving an innovative aspect to the course (SILVA, 2020, p.195).

> "[How do you describe the Degree in Mathematics course?] Relatively difficult, but also captivating and very comprehensive (tracing **paths of education with mathematics - human and exact science** - beautifully)." (Q44).
> "[At any point did you want to leave the mathematics degree course? Why?] Yes, several times I wanted to leave the UFRGS degree course to undertake pedagogical training at another university. The course is not very attractive, especially for those who already have a bachelor's degree. [To what do you attribute the difficulties you had in the Mathematics Degree course?] My biggest **challenge is finding some connections in the course**. Some **classes seem**

> **aimless** to us students. **This lack of understanding** generates **demotivation** which, in turn, brings **bad results**." (Q51).
> "[How do you describe UFRGS?] Great opportunities and qualified teaching, but a certain **disconnect** between the school of mathematics and education (**FACED and IME**)." (Q61).
> "It is a course where there is the opportunity to truly **combine the learning of Mathematics**, from its foundations to more advanced subjects, with **Education** in its most diverse aspects: epistemological, pedagogical, cultural and social. It is not an easy course, which requires a lot of dedication." (Q118).
> "I feel that the **school of education** and the **mathematics institute** are **institutions that are completely indifferent to each other**, there is a total distance between the subjects, and we are faced with the challenge of learning to be a mathematics teacher and **neither of them covers the full complexity of this profession**. At no point did I feel encouraged to do so." (Q139).
> "[At what point did you want to leave the mathematics degree course? Why?] Yes. Honestly, the course follows a UFRGS degree parameter, as I have already taken two others. However, what I miss is **the lack of connection between the subjects**. Recently, the school has been discussing the inter and transdisciplinary role as a way of valuing the student's interest in learning to develop their protagonism. However, when I go to college to have this perspective/experience, **I feel that the traditional way is much more present when dealing with information and knowledge**. These are learning blocks and, often, the fact that I have a class at Faced and others in mathematics makes me wonder how this correlation is made. Many times, I witnessed educators saying the wrong ways to evaluate, in which they did the same procedure in the end. **There is a lack of connecting knowledge** and this is demotivating. Teachers, I believe, do not correspond with each other to create a connection of knowledge and leave the student to be **self-taught**. Few teachers try... Following this parameter, I often accept the proposal to simply conceptualize; but I follow another thought, which doesn't make the course logical." (Q189).

The statements bring up a disconnect between the subjects of Faced and the Institute of Mathematics and Statistics (IME), developed as "learning blocks" whose "objective" and "connection" are up to the undergraduates to find. The perception of the need and the possibility of tracing "paths" to unite "human and exact science" enunciates the separation between the areas of training, whose subjects do not appear to have a common objective among them, nor even clarity in the way they contribute to the formation of the mathematics teacher offered by the course. Given this, we highlight the search for understanding the applicability of the knowledge learned by the student and their manifest difficulty in associating what is covered in theoretical training in mathematics and theoretical training in education and mathematical education, which can influence how they have this training for their teaching practice. Some statements bring up aspects of the provision of this training by students when teaching.

> "Despite the **6 practical subjects** (internships and laboratories), **I missed** greater **interaction between theory and practice**." (Q7).
> "It is very much focused on **scientific training**, **and not on teaching in schools**." (Q23).
> "[...] I think that **pedagogical courses** should be at the end of the course, as they contribute to teacher training and end up being **forgotten in the classroom**." (Q26).
> "A difficult course, I would say. Pure mathematics could be explored in another way, for example, calculation could be taught in other ways, with new resources. I like the autonomous activities they have on the course. Teachers generally manage to carry out good activities. Furthermore, I think that a degree in mathematics is quite privileged about **contact at school**, which **happens from the first semester**. I like the way teachers work with mathematics teaching, however, what we learn in **education subjects** and what **we have in mathematics classes** seems quite **distant to me**." (Q33).
> "[Course] very focused on **knowledge beyond the professional performance** of the course graduate." (Q138).

Theoretical training, whether in mathematics or the field of education (mathematics), even when the student considers that it contributes to teacher training, may not understand its contribution to teaching practice, considering it scientific or beyond the role of the mathematics teacher (an event that further reinforces the dissociation between specialized knowledge and teaching activity). The

understanding of possible "forgetting" about the application of theoretical knowledge of a "pedagogical nature" also indicates an optional nature for its application in the role of mathematics teacher.

The last line of training consists of practical training.

> "[Course] very well done, the curriculum and order of subjects is very good, **only the laboratory subject could have been earlier**, as many are waiting to see if they really enjoyed teaching." (Q1).
> "You must have a lot of time available to dedicate to studies. The issue of **Laboratories is excellent** for teacher training." (Q4).
> "[Course] very good, great curriculum. **I felt prepared** when I graduated, **mainly due to the laboratories and internships.**" (Q60).
> "[Course] difficult, **complete in the educational practical** and **extensive in the pure mathematics**." (Q61).
> "[Course] very good! Here it is necessary to highlight that this course has **included subjects with teaching practices since the third semester** (at least it was like that during the period in which I completed my degree, from 2008 to 2011). Even today I see undergraduate courses in other areas where the subjects that involve teaching practices only take place in the last semesters." (Q63).

Teaching practice, in a mathematics teacher training course, appears as a means valued by students for their preparation and training, being appreciated when it occurs in the first semesters of the course and occupies a higher workload, compared to other degrees. Practical training is stated as offered to the student with the perception of being trained as a mathematics teacher, given the relationship between the profession and practice in the classroom, the student's lack of understanding of how theoretical training can contribute to their professional performance and the enunciation that places this part of the course as one through which the student can understand whether they "like" "teaching". Thus, we perceive a relationship between lack of knowledge about the objectives of the course and each stage and subject and dissatisfaction, demotivation, or perception of (un)utility of what is being studied by the student.

Regarding the perception that students and former students present about the course, we understand that it was influenced by the curriculum of the course they have or had links to and the subjects they had contact with. In the first case, among students entering from 2017 onwards, it would be possible to bring the perspective of a course in which they can have contact with practical training from Stage 2 onwards, both in the course offered during the day and at night (which is equivalent to the second semester of the course, for those who can take the subjects as the curriculum was designed). Respondents who joined before 2017 were able to practice at later stages. In the second case, we understand that students and former students may have different perceptions about the course, mainly because former students who did not complete the course cannot discuss all subjects, especially those involving practical training, which are not the initial subjects of the course. Therefore, despite maintaining the statement that students enter the course with a perspective that the teaching profession is substantially given by practice in the classroom, we cannot ignore that statements about the Mathematics Degree course being excessively theoretical may be associated with an early exit from the course, in which the participant had no contact with practical training subjects.

In addition to the content and teaching practice attributed to the areas of theoretical training, we understand, based on Krahe (2009), that the institutional structuring system at UFRGS, in departments, may disfavor communication between areas and, consequently, their integration into the offering training through the course.

Therefore, we conclude here our exposition on the statement that training in the course is provided by the existence of three lines of training. Theoretical training in mathematics, whose statements promoted learning mathematics refers to difficulty or the need for extreme dedication. Furthermore,

teaching performance concerns a teacher-student relationship that promotes the statement of centralization of the teacher and content in the classroom, contributing to the loss of space in the statement of the role and training of the teacher-researcher- innovative by the course. Theoretical training in education/ mathematics education can be stated as that capable of promoting, theoretically, the statement of the teacher-researcher-innovator, but which is also manifest as being capable of having its theoretical framework questioned. These two theoretical formations are stated to separate theory and teaching practice within the course. Practical training is considered to prepare the graduate for the profession.

THE RELEVANCE OF THE TOPIC AND SOME RELATED STUDIES

We defend the relevance of bringing the results of our research not only for scientific dissemination but especially for the current topic, whether in research on "evasion" of students in higher education or the study carried out by Working Group 07, from SBEM (ZAIDAN et al., 2021), on the PPCs of LM courses in Brazilian public higher education institutions.

> The motivations for carrying out this research arose from the debate about the initial training of Mathematics teachers highlighted by persistent and historical difficulties, such as the very high dropout rates from courses and the difficulties in adapting course projects to a universalized Basic Education perspective. (p. 13).

Below, we highlight some works that help us understand the importance of the training theme offered by undergraduate mathematics courses, about its relationship with the retention and non-permanence of students. Research on student dropout is not an unprecedented topic of study in Brazil, although there are still publications that mention the need for this research to agree on concepts and calculation formulas used in its approach (VITELLI, FRITSCH, 2016; LIMA JR. et al., 2019). In general, we perceive works that deal with student dropout in higher education as an institutional "problem", others understand that dropout is a "problem" to be solved by focusing on the student and others that assume dropout is not necessarily a problem, recognizing different trajectories in the academic environment. The studies cited below contribute to the representation of this panorama.

The work of Caliatto and Almeida (2020) deals with student performance and learning in the university context. The article consists of a production review that brings together 90 articles published from 2008 to 2018. From these references, the authors identify investigations that go beyond the variables of the student's self-regulatory capacity or the categorization of the student's learning approach (which can be classified as the search for a deep level of learning; a superficial or high-performance level). These other variables would be related to the student's personality, temperament, values, sociocultural origins, and socioemotional experiences and would be understood as possible influencers in their adaptation to the university context (Ibidem, p. 1857).

Therefore, this work understands that knowing these variables could help in reflecting on curricular projects, teaching practices, and institutional conditions in which the "teaching-learning-evaluation processes" occur (CALIATTO, ALMEIDA, 2020, p. 1858), relating the student's performance and relationship with the university context and the university's institutional issues. We highlight the institutional aspects gathered in the article (although, according to the authors, the minority of the works selected for the research are related to the theme): pedagogical resources, materials, equipment, available laboratories, teachers' working conditions, teacher training, and pedagogical skills, organizational aspects of the course, class schedule, class size, student's relationship as a scholarship holder (Idem, p. 1858, 1865). Finally, the evidence found by the authors leads them to confirm that "most of the factors relevant to understanding the phenomenon of learning, performance at university refer to

students' cognitive, metacognitive and motivational variables" (Idem, p. 1867) in which we think they are capable of being related to their sets of interdependent variables.

The article by Cardoso and Ludovico (2017) shows a longitudinal study of 27 theses and dissertations on evasion in higher education, published from 2011 to 2016. In the abstract, evasion is announced as a problem (and, throughout the text, it is referred to as a target of "concern", "treatment" and "combat") on which the work proposes to seek proposals for actions in the references consulted. As a result, the identification of diagnoses for the causes of dropout and the development of specific actions, associated with certain higher education institutions, and broad ones, dimensioned as public policies, stand out. The factors that influence the causes of dropout were organized into factors external to the institutions, individual student factors, and factors internal to the institutions. These last factors are given:

> 1. The infrastructure: availability of equipment, laboratories, quality of physical space, libraries and facilities, and maintenance of centers (in the case of distance learning);
> 2. Teaching staff: poor performance and interaction of teachers (face-to-face and/or tutors in the distance learning modality) demotivate the student, methodological practices are more qualified, motivating, and meaningful, student-teacher relationship;
> 3. Course administrative issues;
> 4. Socio-educational assistance: projects and actions to interact between the student and the institution: research and extension activities, curriculum/shifts, tutoring, assistance to low-income students (CARDOSO, LUDOVICO, 2017, p. 13-14).

The work of Lima Jr. and others (2019), in addition to questioning the use of the Graduation Success Rate (TSG-*Taxa de Sucesso da Graduação*) (BRASIL, 2005) and the Undergraduate Course Completion Rate (TCG-*Taxa de Conclusão dos Cursos de Graduação*) (BRASIL, 2007) to measure and thinking about student dropout in higher education, proposes other forms of measurement: the Longitudinal Evasion Rate (TLE-*Taxa Longitudinal de Evasão*) and the Longitudinal Retention Rate (TLR-*Taxa Longitudinal de Retenção*) (LIMA JR. et al., 2019, p. 166). This study states that indicators of student retention at university (when they do not undertake an undergraduate course following the trajectory established by the curriculum, including cases of mobility) are "potentially more sensitive to problems that can be solved by the institution such as the learning opportunities given to students, the offering of subjects, the curricular design of the courses, the acceptance of diversity, among others" (Ibidem, p. 165).

Coimbra, Silva, and Costa (2021) present a work that addresses student dropout in federal higher education based on a bibliographic study. The study focuses on the current definitions around the theme and its limitations and on reinforcing the importance of linking definitions and terms to the causalities of evasion, understood as a problem of national importance to be faced, but also as a phenomenon that serves as a social indicator.

After gathering articles as a bibliographical reference and discussing their approaches to problematizing the use of terms related to evasion in different institutions, the authors propose three categories related to the student's exit from a higher education course, other than through graduation: evasion by exclusion, evasion for insertion and evasion due to externalities. Among these categories, we understand that the first would be related to institutional issues, as it is described as: "the loss of the link with the course, institution or higher education system caused by institutional distortions in their didactic and curricular structures or by institutional incapacity to combat vulnerabilities and guarantee access to education" (COIMBRA, SILVA, COSTA, 2021, p. 14). We understand that the student's non-permanence in higher education cannot always be related to a single cause/category, but that understanding them can help in constructing the complexity that they can be related and in classifying those that are influential in the decision to leave a course.

Although the occurrence of institutional issues is not attributed to the greatest influence on students not remaining in undergraduate mathematics courses, we understand that their frequent

appearance in studies on the subject justifies their importance. We highlight that, in addition to the selection made for this work, other studies (SILVA, 2020, p. 13) have already problematized the influence of the course and the training offered on the retention of students in undergraduate courses, especially degrees (in mathematics). As an example, we have the pioneering study, carried out in the 90s by the Special Commission for Studies on Evasion in Brazilian Public Universities (*Comissão Especial de Estudos sobre a Evasão nas Universidades Públicas Brasileiras)*, composed of representatives and directors of federal higher education institutions and representatives of the Brazilian Ministry of Education, which points out factors that can contribute to the dropout of undergraduates such as: "**Factors internal to the institutions**: peculiar to academic issues; outdated, elongated curricula; rigid chain of prerequisites, in addition to the lack of clarity about the course's pedagogical project" (ANDIFES /ABRUEM/SESu/MEC, 1996, p. 29, authors' emphasis).

In Lima Jr.'s thesis (2013), we find another example when he relates possible curricular modifications and the increase in the chances of success in graduation (in the area of Physics) for historically marginalized students: "[...] the best strategy is one that preserves institutional provisions but identifies other variables that, when controllable, increase the chances of historically marginalized students enjoying the benefits of being successful and appropriating the dominant provisions in their institution" (LIMA JUNIOR, 2013, p. 249) and associates the curriculum as a manipulable variable that could be subjected to this strategy.

Another example is the findings in Paz's thesis (2016), which understands the curriculum as endowed with meanings embodied in course Pedagogical Projects, which, as they are politically and historically situated, produce truths and meanings and, thus, contribute to the conditioning of the daily life and academic trajectory of its students (SILVA, 2020, p. 34, 35). Regarding the constitution of the curriculum, the author states:

> [...] one of the serious problems of these courses [degrees] is in their curricular structure, with an imbalance between training in the specific area and training for teaching, in which there is almost no perspective of integrative training, to the extent that a small number of pedagogical subjects cannot 'talk' with the other subjects that make up the curriculum (PAZ, 2016, p. 173).

As this author also mentions, this characteristic – of a course not offering integrative training, specifically regarding degrees – is translated by the expression: "3+1 training", which has been recurring in documents and publications about its curriculum.

The multi-handed study, carried out by Zaidan and others (2021), was interested in analyzing mathematics teacher training courses, taking as a reference the National Curricular Guidelines for Initial Higher Education and Continuing Training (DCN- 2015), defined by Resolution 2, of July 1, 2015, of the National Education Council (CNE-*Conselho Nacional de Educação*). The research selected, for its sampling, according to previously established criteria, 172 training courses (initial and continuing) for mathematics teachers in Brazil (out of the total of 298 inventoried), 60 of which were from federal universities, 44 from state universities and 68 from federal institutes (Ibidem, p. 390), which were analyzed based on their Pedagogical Course Project (PPC-*Projeto Pedagógico de Curso*).

General findings regarding the training of mathematics teachers show that among the LM considered, "none of these courses has more than 69.9% of the initial training time dedicated to this field of knowledge [disciplines in the area of mathematics, revisional or related to academic mathematics]" (ZAIDAN et al., 2021, p. 394), that is, the 3+1 model would no longer be satisfied in this criterion for distributing course workload. However, as an additional comment, the study states that:

> [...] As identified by Dario Fiorentini (UNICAMP) and Ana Teresa de C. Correa de Oliveira (UFRJ), the latter member of the research team, there still seems to remain a trichotomy between

> **mathematical training, didactic-pedagogical training, and professional practice in Mathematics Degrees** (ZAIDAN et al., 2021, p. 11, emphasis added).

This statement consists of an inconsistency regarding the previous statement, since it does not refer to the workload of mathematics teacher training subjects, but rather to the integration between these subjects. Regarding the training paths existing in the courses studied, the research identifies three possible ones. The first would be the route organized into separate and well-defined blocks of knowledge, called the "discontinuous route":

> This path appears to be fragmented, both in the sense that the blocks are not related to give an articulated sequence to the training and in the sense that it demonstrates little connection with the professional perspective specifically about mathematical knowledge.
> The non-existence of an articulated path, in which the teaching of all knowledge is linked to a professional perspective, makes the training process quite difficult, perhaps in the understanding that the graduate is limitedly capable of making the deductions and articulations for his/her future profession. (ZAIDAN et al., 2021, p. 404, 405).

The study highlights that names and syllabuses of mathematics subjects are presented with a focus on mathematical content, failing to highlight relationships with the demands of the teaching profession.

The second path also presents blocks of knowledge, but with a curricular matrix that considers connections with, for example, teaching and inclusive education. This path is called the "integrated path", in which "continuity" and "presence of the professional perspective" can be found (ZAIDAN et al., 2021, p. 405, 406). Mathematical training subjects present in their syllabi the incorporation of "principles of a democratic and public education, [...] they explicitly deal with the concepts and their teaching methodologies, cite interdisciplinarity and propose debates on theory and teaching practice through seminars during the course" (Ibidem., p. 406). Between these two conceptual "extremes", the research indicates that most PPCs would be between them, characterizing the third possible path. Among these, the majority would be focused on the discontinuous route. Despite having in common the conception through blocks of knowledge (an organization that the research emphasizes resulting from the DCN-2015), Zaidan and others (2021) highlight the diversification of proposals (adoption of integrative disciplines, seminars, extension projects, etc.), even exposing contradictory possibilities (Ibidem., p. 406, 407). Regarding the 2015 Resolution, the study also recalls that:

> the changes proposed in Resolution CNE/CP 02/2015 do not have a decisive impact on the structural organization of the courses, since they do not effectively break with the fragmentation of training and the discontinuities with the demands of basic school, especially in specific knowledge (ZAIDAN et al., 2021, p .407).

Therefore, we highlight from this study the overcoming of the "3+1 format" regarding the distribution of workload in mathematics teacher training courses, but not regarding the integration of subjects from each area involved in the course, an integration that would not be foreseen in the DCN-2015.

Regarding the position that our study occupies among the findings of Zaidan et al. (2021), we understand that our result regarding the 1+1+1 training stated by the LM course at UFRGS contributes to exemplifying one of the cases of offering a route discontinuous training, despite the difference in the theoretical and methodological foundations of each research. Furthermore, the speeches of students and former students bring to light perspectives that often speak to the findings of variables that influence the decision to remain or not remain in graduation and that influence the academic path of undergraduates, as mentioned by the research gathered for this study.

FINAL CONSIDERATIONS

We hope to have been able to highlight the existence of a relationship between the student's perception of the training provided by the UFRGS Mathematics Degree course and whether they remain in the course. Studies within the theme of student evasion in higher education refer to institutional issues related to evasion and retention, which repeatedly include aspects related to the curriculum and training offered such as the need for updating, flexibility, organization, and dissemination, as well as clarity regarding PPC.

The data and results of our research allowed the characterization of the 1+1+1 training set out in the Mathematics Degree course at UFRGS, based on the statements of its students and former students, which is composed of theoretical training in mathematics, training theory in education/ mathematics education and practical training. Furthermore, the elucidation of statements promoted by each of these lines, as well as the possible exclusions that they may impose on the others, contribute to the understanding of the training that the course promotes, from the perspective of its students.

Despite referring to a specific context and originating from the application of Discourse Analysis, the results we obtained in Silva (2020) are in line with one of the findings of the study by Zaidan et al. (2021), which analyzed courses from all over Brazil based on the analysis of their PPCs, and with the observations of Moreira (2012), regarding aspects that still characterize the presence of the "3+1" structure in LM courses. These aspects would no longer be due to the distribution of course loads, but rather due to the lack of integration between them and the conflicts regarding the statements that support and are promoted by them.

Thus, by bringing these results and building the dialogues that we believe are possible with other studies, we were willing to contribute to the debates about the provision of LM course training and the effects that the existence of distinct and independent training lines can have on training mathematics teachers. Furthermore, we offer our view based on Foucault's Enunciative Analysis (2013) as an example of a possible application to studies on this topic. We find that, despite the differences in theoretical-methodological approaches, our findings agree with many of the statements and of the results presented in the research, on undergraduate courses in the Brazilian context.

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Author 2 - Guidance during the planning and carrying out the research, study of theoretical and methodological references, and review of data, analysis, and text.

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The authors declare that there are no conflicts of interest with this article.

DECLARATION OF RESEARCH DATA AVAILABILITY

The research data consists of questionnaires and interviews with invited participants and was partially presented throughout the article. Participants authorized the use of data for research and scientific dissemination purposes through an Informed Consent Form, and their contribution to the research was referenced to preserve their anonymity. The authors declare that the article was not deposited/made available on another Preprints server nor published in another journal.

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The authors declare that the preparation of the manuscript followed the ethical standards of scientific communication, having been approved by Opinion nº: 3,260,538, issued by the Ethics Committee of the Federal University of Rio Grande do Sul, on April 11. 2019.