The constitution of mathematics for teaching as an element of professional knowledge at UFAC (1962–1992): Laws, decrees, opinions, and resolutions

La constitución de la matemática para enseñar como elemento del saber profesional en la UFAC (1962–1992): Leyes, decretos, dictámenes y resoluciones

La constitution des mathématiques pour enseigner comme élément du savoir professionnel à l'ufac (1962–1992): Lois, décrets, avis et résolutions

A constituição da matemática para ensinar como elemento do saber profissional na UFAC (1962–1992): Leis, decretos, pareceres e resoluções

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Abstract

This article analyzes the process of constituting *mathematics for teaching* as an element of teachers' professional knowings in the mathematics teaching degree program at the Federal University of Acre (UFAC) between 1962 and 1992, from the perspective of the history of mathematics education and teacher training. The objective is to understand how the curriculum components related to pedagogical practice contributed to the configuration of this professional knowledge in the local context. The study employs a qualitative approach and documentary analysis of official sources, such as laws, decrees, opinions, and resolutions from the Federal Council of Education (CFE/1962) that guided teacher education during the analyzed period. The source analysis considered theoretical and methodological principles inherent to the field of the history of mathematics education and research on teachers' knowledge. The results indicate a

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gradual process of institutionalizing *mathematics for teaching* in pedagogical practice courses, articulating mathematical, didactic, and professional knowledge amid curriculum changes, educational regulations, and regional specificities. It is concluded that the constitution of this knowings occurred in a historically situated manner, reflecting transformations in academic policies and teacher identity in the Amazon region. However, it is acknowledged that the study is limited to documentary analysis, highlighting the need for future research to deepen the understanding of effective pedagogical practices and teachers' experiences during the analyzed period.

Keywords: Mathematics for teaching, Professional knowings, History of mathematics education, Teaching practice, Curriculum.

Resumen

Este artículo analiza el proceso de constitución de la *matemática para enseñar* como elemento del conocimiento profesional docente en la licenciatura en Matemáticas de la Universidad Federal del Acre (UFAC) entre 1962 y 1992, desde la perspectiva de la Historia de la Educación Matemática y de la formación docente. El objetivo es comprender cómo los componentes curriculares relacionados con la práctica pedagógica contribuyeron a la configuración de este conocimiento profesional en el contexto local. La investigación adopta un enfoque cualitativo y un análisis documental de fuentes oficiales, como leyes, decretos, dictámenes y resoluciones del Consejo Federal de Educación (CFE/1962) que orientaron la formación docente en el período analizado. El análisis de las fuentes consideró principios teórico-metodológicos propios del campo de la Historia de la Educación Matemática y de las investigaciones sobre los saberes docentes. Los resultados indican un proceso gradual de institucionalización de la *matemática para enseñar* en las asignaturas de práctica pedagógica, articulando conocimientos matemáticos, didácticos y profesionales en medio de los cambios curriculares, las normativas educativas y las especificidades regionales. Se concluye que la constitución de este conocimiento se dio de manera históricamente situada, reflejando las transformaciones en las políticas educativas y en la identidad docente en la región amazónica. Se reconoce, no obstante, que el estudio se limita al análisis documental, señalando la necesidad de futuras investigaciones que profundicen en la comprensión de las prácticas pedagógicas efectivas y las experiencias docentes durante el período analizado.

Palabras clave: Matemática para enseñar, Conocimiento profesional, Historia de la educación matemática, Práctica docente, Currículo.

Résumé

Cet article analyse le processus de constitution des *mathématiques pour enseigner* comme élément du savoir professionnel enseignant dans la Licence de Mathématiques de l'Université Fédérale d'Acre (UFAC), entre 1962 et 1992, sous l'angle de l'Histoire de l'Éducation Mathématique et de la formation des enseignants. L'objectif est de comprendre comment les composantes curriculaires liées à la pratique pédagogique ont contribué à la configuration de ce savoir professionnel dans le contexte local. L'étude adopte une approche qualitative et une analyse documentaire de sources officielles, telles que les lois, décrets, avis du Conseil Fédéral de l'Éducation (CFE/1962) et résolutions ayant orienté la formation des enseignants au cours de la période analysée. L'analyse des sources a pris en compte les principes théorico-méthodologiques propres au domaine de l'Histoire de l'Éducation Mathématique et aux recherches sur les savoirs des enseignants. Les résultats indiquent un processus progressif d'institutionnalisation des *mathématiques pour enseigner* dans les disciplines de pratique pédagogique, articulant les connaissances mathématiques, didactiques et professionnelles au milieu des changements curriculaires, des réglementations éducatives et des spécificités régionales. Il est conclu que la constitution de ce savoir s'est réalisée de manière historiquement située, reflétant les transformations des politiques éducatives et de l'identité professionnelle dans la région amazonienne. Il est cependant reconnu que l'étude se limite à l'analyse documentaire, soulignant la nécessité de recherches futures permettant de mieux comprendre les pratiques pédagogiques effectives et les expériences des enseignants au cours de la période étudiée.

Mots-clés : Mathématiques pour enseigner, Savoir professionnel, Histoire de l'éducation mathématique, Pratique de l'enseignement, Curriculum.

Resumo

Este artigo analisa o processo de constituição da *matemática para ensinar* como elemento do saber profissional docente na licenciatura em matemática da Universidade Federal do Acre (UFAC), entre 1962 e 1992, sob a perspectiva da história da educação matemática e da formação docente. O objetivo é compreender como os componentes curriculares relacionados à prática pedagógica contribuíram para a configuração desse saber profissional no contexto local. A investigação adota abordagem qualitativa e análise documental de fontes oficiais, como leis, decretos, pareceres e resoluções do Conselho Federal de Educação (CFE/1962) que orientaram a formação de professores no período analisado. A análise das fontes considerou princípios teórico-metodológicos

próprios do campo da história da educação matemática e das pesquisas sobre saberes docentes. Os resultados indicam um processo gradual de institucionalização da *matemática para ensinar* nas disciplinas pedagógicas de prática de ensino, articulando conhecimentos matemáticos, didáticos e profissionais em meio às mudanças no currículo, às normativas educacionais e às especificidades regionais. Conclui-se que a constituição desse saber ocorreu de forma historicamente situada, refletindo as transformações nas políticas educacionais e na identidade docente na região amazônica. Reconhece-se, contudo, que o estudo se restringe à análise documental, indicando a necessidade de futuras pesquisas que aprofundem a compreensão das práticas pedagógicas efetivas e das experiências docentes no período em questão.

Palavras-chave: Matemática para ensinar, Saber profissional, História da educação matemática, Prática de ensino, Currículo.

The constitution of mathematics for teaching as an element of professional knowledge at UFAC (1962–1992): Laws, decrees, opinions, and resolutions

Introduction

The history of mathematics teacher education in Brazil has been characterized by curriculum reforms, disputes between disciplinary fields, and the pursuit of a unique professional identity. In the case of the Acre Amazon, this process was intertwined with specific geographic, political, and social conditions, which directly impacted the constitution of the curriculum and the professional knowledge of teachers. Between 1962 and 1992, the central period of this study, significant changes resulting from federal and institutional regulations were observed.

In 1962, Acre was elevated to the status of a state, and Opinions 292/62 and 295/62, from the Federal Council of Education (CFE), introduced changes to the teaching degree courses, including in mathematics, seeking to abandon the "3+1" model. The mathematics teaching degree course at the Federal University of Acre (UFAC) was created in 1971 and was reformulated in 1976 and 1986. For a broader historical contextualization, national documents from 1931 to 1975 were also considered, which regulated teacher education and influenced the creation of the first teaching degree courses in Brazil (Pereira, 2022). These regulations and reformulations contributed directly to the organization of pedagogical subjects and the consolidation of mathematics as an element of professional teaching knowledge at UFAC.

In this study, we analyze the legal frameworks–laws, decrees, opinions, and resolutions–that underpinned the organization of the mathematics teaching degree course at UFAC, in light of the concepts of *mathematics to teach* and *mathematics for teaching*, first discussed by Bertini, Morais, and Valente (2017), and taken up again by Valente (2017, 2020). The main time frame helps us understand how the curriculum components and national regulatory frameworks contributed to the constitution of the *mathematics for teaching* as an element of professional teaching knowings, linking the field of educational sciences to the disciplinary field of mathematics.

The objective of the study is to highlight how these legal frameworks influenced teacher education, historically situated and in constant dispute, reinforcing that teachers' knowings are socially and historically constructed, and that, in the case of *mathematics for teaching*, are configured in interactions and disputes for legitimacy in university and school formative spaces.

It is important to note that the analysis does not focus on teachers' pedagogical practice, nor on the specific content of the subjects (*rubricas*[3], in Portuguese) of teaching practices, which have already been widely addressed in previous works (Pereira, 2023, 2025). The focus lies on official documents and how they mobilize conceptions of teaching and teacher education that are articulated in conjunction with the mathematical knowledge necessary for teaching, thereby contributing to the field of the history of mathematics education.

The article is organized into three main sections. In the first, the theoretical framework that underpins the discussion on the constitution of the *mathematics for teaching* as an element of professional teaching knowings, mobilizing contributions from studies on teacher education and professional knowings. Next, in the section dedicated to methodological approaches, we describe the procedures adopted for selecting, categorizing, and analyzing normative and institutional documents. Finally, in the documentary analysis section, we present the results of the investigation, with an emphasis on curriculum reforms, disputes surrounding the knowings that comprise teacher education, and the specifics of the UFAC case. In this way, we want to demonstrate how the legal and institutional frameworks contributed to the constitution of the *mathematics for teaching* as part of a formative field specific to mathematics teaching.

Theoretical framework

The debate on the knowings necessary for teaching mathematics has become central to studies on teacher education. Among these knowings, the concept of *mathematics for teaching*, understood as a specific element of professional teaching knowledge, is highlighted. This concept has been developed by different research groups, such as the Research Team in History and Sciences of Education *(ERHISE, Equipe de Recherche en Histoire et Sciences de l'Éducation*) of the University of Geneva and the Research Group on the History of Mathematics Education of São Paulo (GHEMAT-SP*, Grupo de Pesquisa de História da Educação Matemática de São Paulo*).

The mathematics education of prospective teachers aims to provide mastery of the conceptual field of historically developed mathematics, ensuring that they can effectively apply this knowledge in their teaching practice (Fiorentini, 2008).

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[3] Term used in official documents of the time to refer to the subjects or curriculum components of a course, indicating their content and workload.

Complementing this view, Tardif (2014) broadens the understanding of teaching knowings by highlighting its plural nature, which is built on practices and permeated by relationships between academic knowledge, curriculum knowings, and experiential knowings. These reflections opened space for more specific investigations in mathematics education, recognizing that teaching mathematics requires a particular type of professional knowing.

> Mathematics for teaching is not simply a set of school content to be transmitted, but a knowing that emerges from the intersection between the fields of mathematics and education, being historically produced in formative practices and institutional teaching dynamics (Bertini, Morais, & Valente, 2017, p. 26).

This conception implies recognizing that there is a specificity in the teacher's mathematical knowing, distinct from that required of a mathematician with a pure background. This is situated knowing, focused on pedagogical practice and the teaching of content that, although mathematical, must be didactically mobilized, aiming at the learning of specific subjects in different school contexts.

Professional knowings, say Hofstetter and Schneuwly (2017), are not merely technical, but knowings of reference, based on the articulation between science, practice, and educational policy. Such knowings are historically constructed and institutionally regulated and is therefore permeated by curriculum policies and legislation that regulate teacher education.

In the case of mathematics teacher education, these knowings take on their own contours as they need to integrate knowledge of school mathematics, specific didactics, and general pedagogical foundations. Therefore, the concept of *mathematics for teaching* has been consolidated as a powerful analytical category to allow for an understanding of the historical constitution of the teacher education curriculum. In this sense, mathematics of two natures are articulated: *mathematics to teach* and the *mathematics for teaching*.

> The first, originally derived from the mathematical disciplinary field, but subject to the school's purposes, undergoes complex processes until it becomes a teaching object, organized into school subject matters or disciplines. Mathematics for teaching is characterized as a knowing that is objectified onver time through dynamics and processes linked to knowledge about mathematics to teach, the student and their development, the ways of learning mathematics, the practices of teaching mathematics, the institution that defines the field of professional activity of the teacher who teaches mathematics, through teaching plans, official references for the mathematics course and purposes imposed by the State for this school component, among other elements (Valente, 2020, pp. 203-204).

We distinguish between the *mathematics to teach* and the *mathematics for teaching,* with the intention of understanding the constitution of professional knowings specific to mathematics teaching, which is configured at the boundaries of academic fields and teacher education policies, as already discussed by Pereira (2022).

This theoretical framework, therefore, makes it possible to investigate how the analyzed legal documents, when standardizing the structure of teacher education, impacted the consolidation–or absence–of a field of knowings focused on the pedagogical practice of mathematics, contributing to outlining the contours of the *mathematics for teaching,* configuring professional teaching knowings.

The relationships between *mathematics to teach* and *mathematics for teaching* are present in both teacher education and schools. Their definitions sometimes converge and, at other times, seem to diverge, revealing a historical relationship between education and teaching.

In this sense, thinking about teacher education also entails considering teaching.

> In considering the importance of analyzing the relationships maintained over time between the mathematics of teacher education and school mathematics, the studies have highlighted that this endeavor leads to an understanding of teaching professionalization movements. Particularly, to elaborate analyses related to the knowings present in teaching, taking into account knowings mobilized in teacher education, leads to a discussion on the knowings of the teaching profession, specifically, mathematics as professional knowing of teachers who teach mathematics (Valente, 2020, p. 203).

Valente (2020) points out that the movement towards the professionalization of mathematics teaching stems from an interdependent relationship between the mathematics of training and the mathematics of teaching, in which the knowings constructed in teaching degree courses influence school practices and, simultaneously, the demands of teaching guide academic training. In this process, at specific historical moments, teaching knowledge was consolidated above all in the teaching space, more precisely in the articulation between *mathematics to teach* and the *mathematics for teaching*, which become dimensions of the professional knowing of mathematics teachers in teaching degree courses (Pereira, 2022).

Methodological trajectory

This research is based on a qualitative, interpretive approach, guided by the assumptions of the history of mathematics education and by theoretical contributions

on professional teaching knowings, especially the category of *mathematics for teaching* (Bertini, Morais, & Valente, 2017).

The study focuses on the documentary analysis of primary normative sources that regulated teacher education in Brazil, with an emphasis on the implications for the curriculum organization of the mathematics teaching degree course at UFAC. The main time frame covers the period from 1962 to 1992, marked by three significant moments: the first, in 1962, with Opinions 292/62 and 295/62 of the Federal Council of Education (CFE, Conselho Federal de Educação), which introduced relevant changes in teaching degree courses throughout the country by abandoning the "3+1" model; the second, in 1971, with the creation of the teaching degree in mathematics at the Federal University of Acre (UFAC), when the territory had already been elevated to the status of a state; and the third, with the curriculum reformulations of 1976 and 1986, which directly impacted the organization of the mathematics course at UFAC. For a broader historical contextualization, national regulations issued between 1931 and 1975 were also considered, a period that encompasses the promulgation of the first federal decrees on teacher training and contributed to the recognition of the first teaching degree courses of the institution. This temporal delimitation highlights how legal and institutional frameworks influenced the constitution of *mathematics for teaching* as an element of professional teaching knowings.

The selection of sources followed three criteria: (1) relevance to the research topic; (2) direct relationship with the training of mathematics teachers; and (3) potential to highlight curriculum guidelines and pedagogical concepts associated with the constitution of teaching knowings. Laws, decrees, opinions, resolutions, and recommendations issued by the Federal Council of Education (CFE) and the Ministry of Education (MEC) were analyzed, as well as internal UFAC documents (course plans, syllabuses, and pedagogical projects).

The documentary analysis was based on categories derived from the theoretical framework of the research, especially the concepts of *mathematics for teaching* and professional knowing. These categories were mobilized to identify signs of articulation between mathematical, pedagogical, and institutional knowledge that shape teaching in the field of mathematics.

Document analysis

Reading the sources revealed a gradual process of institutionalization of professional teaching knowledge in the field of mathematics, driven by educational

reforms and federal regulations. Legal and normative documents produced between 1931 and 1975 were considered, a period that ranges from the first decrees aimed at teacher education in Brazil to the official recognition of the first teaching degree course at UFAC.

These documents, laws, decrees, opinions, resolutions, and recommendations from the Federal Council of Education (CFE), directly impacted the curriculum organization of the teaching degree in mathematics and, later, the teaching degree in sciences with a specialization in mathematics. The systematization of these regulations is presented in Table 1, organized in chronological order, with na emphasis on curriculum guidelines, the regulation of pedagogical formation, and the consolidation of mathematics aimed at school teaching as a component of professional teaching knowings.

This stage of historical analysis precedes the main focus of the research, which spans from 1962 to 1992, delimited by the three curriculum reformulations of the mathematics teaching degree course at UFAC. An integrated reading of these periods enables us to understand the continuities and ruptures in the process of institutionalizing *mathematics for teaching* in the Amazonian context of Acre.

Table 1

Timeline of legal and normative documents on teacher training in mathematics (1931–1975). (Pereira, 2022, pp.112, 118-119, 122, and 130)

Year	Document	Date	Contribution and/or Central Content
1931	Decree No. 19.852/1931 (MESP, Francisco Campos)	April 11, 1931	Creates the College of Education, Sciences, and Letters. Defines higher education aimed at teaching and teaching specialization.
1937	Law No. 452/1937 (Vargas Government)	July 5, 1937	Creates the University of Brazil. It provides for teacher training as an essential purpose of the university.
1939	Decree-Law No. 1.190/1939	April 4, 1939	Regulates the National College of Philosophy. Defines courses and sections for teacher training, including mathematics.
1961	Law No. 4.024/1961 (LDB)	December 20, 1961	Establishes the first LDBEN. Creates the Federal Council of Education and establishes standards for teacher education courses.
1962	Opinion No. 292/1962 (CFE)	November 14, 1962	Determines the mandatory nature of pedagogical subjects in teaching degree courses.

1962	Resolution without CFE number	November 14, 1962	Sets the minimum content and duration of the mathematics course.
1962	Opinion No. 295/1962 (CFE)	November 14, 1962	It establishes the minimum curriculum for the teaching degree in mathematics, with an emphasis on the articulation between school content and theoretical mathematical knowledge. Includes the subject "Fundamentals of Elementary Mathematics", aimed at the critical review of topics taught in elementary and secondary schools.
1966	Decree No. 53/1966	November 18, 1966	Anticipation of university reform; defines training units for teachers and education specialists.
1968	Law No. 5.540/1968	November 28, 1968	University reform. It gives the CFE the power to set curricula and the duration of higher education courses.
1969	Opinion No. 672/1969 (CFE)	September 4, 1969	Defines the content and workload for pedagogical training in teaching degree courses.
1969	Resolution No. 9/1969 (CFE)	October 10, 1969	Regulates the mandatory minimum requirements for pedagogical training in teaching degree courses.
1973	Indication No. 22/1973 (CFE)	February 8, 1973	Defines general principles and standards for teacher training in teaching degree courses.
1973	Indication No. 23/1973 (CFE)	February 8, 1973	Establishes the training areas in teaching degrees in general education.
1974	Opinion No. 1687/1974 (CFE)	June 7, 1974	Regulates the teaching degree in the science course. It reiterates the importance of pedagogical training and defines qualifications, including in mathematics.
1974	Resolution No. 30/1974 (CFE)	July 11, 1974	Organizes the curriculum of the teaching degree in science. Establishes qualifications for secondary education, such as mathematics.
1974	Opinion No. 2794/1974 (CFE)	September 2, 1974	Officially recognizes the UFAC mathematics teaching degree course.
1974	Indication No. 51/1974 (CFE)	December 5, 1974	It determines the mandatory progressive implementation of the teaching degree in science.
1974	Opinion No. 4080/1974 (CFE)	December 5, 1974	It ratifies the requirement and replaces the full teaching degree with specific qualifications in secondary education.
1975	Opinion No. 148/1975 (CFE)	January 22, 1975	Complements the UFAC course recognition process.
1975	Opinion No. 1050/1975 (CFE)	April 8, 1975	Consolidates the institutional recognition of the mathematics course at UFAC.

Table 1 presents a timeline with the fundamental legal and normative documents that affected the training of mathematics teachers in Brazil between 1931 and 1975. This systematization highlights the path of construction of a normative and institutional field focused on teaching, particularly concerning the curriculum organization of teaching degree courses in mathematics and sciences, with a qualification in mathematics.

The diversity of documents, including decrees, opinions, resolutions, and recommendations, reveals the State's efforts to standardize both the content to be taught and the formats required for teaching in secondary education. The analysis of this set of documents enables us to identify the transition from a degree training model focused on content and the separation between specific and pedagogical knowings, to an integrated education that articulates mathematical, didactic, and professional knowledge aimed at the effective preparation of teachers for basic education.

This movement becomes especially evident from the opinions and resolutions issued in the 1960s and 1970s, which introduce the mandatory nature of pedagogical subjects, teaching practices, and foundations of school mathematics as structuring components of teacher education. This inflection can be observed in UFAC's institutional documents, which incorporated, revealed disputes, and reinterpreted these guidelines in their academic planning.

It is worth noting, however, that concerns about pedagogical training had antecedents. One example is the curriculum of the mathematics course regulated by Decree-Law No. 1.190/1939, structured on a content-centered model, strongly focused on scientific and disciplinary training. In this model, known as the "3+1" model, the first three years were dedicated exclusively to disciplinary content, while the last year included pedagogical knowledge. This arrangement possibly left the teacher in initial education without access to essential knowledge for teaching and for approaching their field of work, the school. This situation highlights the gap between academic training and school reality.

As Table 2 shows, the curriculum was primarily composed of highly technical subjects, such as Mathematical Analysis, Algebra, Higher Geometry, and Mathematical Physics. The pedagogical content, when present, only appeared at the end of the course, as a complement to the specific education, reinforcing its marginality in the formative process.

Table 2

Curriculum structure of the mathematics course according to Decree-Law No. 1.190/1939. (Pereira, 2022, p.115)

	CYCLE	
1st GRADE	2nd GRADE	3rd GRADE
Mathematical Analysis	Mathematical Analysis	Superior Analysis
Analytical and Projective Geometry	Descriptive Geometry and Complements of Geometry	Higher Geometry
General and Experimental Physics	Rational Mechanics I	Mathematical Physics
----------------------------------	General and Experimental Physics	Celestial Mechanics

This curriculum arrangement reinforces the predominance of a formative logic centered on *mathematics to teach*, at that time characterized as mathematical content, typical of higher education, and distant from practices and knowings aimed at teaching. However, the 1960s marked an important turning point when the Federal Education Council began to recognize the need to integrate components focused on school education into teacher education.

Opinions No. 292 and No. 295, both from 1962, from the CFE, constituted founding documents[4] for the inclusion of pedagogical disciplines in teaching degree courses. Opinion No. 292/1962 established the mandatory nature of these subjects as an integral part of teacher training, recognizing that didactic-pedagogical knowledge could not be dissociated from specific training. Opinion No. 295/1962, when establishing the minimum curriculum for the teaching degree in mathematics, expressed explicit concern with training aimed at professional practice in secondary education. The creation of the subject Fundamentals of Elementary Mathematics represented a significant change by proposing a convergence between school mathematical content and academic knowings. The very formulation of the opinion highlights this articulation, which directly dialogues with the perspective of *mathematics for teaching*, when defending the incorporation of knowings aimed at school teaching as a constitutive part of the professional identity of teachers.

> We include the Fundamentals of Elementary Mathematics in an analysis and review of the subjects taught in mathematics courses at high schools and colleges, not only with a view to giving prospective teachers more in-depth

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[4] Founding documents: regulations or opinions that establish essential guidelines for the curriculum organization and structuring of teacher education, serving as a normative and historical reference for the consolidation of professional practices and knowings.

knowledge of these subjects but also to try to fit them into the set of mathematical theories studied by the student [...] (Brasil, 1962, n.p.).

This movement of rapprochement between academic mathematics and school mathematics became particularly visible during the process of institutional recognition of the teaching degree in mathematics at UFAC in 1974 and 1975. Successive opinions, such as No. 1687/1974, demanded the inclusion of pedagogical subjects, teaching practices, and foundations of school mathematics in the curriculum. However, despite these requirements, there was still a predominance of components focused on academic mathematics — centered on university content — to the detriment of *mathematics for teaching*, which is oriented towards teaching practice at school.

The components described in the curriculum documents of the time indicate that they continued to be strongly based on formal content and higher-level mathematical abstractions, far removed from the realities of basic education. This scenario, as analyzed by Valente (2020) and Hofstetter and Schneuwly (2017), highlights the constitutive tension in teacher education: the dispute between disciplinary fields and the institutional regulation of the knowledge that makes up teaching. In the case of UFAC, progress in institutionalizing *mathematics for teaching* occurred gradually, following national regulations, while also responding to regional demands for teachers capable of working in diverse and unequal school contexts.

Figure 1

Syllabus of the subject Fundamentals of Elementary Mathematics – UFAC (1971). Original document provided by UFAC.[5]

Fundamentos da Matemática Elementar   60 horas   04

Teoria dos números. Sistemas de números. Introdução à lógica e cálculo propo-sicional.

Between 1971 and 1986, the syllabus maintained its theoretical and content-based focus, closer to higher education, not fully incorporating the guidance of Opinion No. 295/1962 of the Federal Council of Education (CFE), which proposed content aimed at secondary education[6]. Although the formal model "3+1" was officially replaced by Opinion No. 292/1962, which incorporated pedagogical disciplines from the first period, the course practice, standardized by its guidelines, still reflected the predominance of

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[5] Full transcript of the document: Syllabus of the subject Fundamentals of Elementary Mathematics: Number Theory. Number systems. Introduction to Logic and Proportional Calculus – 60 hours – 4 Credits. This document is also reproduced in Pereira (2022, p. 186).

[6] In the period analyzed, "secondary education" referred to the stage of formal education corresponding to current high school, according to the Brazilian educational legislation in force at the time.

the rigor of higher mathematics, evidencing the persistence of a content-based approach in teacher education.

Figure 2

Syllabus of the subject Fundamentals of Elementary Mathematics – UFAC (1986). Original document provided by UFAC.[7]

Through Valente's (2018) comparative analysis, the syllabus reveals the persistence of a content-based approach over time. The 1971 version, although after Opinion No. 295/1962 of the CFE, which proposed a discipline focused on the critical review of school content, still aligns with the theoretical and content-based tradition of academic mathematics. Instead of addressing structured knowledge for secondary education, as the opinion recommends, the syllabus in Figure 1 presents topics of an abstract nature, more closely aligned with higher education. Figure 2, referring to the 1986 version, essentially maintains the focus, highlighting the persistence of a scientific and content-based tradition and the distance between the guidelines of the CFE and its actual implementation in institutions.

This discrepancy highlights the limits of normative regulation in the face of institutional practices and field disputes in teacher training. The transitional movement towards the constitution of *mathematics for teaching* as a field of knowing linked to teaching practice does not manifest itself in theoretical subjects. However, it takes shape with the introduction of subjects of a pedagogical nature in the field of educational sciences, established by Opinion No. 292/1962 of the CFE. This set included the teaching practices subjects, which constituted supervised practicum in community

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[7] Full transcription of the document: Federal University of Acre. Date June 21, 2022 – Time 17:17. 11.02.01.99.06 Curriculum Courses (by version). Course: 04 – Teaching Degree in Mathematics. Version: 1986/1. Curriculum Status: Previously Active. Structure: Mandatory subjects. ME 260 – Fundamentals of Elementary Mathematics: Number Theory. Number systems. Introduction to Logic and Proportional Calculus. 8th period – 60 hours – 4 credits – Mandatory. This document is also reproduced in Pereira (2022, p. 124).

schools, in addition to other subjects aimed at the didactic-pedagogical training of prospective teachers.

The introduction of these pedagogical subjects into the UFAC curriculum, starting in 1971, marks the beginning of the search for linking theory and practice. The Teaching Practice III and IV subjects document activities developed in community schools, targeting both primary and secondary education. Although in the initial stage, these components signal an institutional attempt to expand the space for teaching professionalization in the mathematics teaching degree course, progressively incorporating the practical and didactic dimension into the formative curriculum.

Figure 3

Figure 3 – Teaching Practice III and Teaching Practice IV subjects – UFAC (1971). Original document provided by UFAC.[8]

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Ciclo Profissional — 7.º Período

IE-111 — Algebra Linear II — 6-0-4.
FE-120 — Didática Geral — 4-0-2.
FE-106 — Psicologia da Educação —
4-0-2.
FE-132 — Prática de Ensino —
2-2-0.
IE-107 — Cálculo Numérico —
6-0-4.
    Total: 360 horas

Ciclo Profissional — 8.º Período

FE-116 — Estrutura e Funcionamen-
to de Ensino de 1.º e 2.º Graus —
4-0-4.
FE-132 — Prática de Ensino —
2-2-4.
    Total: 120 horas.

5 — Quanto aos docentes indica-
dos anteriormente, e não aceitos, a
mantenedora procedeu ao aditamento
de documentação esclarecedora que,
devidamente examinada, levou às se-
guintes conclusões:

Jaine Maria da Silva Queiroz — Psi-
cologia Geral I e II — Didática Geral
I e II, e Prática de Ensino — Títulos
insuficientes.
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...idicates that, although under the strong influence of the legal...g to incorporate supervised practicum experiences, enabling...real teaching situations. The presence of the subjects...advance toward the professionalization of teaching and the *matics for teaching*. This movement is also highlighted by...alyzing Opinion No. 148/1975/CFE, which reinforced the...ractices in the formative process.

...ilestone is the creation of the short-duration teaching degree with a qualification in mathematics, established by Resolution No. 30/1974/CFE and Opinion No. 1687/1974/CFE. Although designed as an emergency response to the teacher shortage, this modality preserved the three pillars of teacher education: specific content, pedagogical foundations, and teaching practice.

> Article 1. The teaching degree in science aims to train teachers for activities, areas of study, and subjects related to the scientific sector in primary and secondary education.

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[8] Full transcript of the document: **Professional Cycle – 7th Period:** IE-111 – Linear Algebra II – 6-0-4. FE-120 – General Didactics – 4-0-2. FE-106 – Psychology of Education– 4-0-2. FE-132 – Teaching Practice – 2-2-0. IE-107 – Numerical Calculus – 6-0-4. Total: 360 hours. **Professional Cycle – 8th Period:** FE-116 – Structure and Functioning of Primary and Secondary Education – 4-0-4. FE-132 – Teaching Practice – 2-2-4. Total: 120 hours.
5 – Regarding the teachers previously indicated and not accepted, the sponsor added clarifying documentation which, duly examined, led to the following conclusions:
Jaine Maria da Silva Queiroz – General Psychology I and II – General Didactics I and II, and Teaching Practice – Insufficient Qualifications. This document is also reproduced in Pereira (2022, p. 128).

Art 2. The science course will be structured as either a short-duration teaching degree or a full teaching degree, or simultaneously covering both duration modalities, as specified in the plans of the institutions that provide them.
Sole paragraph. The short-duration teaching degree will provide general qualifications in sciences, and the full degree, in addition to this qualification, will lead to specific qualifications in mathematics, physics, chemistry, and biology, without excluding others that may be added by the Federal Council of Education or, upon its approval, by higher education institutions (Brasil, 1974, pp. 110 e 111).

The first part of the Resolution explains the structural organization of the short-duration teaching degree with a qualification in mathematics, outlining formative objectives, expected duration, and institutional justification. This is a normative response to the lack of qualified teachers to teach science and mathematics in what was then called "first and second degrees" (elementary school and high school). By establishing an emergency course with a reduced workload, the Federal Education Council aimed to balance the urgency of social demand with the minimum training requirements for teaching.

The Resolution also determines the inclusion of,

3. Instrumentation for teaching[9].
§ 2 In addition to the content matters provided for in the previous paragraph, the pedagogical training prescribed in the Resolution of this Council that regulates the subject will be mandatory.
§ 3 Pedagogical training, insofar as it is specific to the course, must be supported by the teaching instruments prescribed in item 3 of the previous paragraph. [...]
[...] Art. 6th The Science course will have the following minimum duration:
a) In the short-duration teaching degree modality, 1,800 (one thousand and eight hundred) hours are to be completed in a total time varying from two to four academic years.
b) In the full teaching degree modality, 2,800 hours (two thousand eight hundred) must be completed over a total time frame of three to seven academic years, with an average term of four years. (Brasil, 1974, pp. 112, 113)[10]

Thus, Resolution No. 30/1974 demonstrates that the short-duration teaching degree was not limited to prescribing scientific content, but also sought to articulate specific content, pedagogical foundations, and teaching practices, guaranteeing a minimum, structured, and coherent teacher education, even in an emergency scenario of shortage of qualified professionals. The regulation aimed to strike a balance between agility, institutional legitimacy, and training quality, providing clear parameters for organizing courses and training prospective science and mathematics teachers.

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[9] This document is also reproduced in Pereira (2022, p. 134).
[10] The citation of this official document can be found in full in Pereira's thesis (2022, p. 134), available at: https://repositorio.ufsc.br/handle/123456789/245254

This guideline is reinforced by paragraphs 2 and 3 of Opinion No. 1687/1974/CFE, which establish the obligation of "specific and corresponding" pedagogical training to the teaching degree course. From this perspective, pedagogical education would emerge from the knowings for teaching, originating from the field of educational sciences, and should be incorporated into the trajectory of prospective teachers as a structuring component of teaching.

However, the curriculum details presented below in Figure 6, which were also taken from the aforementioned opinion, reveal an almost exclusive predominance of subjects focused on specific mathematical content, with a strong emphasis on aspects of university mathematics. The program includes components such as Differential and Integral Calculus, Algebra, Mathematical Analysis, Geometry, and Applied Mathematics, representing a technical-theoretical training centered on *mathematics to teach,* which, as previously mentioned, was composed at that time of mathematical content aimed at the disciplinary teaching of mathematics (Bertini, Morais, & Valente, 2017).

Opinion [11] nº 1687/1974/CFE – Program content of the mathematics qualification – short duration teaching degree (UFAC, 1974):

1. Qualification in mathematics:
1.1 – Differential and Integral Calculus – Continuing the study begun in the common core, covering derivatives and integrals of functions of several variables. The basic concepts must be established simultaneously with the presentation of the techniques essential for their application. A rigorous and deductive presentation of the topics covered will be made in mathematical analysis.
1.2 – Algebra – including Linear Algebra and Algebraic Structures (groups, rings, and bodies). It is important to consider the numerous applications that the first, through matrix theory and linear programming, has found in economics, sociology, agricultural sciences, and engineering.
1.3 – Mathematical Analysis – Understanding the main topics covered in Differential and Integral Calculus, now with greater rigor. Mathematics will provide a theoretical basis for the Calculus studied previously, with a more practical application.
1.4 – Geometry – Consisting of a review of elementary geometry, from an advanced point of view, with an axiomatic model (e.g., Hilbert). The study will have historical, critical, and philosophical significance, emphasizing the importance of mathematics and its role in the culture of the Western world.
1.5 – Applied Mathematics – Including the study of differential equations, with integration of mathematical disciplines for the analysis of real-world problems. It is desirable to focus on topics from physics, biology, and other fields that involve mathematics to solve them. This will lead to a functional approach to the algebra of matrices, Fourier series, Laplace and Fourier transforms, as well as ordinary and partial differential equations. This subject also includes topics

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[11] This document is also reproduced in Pereira (2022, p. 135).

in finite mathematics, which generally begin with combinatorial analysis and lead to the study of probabilities (set theory, permutations, and combinations of discrete functions, the first notions of graphs, networks, and Boolean algebra); this does not prevent their individual presentation in full curricula, according to each institution's plan (Brasil, 1974, pp. 222, 223)

This section is also analyzed by Pereira (2022), who highlights the mismatch between the normative discourse in Resolution No. 30/1974/CFE and Opinion No. 1687/1974/CFE, which emphasizes the importance of pedagogical training and its actual implementation in the curriculum. Although the short-duration teaching degree in mathematics included subjects related to the field of educational sciences, the curriculum structure remained much focused on higher mathematics content, more suited to university education than to teaching in secondary education. The absence of components consistently focused on the didactics and pedagogy of mathematics—what Valente (2020) refers to as *mathematics for teaching*, in terms of professional teaching knowledge— compromised the systematization of these elements in teacher training.

Although subjects such as Applied Mathematics proposed a certain interdisciplinarity by articulating mathematics, physics, and biology, they still prioritized scientific content with little direct relation to teaching practice in basic education. This highlights the persistence of an academic rationality in teacher education, making it challenging to consolidate *mathematics for teaching* as a structuring element of a professional knowing.

Below are the syllabi of the teaching practice subjects in the mathematics teaching degree course at UFAC, organized in Table 3. This systematization enables us to visualize the evolution of pedagogical activities and the institutional effort to bridge the gap between theoretical education and practical classroom experience.

Table 3

Syllabuses of teaching practice subjects – UFAC (1971, 1976, 1986). (Pereira, 2022, p.139)

COURSE	SUBJECT	SYLLABUS	Workload	CREDIT
Teaching degree in	TEACHING PRACTICE III[12]	Prerequisite – Ed. 320. Teaching practice will be developed through	60	04

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[12] Teaching Practice III corresponds to the 1971 version of the UFAC mathematics teaching degree course. Subjects I and II were included in the 1976 version, aimed, respectively, at teaching primary and secondary school levels in the short-duration teaching degree in science with a qualification in mathematics. Subject VIII refers to the 1986 version. It is noted that the numerical sequence of the

mathematics (1971)		activities aimed at primary education in community schools.		
	TEACHING PRACTICE IV	Prerequisite – Ed. 320 and Ed. 420 Teaching practice will be developed through activities aimed at secondary education in community schools.	60	04
Teaching degree in sciencies/ Qualification in mathematics (1976)	TEACHING PRACTICE I and II	Philosophy, planning, and execution of the course plan, unit, and lesson plan. The teacher will develop teaching activities in primary and secondary schools, developing, participating in, and directing classes of students.	120	04
Teaching degree in mathematics (1986)	TEACHING PRACTICE VIII	Teaching practice will be developed through observation activities, participation, and application of the student's specific knowledge, in teaching primary and secondary schools in the community.	120 13	04

A comparison between the 1971, 1976, and 1986 versions reveals a qualitative transformation in the approach to teaching practice. There is a shift from an organization centered on content and assessments to guidelines that focus more on school reality and teacher professionalization. In this movement, the teaching practice subjects incorporate activities in community schools, in line with Opinion No. 292/1962/CFE, enabling teaching degree students to experience real teaching situations.

In 1986, the consolidation of teaching practice was noted as a privileged space for articulation between theory and pedagogical practice, involving school observation and didactic intervention. This advancement signals the institutionalization and strengthening of *mathematics for teaching* as a constitutive dimension of professional teaching knowing.

Figure 5

Syllabus[14] of the Teaching Practice VIII discipline – UFAC (1986). Original document provided by UFAC.

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subjects does not follow a strict chronological order and that, in the 1971 version, the nomenclature III and IV was adopted for the mathematics teaching degree course, without there being a direct correspondence with the later numbering of the versions.

[13] 30 hours consisted of the theoretical part, and 90 hours were equivalent to the supervised practicum to be carried out in schools.

[14] Full transcription of the document: Federal University of Acre. Date June 21, 2022 – Time 17:17. 11.02.01.99.06 Curriculum Courses (by version) Course: 04 – Teaching Degree in Mathematics. Version:

The figures presented in this text—based on Table 1, which organizes the timeline of official and normative documents on teacher education in mathematics (1931–1975) (Pereira, 2022, pp.112, 118-119, 122, 130)—complement this analysis by highlighting some of these documents. They make it possible to understand how federal regulatory devices were materialized in UFAC's institutional documents over the decades. The triangulation between opinions, resolutions, subjects, and syllabi highlights a process of curriculum construction that, although marked by tensions between disciplinary fields, has advanced the consolidation of professional teaching knowings anchored in *mathematics for teaching*. This trajectory was not linear, but it proved to be sensitive to both legal impositions and the demands of teacher education in Western Amazonia.

Final considerations

The analysis of the normative documents that guided teacher education between 1962 and 1992 made it possible to highlight the progressive constitution of a field of knowings focused on mathematics teaching, in which *mathematics for teaching* is outlined as a constitutive element of professional teaching knowings. This construction was not linear; it resulted from historical processes marked by epistemological disputes, curriculum reconfigurations, and clashes between different formative projects.

In the specific case of UFAC, we observed the gradual integration of national guidelines into the mathematics teaching degree curricula, which implied not only formal changes, but also tensions between the traditional scientific and content-based

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1986/1. Curriculum Status: Previously Active. Structure: Mandatory subjects. ED167 – Teaching Practice VIII: The teaching practice will be developed through observation activities, participation, and application of the student's specific knowledge, in teaching primary and secondary schools in the community. 8th period – 120 hours (90 h/Practicum and 30h/Theory – 4 Credits – Mandatory. This document is also reproduced in Pereira (2022, p. 150).

model and the teacher training proposal focused on basic education. The subjects related to teaching practice, foundations, school mathematics, and the articulation between pedagogical and specific knowings began to occupy a more central place in the curriculum organization, although not always in a homogeneous manner or without resistance.

At the same time, the Amazonian regional context required the redefinition of these regulations, revealing a historically situated formative process, permeated by institutional, cultural, and social conditions. Teacher education at UFAC cannot, therefore, be understood merely as the application of national guidelines, but rather as the local construction of a pedagogical project that is sensitive to the educational demands of the region and the material conditions for offering courses.

We conclude that *mathematics for teaching* should not be understood as a stagnant set of teaching content, but rather as complex knowing, constructed through interactions between public policies, institutional requirements, training practices, and local needs. This perspective helps us broaden our understanding of the constitution of the teaching profession in mathematics, highlighting the importance of legal frameworks and curriculum disputes in the consolidation of historically constructed and socially situated teaching knowing. By illuminating the case of UFAC, this study, we believe, contributes to a broader understanding of the dynamics that shape teacher education in peripheral contexts, such as the Amazon, and reaffirms the centrality of teaching in the struggle for a mathematics education more committed to the social and cultural realities of its subjects.

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Revisão e tradução

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