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National policies for the training of Mathematics teachers and power games: reflections, challenges, and propositions

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***Abstract**:* This article analyzes how specific power relations and discourses, based on discussions held during the VIII National Forum of Mathematics Teachers (VIII FPMat), shape national policies for the training of mathematics teachers. To this end, some conceptual tools proposed by Michel Foucault were mobilized. The analysis focused on the corpus constituted by the reports shared by the coordinators of the Discussion Groups (DG). The study was based on the principles of discourse analysis as a methodological tool. We reference three units of analysis: a) Training models and normative control; b) The effects of power and the constitution of identity; c) Standards and practices in initial and continuing training. Overall, the results indicate that discourses shape norms, standards, and practices in teacher training. The discursive framework establishes knowledge and truths, referencing normative dimensions.

Keywords: Official Documents. Training. Identity. Device.

Políticas nacionales de formación de profesores que enseñan Matemáticas y los juegos de poder: reflexiones, desafíos y proposiciones

***Resumen**:* Este artículo analiza cómo las políticas nacionales de formación de profesores que enseñan Matemáticas están moldeadas por relaciones de poder y discursos específicos, a partir de las discusiones planteadas durante el VIII Foro Nacional de Profesores que Enseñan Matemáticas (VIII FPMat). Para ello, se movilizaron algunas herramientas conceptuales propuestas por Michel Foucault. La análisis se centró en el corpus constituido por los informes socializados por los coordinadores de los Grupos de Discusión (GD). El estudio se apoyó en los principios del análisis del discurso como herramienta metodológica. Tomamos como referencia tres unidades de análisis: a) Modelos de formación y control normativo; b) Los efectos del poder y la constitución de la identidad; c) Estándares y prácticas en la formación inicial y continua. En general, los resultados comunican que los discursos configuran normas, estándares y prácticas en la formación de profesores. La trama discursiva establece saberes y verdades, tomando como referencia la dimensión normativa.

Palabras clave: Documentos Oficiales. Formación. Identidad. Dispositivo.

Políticas nacionais de formação de professores que ensinam Matemática e os jogos de poder: reflexões, desafios e proposições

Resumo: Este artigo analisa como as políticas nacionais de formação de professores que ensinam Matemática são moldadas por relações de poder e discursos específicos, a partir das discussões pautadas durante o VIII Fórum Nacional de Professores que ensinam Matemática (VIII FPMat). Para tanto, mobilizou-se algumas ferramentas conceituais propostas por Michel Foucault. Optou-se pela análise do *corpus* constituído pelo conjunto de relatórios socializados pelos coordenadores dos Grupos de Discussão (GD). Apoiou-se nos princípios da análise do discurso como ferramenta metodológica. Tomamos como referência três unidades de análises: a) Modelos de formação e controle normativo; b) os efeitos do poder e a constituição da identidade; c) Os padrões e as práticas na formação inicial e continuada. De maneira geral, os resultados comunicam que os discursos configuram normas, padrões e práticas na formação de professores. A trama discursiva faz com que saberes e verdades sejam instituídos, tomando como referência a dimensão normativa.

Palavras-chave: Documentos Oficiais. Formação. Identidade. Dispositivo.

1 Introduction

In this article, we problematize some issues raised during the VIII National Forum of Teachers Who Teach Mathematics (VIII FPMat), which took place from November 30 to December 2, 2023, at the Federal Institute of Piauí (IFPI), Teresina Central Campus, and we advance the discussions by bringing up some controversial points of CNE/CP Opinion n. 4/2024. The event, promoted by the Brazilian Society of Mathematics Education (SBEM), was coordinated by WG07 Training Teachers who Teach Mathematics. The authors of this article, coordinators of WG7, were part of the organizing committee of the event, whose theme was *National Policies for Teacher Education in Mathematics: Reflections, Challenges and Proposals*[1].

National teacher education policies refer to the set of guidelines, norms, and strategies developed by government agencies and educational institutions to align teacher education with contemporary educational and societal demands (Dourado, 2023; Metzner & Drigo, 2021). For Dourado (2023), these policies should promote the articulation between initial and continuing education, reflect the specific needs of the educational context, and include professional development. However, for the author, in the history of Brazilian education, the materialization of policies for teacher training is not linear. Regarding teacher training, we have a series of policies implemented in our country, such as the National Education Plan (PNE) 2014-2024[2] in its goals 15, 16, 17 and 18, which strengthen actions for initial and continuing training (Ministry of Education, 2014). Although interest in teacher training has increased in the past 20 years, since 2016, after the coup, the logic of the Ministry of Education (MEC), which rejects the PNE and CNE/CP Resolution n. 02/2015, which establishes the National Curriculum Guidelines (DCN), has moved in the opposite direction to the needs of teacher training (Cosenza, 2018).

Recently, the National Association for the Training of Educational Professionals (Anfope) presented in a document a historical outline of the movement of struggle inherent to this entity that has as its object the training of teachers. In opening the debate, they put on the agenda the repeal of Resolution CNE/CP n. 2/2015 and the process of implementing Resolution CNE/CP n. 2/2019, based on a matrix of competencies and skills formatted by the National Common Curriculum Base (BNCC) and associated with it in the context of the denialist government. Since the approval of Resolution CNE/CP n. 2/2019 on initial training, as well as

[1] The event was supported by the Coordination for the Improvement of Higher Education Personnel (Capes), through the Postgraduate Support Program (Proap), 2023.
[2] Law 14.934, of July 25, 2024, extends the validity of the National Education Plan approved by Law 13.005, of June 25, 2014, until December 31, 2025. https://normas.leg.br/?urn=urn:lex:br:federal:lei:2024-07-25;14934.

the fragmented approval of Resolution CNE/CP n. 1/2020, which deals with continuing training, the debate has taken on a different shape. It has been four years of intense struggles and disagreements over the proposal for the Common National Base (BNC-Formação), the fight to repeal CNE/CP Resolutions 02/2019 and 01/2020, and the resumption of CNE/CP Resolution 02/2015. The document expresses the deep rejection of the approval by the Ministry of Education of Opinion n. 04/2024, which expresses a technical and standardized view of training (Anfope, 2024).

In the field of mathematics education, studies have questioned the reforms and counter-reforms related to the training of teachers who teach mathematics (Barbosa, 2021; Dias *et al.*, 2020; Lopes *et al.*, 2023; Santana *et al.*, 2022). These authors problematize the initial and in-service training of mathematics teachers, highlighting the tensions between policy changes and the reality of training. For example, recent research shows that universities and mathematics programs are struggling to adapt their curricula to the guidelines because of the clash between established academic traditions and the new requirements proposed by the resolution. Zaidan *et al.* (2021) present a detailed analysis of 172 mathematics degree programs in Brazil that have been adapted to meet the guidelines established by Resolution CNE/CP n. 02/2015. The authors provide a general overview, analyze how the programs made the adaptations in a critical and detailed manner, considering the current legislation, and highlight the implications of these adaptations for mathematics education in Brazil. However, there are no studies in the field that highlight how national policies for training teachers who teach mathematics shape knowledge and regulate practices. This gap motivated us to analyze how these policies can be challenged and transformed.

In the next section, we will mobilize some conceptual tools proposed by Michel Foucault to problematize and broaden the discussions about the object of study. This analysis not only sheds light on the implications of national policies for teacher education, but also offers a critical look at the forces shaping the field of education, particularly mathematics education. We will consider guidelines as one of the elements of the apparatus, so we will focus on this concept below. We will then return to the goal of the study in theoretical terms.

2 Device, discourse, and power games

Dear reader, please allow us to situate the different conceptions that have been formed by placing training policies in a specific historical context. Inspired by Foucault (2018), we argue that they can function as control mechanisms by establishing standards and expectations for teacher education that, over time, display certain practices and discourses. Foucault (2018) does not define *practice* in isolation, but integrates it into his analysis of forms of power, knowledge, and discipline. For him, practices are actions and behaviors inscribed in a broader social and cultural context and shaped by discourses and institutions. These practices are not just individual actions, but are part of systems of knowledge and power that define and regulate behavior. Foucault (2018) uses *discourse* not only in the common sense of verbal or written communication, but as a complex set of practices that define what can be said, known, and thought at any given time. For the author, discourse not only reflects ideas or representations of an object, but also produces meanings and defines the conditions under which knowledge is produced and validated as true. We can take as an example the guidelines for teacher education that shape and regulate professional practice and identity[3]. By taking them as an object of study, we problematize the ways in which power and knowledge are configured, how norms and

[3] According to Cyrino (2016, p. 168), professional identity (PI) is understood as a movement that "takes place in view of a set of beliefs and conceptions related to self-knowledge and knowledge of one's profession, associated with autonomy (vulnerability and sense of agency) and political commitment".

practices are established, and how discourses about teacher education are constructed and maintained. From this perspective, we argue that the guidelines are one of the elements of the apparatus associated with teacher education.

Inspired by Foucault (2017), we take the concept of device as an object of genealogical description, a phase in which it incorporates a more contextualized and critical analysis of power relations. The philosopher introduced the concept of device as a set of relations that cut across institutions, social practices, discourses, and power (Foucault, 2018). The device includes not only formal structures such as laws and institutions, but also social norms, disciplinary practices, and techniques of government (Foucault, 2018, p. 364).

Historically, since the publication of the Educational Guidelines and Basic Law (LDB) n. 9394/96, we have been immersed in a national debate on forms of discourse and practice that legitimize certain knowledge and power hierarchies, and that influence public and individual perceptions of what is acceptable and true through the DCN (Brasil, 2002, 2015, 2019, 2020, 2024). In this game, power is seen in action, as it is exercised and contested. According to Foucault (2017), power is neither a place that is occupied nor an object that is possessed: it is a struggle, a confrontation, a relationship of force, or a strategic situation. However, even though power excludes, represses, censors, and masks, it also has a productive efficacy and strategic wealth. This aspect explains why power does not apply to individuals or is applied by them. Power passes through them to direct their behavior, to improve them, to train them, or to transform them, according to Foucault (2017).

We can take as an example what happened at the end of Fernando Henrique Cardoso's government, with the promulgation of Resolution CNE/CP n. 01/2002 (Brasil, 2002), which required that undergraduate courses comply with the guidelines, with a form of regulation for the circulation of what was proposed. This document, based on a competency model, began to regulate curricular configurations and, consequently, described a different view of initial teacher education in Brazil (Marchan, 2017). Principles were established to regulate the lives of those involved in the training and to guide behavior, creating a strong relationship of power and, consequently, resistance, as noted by Dias *et al.* (2020) and Barbosa (2021). For these researchers, the emphasis on competencies recalls the instrumental-technical curricular visions propagated in Brazil until the early 1970s, when teacher training required the development of teaching methods in line with the dominant production model. These relations, in turn, are always inscribed in a dynamic play of power that presupposes knowledge that guides it and is configured by it: “This is the device: strategies of relations of power that sustain types of knowledge and are sustained by them” (Foucault, 2018, p. 110). For the author, it is a game, an intervention constituted in the relations of power, either to develop them in a certain direction or to block or stabilize them.

Taking the example of the mathematics courses, we can see that different discourses have been used to legitimize or challenge forms of power over the course of 13 years. The formative/formatting model — characterized by selection, creation, production, and transformation — establishes practices that are justified by the need to prepare professionals to occupy positions in the labor market, as stated in the DCN for Bachelor's and Licentiate degrees in Mathematics (Brasil, 2003).

In this game, after 13 years, at the end of Dilma Roussef's government, the National Education Council (CNE) reopened the debate on the training of education professionals and proposed the reformulation of the courses aimed at this training through CNE/CP Opinion n. 02/2015 and CNE/CP Resolution n. 02/2015. This resolution was collectively constructed and widely discussed by the community and legitimized by different scientific societies, such as the

National Association for Graduate Studies and Research in Education (Anped), the National Association for the Training of Education Professionals (Anfope), and the National Association for Education Policy and Administration (Anpae), among other representative organizations. The discourse in Resolution CNE/CP n. 02/2015 was based on solid theoretical and interdisciplinary training, the unity between theory and practice, work as a pedagogical principle and the understanding that research is a cognitive and formative principle and, therefore, the axis of this training. Regarding the projects of mathematics programs in Brazil, we found that by 2019, of the 298 courses in the face-to-face modality, 172 had made the adaptations to comply with Resolution CNE/CP n. 02/2015, as shown in the mapping in which we participated (Zaidan *et al.*, 2021).

Against a backdrop of political and ideological disputes, during the negationist government of Jair Bolsonaro, CNE/CP Resolution 02/2019 comes into force and presents a range of professional teaching competencies anchored in know-how, based on three professional dimensions: knowledge, practice, and engagement. CNE/CP Resolution 02/2019 uses various technologies of power to regulate and govern initial teacher training, shaping not only curricula and practices, but also the subjectivities and identities of future education professionals in Brazil. Technologies of power refer to the set of practices, devices, and strategies through which specific forms of power and governance are established and exercised over individuals and populations (Foucault, 2018).

Inspired by Foucault (2018), we argue that among the specific practices and procedures that we use to achieve certain goals, we can highlight: the disciplinary institutions that operate as power devices by regulating and controlling behavior and bodies; the training device associated with the dictates of the National Common Curriculum Base (BNCC), which leads to pragmatic training and resumes the technical-instrumental orientation, supported by a ballast of competencies explicit in articles 2 and 3 of CNE/CP Resolution n. 02/2019, which deals with initial training. CNE/CP Resolution n. 02/2019, which deals with initial training; the surveillance, monitoring, and evaluation methods used to supervise and discipline individuals in institutions and in public spaces; as well as standardized practices that point out details of content and evaluation, break the articulation between theory and practice, and place the responsibility for continuing education on the teacher, as also pointed out by Dias *et al.* (2020). Against this backdrop, society is presented with the guidelines for in-service training prescribed in CNE/CP Resolution n. 1/2020. This fragmented and discontinuous document functions not only as a regulatory instrument for teacher training, but also as an instrument of power that shapes knowledge, practices, and subjectivities in the field of education. Through strategies of standardization, knowledge production, and control, the resolution has a profound impact on education in Brazil, and we can say that these guidelines are a contemporary example of the technologies of power as proposed by Foucault (2017).In this game, power is shown in action, as it is exercised and contested. According to Foucault (2017), power is neither a place that is occupied nor an object that is possessed: it is a struggle, a confrontation, a relationship of forces, a strategic situation. However, despite its exclusion, repression, censorship, and masking, power also has productive efficacy and strategic wealth. In the field of mathematics education, research on the initial training of mathematics teachers discusses the relevant knowledge for teaching mathematics (Ball *et al.*, 2008; Fiorentini & Oliveira, 2018; Santana *et al.*, 2024). For Santana *et al.* (2024), the discursive fabric leads to the establishment of knowledge and truths, taking as a reference the normative dimension of the curriculum. These are the forces that intertwine and interfere in the curricular organization of school mathematics.

In the current context, in the face of a broad movement of resistance (until 2022) and hope (in 2023) for the return of social and educational policies, as stated in Anfope's note,

Brazil, under the government of President Luiz Inácio Lula da Silva, enacted CNE Resolution n. 4/2024. It was shaped by a complex political and social context that included the need to revise educational guidelines in response to previous challenges and criticisms, as well as to align educational policies with the government's new priorities. However, the discourse of updating and consensus present in CNE/CP Resolution 4/2024 creates a regime of truth about teacher education. This leads us to question the conceptions, propositions, and materialization debated and how they shape the vision of *updating* training since the resolution emphasizes content-based training, which, in the case of mathematics programs, legitimizes the principles of the 3+1 model so criticized in the mathematics education community (Zaidan *et al*., 2021).

In this article, we will discuss four points that are also on the agenda of the VIII FPMat: the 400 hours of pedagogical practice as a curricular component, which has been present since Resolution CNE/CP n. 01/2002 (Brasil, 2002); initial training linked to continuing training; the inseparability of teaching, research and extension; internships and teacher training programs.

The originality of this question lies in the fact that it offers an analysis of the power games set in motion by discourses that interact and overlap, how they shape practices and policies, and what the implications are for the training of mathematics teachers. In terms of our theoretical understanding, we can thus analyze how power relations and specific discourses, based on the discussions during the VIII FPMat, shape national policies for the training of teachers who teach mathematics. In the next section, we present the methodological approaches of the research. Then we discuss the problematizing elements.

3 Paths traveled

To accomplish our goal, we rely on the principles of the postmodern paradigm (Creswell, 2010). We argue that Michel Foucault fits into this paradigm by questioning narratives and universal truths. The author discusses the social and historical construction of knowledge and explores the interrelationships between power, discourse, and subjectivity (Foucault, 2017). His deconstructive and critical approach contributes to the postmodern view that reality is multiple, fragmented and socially constructed, reflecting a distrust of absolute truths and the universal subject. From this perspective, there is an interweaving of realities, opinions, historical and social issues that are mixed with human subjectivity to answer questions that interest an individual or a group of them.

In this sense, this research is situated from a postmodern perspective, considering the plural reality that exists today, both in relation to cultural groups and in relation to the discourses that cross them, as well as the political scenario that interferes with the logic of organizing national policies for training teachers who teach mathematics. Like Foucault (2018), we were inspired by the archival process to analyze how power relations and specific discourses, based on the discussions that took place during the VIII FPMat, shape national policies for training teachers who teach mathematics. Thus, the study mobilized the conceptual tools proposed by Michel Foucault. The analyses focused on contentious concepts, propositions, and materialization. To this end, the study adopted a qualitative approach of a documentary nature, as proposed by Cechinel *et al.* (2016).

The corpus consisted of a series of reports shared by the coordinators of the discussion groups (DG) of the VIII National Forum of Teachers who teach Mathematics (VIII FPMat), which took place between November 30 and December 2, 2023, at IFPI, Teresina Central Campus. The VIII FPMat was organized into five DGs, namely: (DG1) Mathematics Degree and Knowledge of Teaching; (DG 2) Professional and Academic Profile of Teacher Trainers; (DG 3) Curricular Public Policies for the Initial Training of Teachers who Teach Mathematics;

(DG 4) Initial Training in Mathematics Education in the Degree of Pedagogy; (G DG 5) Mathematics Teaching in the Training of Indigenous, Quilombola and Rural Educators: Intercultural Practices.

Next, we read the five reports (documents) in an attempt to achieve our goal of identifying the dominant specific discourses and the main narratives supported by discursive practices. This included how the discourses were formulated, what the central concepts were (such as "teaching literacy," "applied mathematics," "educational technology"), and what the significant presences and absences in the texts were.

The analysis was based on the principles of inversion, specificity, discontinuity, and exteriority. Based on what Paraíso (2012) proposes, in the process of analysis, we verified the functioning of power relations, the strategies used, and the discourses legitimized or excluded to authorize and disseminate them. Finally, we argue that the reports selected for analysis have given us clues as to which lines of power and clashes lead to the establishment of truths that are considered universal. However, it is worth pointing out that "Foucault is not there to tell us the truths about things, but rather to help us understand in what ways, by what paths, everything that is considered true once became true" (Veiga-Neto, 2006, p. 87).

4 What's at stake

In this section, we will present a problematization undertaken about the documents analyzed. We will then present three units of analysis: a) training models and normative control; b) the effects of power and the constitution of identity; and c) standards and practices in initial and continuing training. These units emerged from the data and were systematized through a dialogue with some Foucauldian concepts, highlighting reflections, challenges, and propositions based on the DGs.

4.1 Normative formation and control models

The training models proposed in the normative documents shape the dynamics of power and knowledge that permeate curricular organization, in the terms put forward by Foucault (2018). Dourado (2023) criticizes the models that perpetuate the fragmentation of knowledge, emphasizing that this division can limit subjects' ability to relate different knowledge to their everyday experiences, as expressed, for example, in CNE/CP Resolution n. 02/2019 and CNE/CP Resolution n. 1/2020. This compartmentalization is not neutral; it reflects and reinforces power relations, in which each discipline becomes a field of dispute for prestige and legitimacy, as we can see in the following excerpt:

> Undergraduate programs are still characterized by a strong imprint of what several authors have called "three plus one," in that it separates "specific knowledge," understood as academic mathematics, the mathematics proper to the professional practice of professional mathematicians, and "pedagogical knowledge, In other words, we are training mathematics teachers without paying due attention to what will be at the heart of their professional identity, their professional development and their future professional practice (Synthesis of the DG of the DR/MG, 2023 cited by DG1, 2023).

The passage under analysis highlights the separation of "specific knowledge" and "pedagogical knowledge," which can be considered a form of control over what is considered legitimate knowledge in the training of mathematics teachers. This separation highlights the model of undergraduate courses based on an organizational structure that is well established in Brazil, as pointed out by Moreira and Ferreira (2013), Lima and Leite (2018), and Gatti *et al.* (2019). For the authors, this organization often summarized in the formula "Bachelor's Degree

= Bachelor's Degree + Didactics", reflects a culturally consolidated educational model characterized by the "3+1" format: three years dedicated to knowledge areas and one year to pedagogical training. This segmentation reveals a conception of mathematical knowledge that, by taking root in institutions, perpetuates a curricular approach in which mathematics and pedagogical training are treated in a fragmented and discontinuous manner, as also problematized in Zaidan *et al.* (2021). Inspired by Foucault (2018), we argue that this fragmentation is an example of how knowledge is organized into categories that paradoxically limit teacher training. The segregation of knowledge creates a space in which knowledge does not dialogue with one another, resulting in fragmented and often superficial training.

Criticism of curricular arrangements was present in the discussions of all the DGs. During the debate, the need to make curricular boundaries more flexible was signaled as a way of opening up space for a more critical and reflective education, where dialogue between different social and political contexts is considered a potential for education, as we can see in the following excerpt:

> This is also happening in the degrees in Field Education (LEdoC), Quilombola School Education (LEEQ), Indigenous Intercultural Education (LII), Mathematics, and Pedagogy, seeking to (re)structure PPCs and mobilize specific teaching, research, and extension actions that meet these demands. Evidenced in normative frameworks that deal with the training of basic education teachers. These courses need to value aspects relating to history, culture, tradition, and links with the territory DG5, 2023).

In seeking to (re)structure the PPCs, these degrees are part of a power play in which they seek to legitimize knowledge that has often been marginalized, such as local traditions and cultures. The emphasis on history, culture, and tradition reveals a recognition of the importance of context and territorial identity in teacher education. Foucault (2018) reminds us that social and cultural relations always influence the construction of identity. Therefore, by valuing these aspects, the courses not only oppose a homogeneous model of education, but also build a resistance that seeks to affirm the plurality of knowledge.

In this sense, DG 4 also questions the curricular structure by guiding the curricularization of extension, as we will see below:

> The mandatory restructuring of pedagogy courses with the BNC-Formation and the curricularization of extension (320h) were indicated by Resolution n. 7, of December 18, 2018, of the Ministry of Education (MEC), National Education Council (CNE), and Chamber of Higher Education (CES), and establishes the guidelines that extension activities must make up at least 10% (ten percent) of the total student curricular workload of undergraduate courses, which must henceforth be part of the curricular matrix of the courses. This determination has raised many questions: by making extension a curriculum, aren't we making its funding even more precarious in public institutions? What role will the extension secretariats, deans, and undergraduate teaching deans take on in this process? How will extension activities be monitored and evaluated? Has the resolution been widely discussed in the institutions to problematize the conception and/or conceptions of university extension? (DG 4, 2023).

The excerpt under analysis denounces the obligation to restructure according to the Common National Base (BNC-Formação) and the curricularization of Extension as an integral part of the curriculum matrix, also problematized by Barbosa (2021) and Dias *et al.* (2020). Now, this obligation reveals a power game between different instances of the institution, such as the MEC, the CNE, the CES, and the universities. This can be considered a way of centralizing control over what is considered valid knowledge and how higher education should be organized. The question of funding and the role of the pro-rectorates implies a

reconfiguration of power relations within the institution itself. What might previously have been a more autonomous initiative becomes part of a normative structure. This issue was also discussed in DG3, as will be seen below:

> After discussions on the idea of extension, provoked by the expression "extension as service provision", it was agreed that extension in bachelor programs should be an action articulated with teaching and research, built together from a permanent relationship between the university and the external community, with a focus on formal, non-formal and informal educational contexts (DG3, 2023).

Inspired by Foucault (2018), we argue that the discussion around the concept of extension mentioned in the excerpt implies a problematization of traditional ways of understanding this concept. Santana *et al.* (2022) argue that the different interpretations of what extension is can affect practices and relationships with the community, challenging or reinforcing existing power structures. For the authors, the regulations that determine the "curricularization" of extension pose challenges to university faculty, leading them to rethink their PPCs. However, the legal frameworks point to several fractures; as a result, we have not yet managed to overcome the fragmentation of the teaching work of "teaching, research and practice of extension" (Oliveira; Tosta; Freitas, 2020, p. 115). This is also the case with the design discussed in the CNE/CP Opinion n. 4/2024, which presents a reductionist conception of Extension, limiting actions to school spaces, with a proposal of 320 hours to complete the curriculum (Brasil, 2024).

In this context, we argue that the curricularization of Extension should be understood as a field of struggle in which different visions of the role of Extension in higher education are confronted. In line with the Anfope Manifesto (2023), we advocate preserving the intrinsic characteristics of extension activities and avoiding an approach that reduces them to a disciplinary model. This reduction can not only distort the essence of extension, but also impose a control regime that limits the university's ability to interact with the community in an authentic and transformative way.

Another form of articulation between the university and the school community is legitimized during the 400-hour internship recommended by CNE/CP Resolution 1/2002 and the current resolution, as we can see in the following excerpt:

> Internships (compulsory and non-compulsory) are cited “(...) as the real link between formal, academic mathematics, which is covered in higher education, and school mathematics, the working tool of teachers who teach it in primary schools” [Summary of the DG of the DR/AC, 2023]. The discussions within this directorate record questions about the internship and include, in a circumstantial way, the role of the trainer in the role of supervising teacher (DG2, 2023).

The claim that apprenticeships act as a link between formal mathematics and school mathematics reflects a power structure that hierarchizes different forms of knowledge. From a Foucauldian perspective, what we have is knowledge shaped by power relations, in which formal mathematics, often associated with academia, is legitimized as superior to school mathematics, which is considered a working tool. For Pimenta and Lima (2017), what is observed is a lack of articulation between university and school, generating misunderstandings in teacher training and increasing this duality. While the internship is seen as a link between different types of knowledge, it can also be interpreted as a standardization mechanism. It establishes a form of control over training, in which practices are shaped by guidelines that often do not consider the diverse realities of schools. Foucault (2019) leads us to question how this standardization can limit the autonomy of future teachers and the diversity of practices.

In the cross-sectional analysis of the data presented in the DG reports, in addition to the internships, the DGs put on display the teaching initiation programs, such as the Institutional Teaching Initiation Scholarship Program (Pibid) and the Pedagogical Residency Program (PRP), instituted by the Coordination for the Improvement of Higher Education Personnel (Capes), which emerge within a regulatory framework characterized by uncertainty and fragmentation. According to Santana and Barbosa (2020), the PRP, which is operated by higher education institutions, seeks to develop placement, immersion and regency activities, coexisting with programs such as Pibid and the supervised internship in undergraduate courses. However, this integration reveals a power relationship that overburdens public schools. According to Pimenta and Lima (2017), these institutions must not only fulfill their educational obligations, but also submit to a series of external demands, including institutional and external evaluations imposed by the government.

These practices are immersed in a network of control and surveillance that shapes both teacher training and the conditions in which schools operate, in line with the studies of Foucault (2019). By instituting programs such as Pibid and PRP, not only is a new form of disciplining legitimized in training, but it also reinforces existing hierarchies and normative expectations about what it means to be an educator in the current context.

4.2 Knowledge, power, and the constitution of identity

According to Foucault (2004), knowledge and power are inseparable within any collectivity. The author argues that knowledge is not a neutral or objective entity, but rather a social and historical construction that is deeply imbricated in the power relations of a society. An example of this dynamic can be found in the way mathematical knowledge is used as an exercise of power, as we can see in the following excerpt:

> The knowledge that future educators need to be able to teach mathematics in early childhood education and in the early years was brought up again in the discussions. In this sense, the need to offer pedagogy students proposals that allow them to experience teaching mathematics was highlighted. There is a perception that a considerable number of students in the pedagogy course show no interest in teaching mathematics, which may be related to their training in basic education, when they had no opportunity to approach/have positive experiences with this subject. This implies that the teacher of mathematics education should try to reverse this situation (DG 4, 2023).

The excerpt discusses the knowledge that future educators must acquire to teach mathematics and the need for experience in teaching the subject. This discourse reflects a discursive practice that values experience and the acquisition of knowledge as fundamental to education. The perception that education students are not interested in mathematics and the attempt to reverse this situation is a discourse that relates interest and motivation to the training received. Bittencourt and Curi (2020), taking pedagogy courses as their object, discuss the challenges of teacher training in Brazil and denounce the limitations of theoretical and epistemological discussions on mathematical thinking due to our limited workload. According to the authors, we have PPCs that are too comprehensive and therefore do not guarantee the desired training of primary school teachers. However, this situation is not static; it is permeated by power dynamics and discursive practices that sometimes allow for some curricular adjustments.

These advances, although they seem to indicate improvements, are always embedded in, limited by the discourses and power relations that structure, and regulate the field of training. This is also the case in the LEdoC, LEEQ and LII courses, where DG 5 points out that "*through oral tradition, stories, ways of life and knowledge have been passed down from generation to*

generation as a form of resistance to the erasure, social, political and cultural invisibility and other violence suffered by quilombola and indigenous peoples." The oral traditions and knowledge of quilombola and indigenous peoples represent forms of knowledge that challenge dominant narratives that seek to silence or erase these cultures. Inspired by Foucault (2018), we affirm that this erasure is a practice of power that seeks to keep certain narratives and identities at the margins of society. Resistance through oral tradition is a response to this dynamic, emphasizing that this knowledge cannot be completely erased, even in the face of cultural violence.

According to Fernandes *et al.* (2023), rural identity emerges as a central element that articulates the concepts of territory, land, culture, and school, all of which are linked in collective struggles for rights. For the authors, this identity not only recognizes and values the relationship between belonging to the territory and agro-ecological production methods, but also reflects the power dynamics that permeate rural lifestyles. They also point out that the interactions between subjects and their work practices, respect for nature, and their consequences for the organization of curricula and pedagogical work in schools reveal how these relationships are shaped by discourses and practices of resistance.

The concepts of knowledge and knowing, although distinct, are intertwined and shaped by forces such as power, authority, and historicity. This perspective is corroborated by several researchers who point out that working with and among teachers reveals a specific mathematics shaped by teaching action, such as the research carried out by Santana *et al.* (2024). We find evidence of this in the following excerpt:

> In the DR/TO DG, various recommendations were made, but at the end of the text, summaries were presented, which we have taken as a reference for this text. For the participants, LM courses "(…) need to take as a reference the teaching activities in basic education that mathematics teachers carry out, rather than taking academic mathematics as a reference. Teaching knowledge and professional knowledge can guide curriculum reformulations". In arguing for the LM course to have its own identity, they point to the need to "(…) take on the commitment and have a curricular organization that focuses on the work of mathematics teachers in basic education, in terms of content, practice, and the real situations that are experienced in schools". To this end, it is necessary to seek a system of collaboration between universities and basic education schools to build a policy of continuing education for basic education professionals (DG 1, 2023).

The suggestion that mathematics degree courses should use teaching activities in basic education as a reference reveals a struggle to recognize knowledge that has traditionally been denied, rejected, or avoided in training spaces. Foucault (2014) reminds us that knowledge is always in a context of power. By prioritizing teaching knowledge and practices, the participants claim a space for voices that reflect the reality of basic education, challenging the hegemony of academic mathematics. By focusing on the work of primary school teachers and the situations they experience, the aim is to provide training that not only prepares them technically, but also builds a critical and contextualized identity for future educators.

In the course of the analysis, we observed that the debate on curriculum organization highlighted the PI of future mathematics teachers, in the terms put forward by Cyrino (2016). Another highlight is presented below:

> In addition, not all courses have a defined identity, resulting in a broad curricular organization with little focus on the preparation of teachers who will work in early childhood education and the early years of primary school. The influence of public policy and legislation must also be considered (DG 4, 2023).

The reference to the "broad and undirected" organization of the curriculum suggests that there is control over what is taught and how. The lack of focus on specific training for Early Childhood Education and the initial years of Primary School can be seen as a form of disciplining that ignores the specific needs of this educational context. For Foucault (2004), the logic of imposed standardization can limit the autonomy of educators and the relevance of training. However, DG 1 points out that "initial training spaces need to be intertwined with the specificities of the PI of (future) mathematics teachers who work (will work) in Basic Education, teacher training and research in Mathematics Education". This suggests a need for articulation between theory and practice, university and school, teaching, research and extension, as stated by Santana, De Paula and Pereira (2022).

From a Foucauldian perspective, we could say that this imbrication could be seen as a resistance against decontextualized and normative training models, promoting education that is more relevant and connected to the realities of basic education. From this perspective, based on the studies of De Paula and Cyrino (2020a), we share complexity, dynamism, temporality, and experientiality as aspects that should be considered in investigations on this subject. This means that education is not a linear and fixed process but a field in constant transformation.

With this in mind, we will analyze the following excerpt in dialogue with the studies of Foucault (2018):

> Although efforts have been made to create a curriculum that meets the demand for a qualified professional, in other words, initial training that contributes significantly to the production of basic, essential knowledge that will make teachers more confident when they begin their teaching practice. It was felt that we still needed to be aware that the course should prepare mathematics teachers for basic education. It doesn't work to want to prepare for a career as a researcher in a specific field or for teaching in primary schools. We need to define clear principles, goals, and objectives that will guide a curriculum that meets social, educational, and technological demands, built by several hands (Regional TO apud DG 3).

By emphasizing teacher confidence, it is suggested that training should not only impart knowledge, but also empower future teachers by forming a professional identity that is critical and reflective. Foucault (2018) argues that identity is shaped by social practices and discourses. In the author's terms, the criticism that training cannot simultaneously prepare for research and teaching points to a dichotomy that reveals control and standardization. Dourado (2023), referring to regulatory frameworks, highlights the educational model that often creates artificial separations between different functions, which can result in training that does not adequately meet the needs of either area. This highlights the need to re-evaluate the power structures that define curricula.

4.3 Standards and practices in initial and continuing training

To give unity to our article, in this subsection we will highlight how the dynamics of power and knowledge are intertwined in the construction of realities and historical narratives around the articulation between initial and continuing training. When we analyze the last two decades, we see that this proposal has been a central theme of debate and defense by various entities, such as Anped and Anfope. Both initial and continuing training aim to prepare and develop professionals to teach in basic education in its different stages and modalities (Brasil, 2015), which justifies the need for this interconnection.

As mentioned above, this link was formalized with the approval of CNE/CP Resolution 2/2015, which established the DCN for initial and continuing education (Brasil, 2015).

However, this proposal was fragmented by CNE/CP Resolutions 02/2019 and 01/2020, revealing a significant disassociation. This disassociation is also evident in CNE/CP Opinion 4/2024, which fails to provide clear guidelines for the continuing education of teaching professionals. This analysis highlights how discursive and normative practices shape the identities and actions of educators, reflecting tensions that permeate the educational field, as we can see in the following excerpt:

> The triad of establishing, consolidating and expanding links between higher education institutions and educational networks, given that initial and continuing training must be understood as part of the process of professional development of teachers, was highlighted in the DGs of several RDs (including BA, MT, RS and SP). This intention is articulated in two guidelines proposed in the DG of DR/RR, namely: (i) to provide solid training in learning theories and (ii) to develop "(. . .) pedagogical proposals based on a real LM student and not on an idealized student". Together, these guidelines emphasize the need to overcome the fragmentation between specific and pedagogical training, as well as the need to take into account the specificities of the LM target group, such as working students (DG 1, 20-23).

The proposal to build, consolidate and expand links between higher education institutions and educational networks reflects a power dynamic that seeks to legitimize new training practices, as already pointed out by Santana *et al.* (2022). By highlighting "learning theories" and "pedagogical proposals" based on "real students", the traditional discourse is criticized, which often idealizes the student and ignores their specificities and contexts. We will use this idea to argue that for decades, the literature has shown a duel between the roles of *theory and practice* in teacher education (Pimenta, 2012; Veiga-Neto, 2015). Veiga-Neto (2015) notes that despite the different epistemological strands that challenge the notions of theory and practice, they all agree that one is dependent on the other. In addition, the discourse shows that continuing education and adapting pedagogical strategies are considered essential for teachers to position themselves as agents of change, challenging the passive view of the educator. For Foucault (2018), practices shape the subjectivities of individuals, which is also evident in the following excerpt:

> In light of the above, we propose that this forum broadens the discussion on Pibid and PRP as spaces that favor the integration of initial and continuing education, as advocated by CNE/CP n. 02/2015 and defended by the collective of educators and mathematicians. Regarding the issues related to the role of Pibid, PRP, and the internship, the group believes that it is necessary to form a working group, linked to SBEM, to address the specific objectives of each of the programs, so as not to confuse them with those defined and regulated for the curricular internship, and to collaborate in the constitution of these programs as state policy, including the Teaching Residency, which should be implemented soon (DG 3, 2023).

The excerpt under analysis reveals how the discussion around Pibid and PRP is part of a context of struggle for power and knowledge in teacher training. The search for greater clarity and articulation between the programs reflects an attempt to standardize practices that have already been problematized in the literature, such as the studies by Santana and Barbosa (2020) and Cardoso *et al.* (2023). Mentioning the constitution of these programs as a state policy indicates a movement towards the institutionalization of training practices. This perspective legitimizes the way in which a device operates, since it operates through mechanisms of subjection and resistance, and therefore through conflicts, in the terms set out by Foucault (2018). In addition, this proposition can help us understand the relationships between policies, training practices and PI in the field of education. The idea of including the Teaching Residency as part of this policy reflects an effort to integrate different dimensions of teacher training and strengthen the institutional structure around it. This topic was also discussed in DG 4:

> The two programs, Pibid and Pedagogical Residency, are considered to contribute to the process of initial teacher education and to promote the articulation between initial and continuing education. There are many contradictions both in the concepts contained in the documents and in the implementation process, as well as questions and indications of the need to advance the proposals and the number of students involved. The development of subprojects that prioritize mathematical training in pedagogy courses has been repeatedly mentioned in forums and events (DG 4, 2023).

These programs are seen not only as training initiatives, but also as spaces of power that shape the knowledge that is taught. The contradictions and questions mentioned point to the tension between established norms and practices, and reveal how power is exercised in defining what is considered adequate training. According to Santana and Barbosa (2020) and Cardoso *et al.* (2023), these programs operate with norms that standardize behavior and determine both training and performance, while entities and subjects resist and challenge the imposed proposal for teacher training, shaping new practices. From this perspective, and in line with Foucauldian principles, transformations have taken place in the regional groups, as we will see below:

> To propose new approaches to teacher training, DR-Rio Grande do Sul and DR-Rondônia used the expression decolonize/decolonization of the curriculum, which "implies addressing the mathematics of culturally diverse groups, promoting self-criticism in relation to social injustices, and combating the invisibilization of women and ethnic minority groups in the process of recording the history of the development of mathematical knowledge" (SBEM Regional Rondônia, 2023, p. 6). Since this is a situation that does not refer to the need to replace the political authorities that control the territory or the nation, we consider the expression decolonize in the sense of decolonizing, that is, as an action to combat racism, inequalities, and violence generated by the colonization process (DG 5, 2023).

The use of the phrase 'decolonizing/decolonizing the curriculum' suggests a significant shift in discursive practices in education. Foucault (2014) argues that discourses reflect reality and shape it. By promoting decolonization, the RDs of Rio Grande do Sul and Rondônia are challenging hegemonic discourses that marginalize the contributions of culturally diverse groups, highlighting a struggle for recognition and visibility. It's not just a question of changing political authorities, but also of restructuring social and educational relations. For this to happen, it is necessary to consider territory, land, culture, and school as characterizing elements linked to and interwoven with the notion of identity, as Fernandes, Magnus, and Roseira (2023) suggest. In the same vein, DG 2 refers to the Regional Council of SBEM/Rondônia (RO), which, in its Regional Forum, emphasizes the human and social dimensions of education and the value of cultural diversity.

> Decolonize the curriculum in mathematics teacher education programs. This means addressing the mathematics of culturally diverse groups, promoting self-criticism regarding social injustices, and combating the invisibility of women and ethnic minority groups in the process of recording the history of the development of mathematical knowledge (Synthesis of the DG of DR/RO, 2023 cited by DG 2, 2023).

The idea of decolonizing the curriculum implies active resistance to established norms that perpetuate hegemonic knowledge. This practice seeks to reverse the discursive power that marginalizes the contributions of culturally diverse groups, allowing their experiences and knowledge to be recognized and validated within mathematics education. As Apis (2011) puts it, we could speak of (re)existence as a movement of creation, of transforming educational spaces.

5 Some considerations

In this article, we analyze how national policies for teacher education in mathematics are shaped by power relations and specific discourses, based on discussions at the VIII FPMat. The results indicate that the discourses configure norms, standards, and practices in teacher education that reflect ideologies and, at the same time, promote a specific vision of mathematics. The discursive fabric produces knowledge and truths and defines what is "appropriate" in mathematics education in terms of the normative dimension. They also reflect and reinforce power and knowledge relations in the field of education. This can be seen, for example, in CNE/CP Opinion n. 4/2024, which favors "Core II — Learning and Deepening the Specific Contents of the Areas of Professional Activity" with 1,600 hours, the same as CNE/CP Resolution n. 2/2019, and 200 hours more than the "Reference Text," to the detriment of "Core I — General Education Studies (EFG)", with a similar workload as CNE/CP Resolution n. 2/2019, 880 hours.

During the cross-sectional analysis, we identified different discourses, as indicated below:

a) *Discourse of updating and consensus*: this reflects a movement to restructure the proposed design for the training of teachers who teach mathematics, which is not limited to mere updating, but is part of a discourse that prioritizes knowledge that emerges from practice. Thus, the aim is not only to rethink the undergraduate curriculum, but also to reconfigure it as a space for valuing the cultural, ethical, social and political dimensions of mathematics. This approach recognizes the importance of research in the field of mathematics education and promotes a critical understanding that challenges established norms and questions the power relations that shape education, as suggested by the DGs.

b) *Discourse on inclusion and diversity:* There is an emphasis on the importance of valuing the history, culture, and traditions of specific groups, such as rural, quilombola, and indigenous communities. This reflects a discourse that seeks to include historically marginalized perspectives in training, highlighting the struggle for recognition and representation.

c) *Discourse on the constitution of an identity:* this reflects the need to pay attention to the constitutive elements surrounding the construction of PI. The lack of identity may indicate a crisis in the definition of what it means to be a teacher who teaches mathematics, reflecting uncertainty about what mathematics to teach.

d) *Discourse on autonomy and collective construction of the curriculum:* There is a demand for a curriculum that considers the degrees that train teachers to teach mathematics, recognizing the importance of different voices and experiences. This can be seen as a form of resistance to the imposition of centralized norms, promoting a space for dialogue and negotiation about what should be taught.

e) *Discourse of representativeness:* The records prove that we need to position ourselves in institutional and political spaces related to the discussion/construction/implementation of public policies, with collectively elaborated proposals aimed at the training of mathematics teachers.

This Foucauldian analysis allows us to understand how discourses and practices shape and regulate power relations and training policies. In light of this, as a contribution, we should promote articulated actions that focus on: (i) the needs of basic education; (ii) the demands of teachers working in this context and those working in mathematics degrees; (iii) the personal and professional perspectives of future teachers, with a view to recognizing the relevance and

protagonism of all people involved in these (complex and dynamic) processes, as stated in DG 1.

Consequently, we propose that, when making adjustments and reformulations of the Pedagogical Projects of the Courses (PPC), those in charge should undertake a critical reflection on the centrality of the problematizing elements discussed. In line with Santana *et al.* (2022), we advocate the creation of insubordinate training designs, capable of integrating the actions and knowledge essential for the training of future mathematics teachers. This reflective process must take into account the principles of democracy, social justice, ethics and solidarity, which are crucial for challenging established norms and structures. This stance allows us to highlight the potential of CNE/CP Resolution 02/2015, which has been overshadowed by resolutions such as CNE/CP 02/2019 and 1/2020, as well as CNE/CP Opinion 4/2024. This critical analysis reveals the power dynamics that shape teacher training, opening a space for new practices and knowledge that oppose a normative and standardized curriculum.

This approach opens a space for new research that analyzes national policies for training teachers who teach mathematics. Such research reveals the power dynamics at play in national training policies and allows for a critique of the structures that shape curriculum and practice. Finally, it is important to note that these power relations are not one-dimensional. For Foucault (2020), the possibility of resistance is a matter of strategy and struggle. There are always possibilities for resistance for subjects and entities that can reinterpret and challenge the imposed norms, seeking ways to innovate and contextualize the teaching of mathematics in a more inclusive and critical way.

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