A study on the identity of teacher educators: traits revealed by a Mathematics preceptor of the Pedagogical Residency Program

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Abstract: This study presents partial results of the repercussions of the performance of a mathematics preceptor in the Pedagogical Residency Program (PRP). For this, we chose to use semi-structured interviews as an instrument of data production. After transcription, the analysis was performed in light of the characterization of the professional identity of the teacher who teaches mathematics, proposed by our main theoretical reference. It was found that participation in the PRP enabled the school teacher to play a new role (preceptor), which mobilized a shift towards the constitution of their identity as a teacher educator.

Keywords: Pedagogical Residency Program. Teacher Educator Identity. Teaching Identity. Professional Identity. Teacher Preceptor Educator.

La identidad de los formadores de profesores: rasgos revelados por un preceptor de Matemáticas del Programa de Residencia Pedagógica

Resumen: Este es un estudio con el objetivo de presentar resultados parciales sobre las repercusiones del desempeño de un formador de preceptores, específicamente, de matemáticas del Programa de Residencia Pedagógica denominado Preceptor A. Para ello, se optó por utilizar la entrevista semiestructurada como instrumento de producción de datos. Luego de la transcripción, el análisis se realizó a la luz de la caracterización de la Identidad Profesional de los Docentes que Enseñan Matemáticas, propuesta por nuestro marco teórico principal. Se constató que la participación en el mencionado programa posibilitó que el docente escolar asumiera un nuevo rol (preceptor) que movilizó un giro hacia la constitución de su identidad como formador de docentes.

Palabras clave: Programa de Residencia Pedagógica. Identidad del Formador. Identidad Docente. Identidad Profesional. Profesor Preceptor Formador.

Identidade de formador de professores: traços revelados por um preceptor de Matemática do Programa Residência Pedagógica

Resumo: Trata-se de um estudo com o objetivo de apresentar resultado parcial sobre as repercussões da atuação de um preceptor formador — denominado Preceptor A —, especificamente, de Matemática do Programa Residência Pedagógica. Para tanto, optamos por utilizar, como instrumento de produção de dados, entrevistas semiestruturadas. Após a transcrição, a análise foi realizada à luz da caracterização da Identidade Profissional de Professor que Ensina Matemática, proposta pelo nosso principal referencial teórico. Verificou-se que a participação no referido programa possibilitou ao docente da escola uma atuação nova

(preceptor), que mobilizou um deslocamento para constituição da sua identidade como formador de professores.

Palavras-chave: Programa Residência Pedagógica. Identidade de Formador. Identidade Docente. Identidade Profissional. Professor Preceptor Formador.

1 Introduction

In recent decades, we have seen, in Brazil and around the world, how complex it is to think about teacher education and overcome the stereotypes of the teaching profession, which have been historically and socially (re)constructed, especially concerning the professional who teaches mathematics.

In the Brazilian context, we have noticed that different programs and public policies aimed at teacher education have favored structuring several groups to reflect on teaching practice (De Paula, Costa, Bandeira, & Couto, 2022). In this direction, there is a concern about the model in which they are inserted, as "collaborating teachers are not recognized as teacher educators, as this would require more intentional and systematic action on their part" (Benites, Sarti, & Souza Neto, 2015, p. 113).

Using this scenario, we seek to understand how teachers[1] at schools that receive prospective teachers in programs such as the Pedagogical Residency Program (PRP) are recognized as mathematics teacher educators. Generally, the PRP — included in the National Teacher Education Policy — was established through Ordinance n. 38[2] on February 28, 2018, fostered by the Coordination for the Improvement of Higher Education Personnel (CAPES). The primary purpose is to promote institutional Pedagogical Residency Projects implemented by higher education institutions (HEIs), improving the initial education of basic education teachers in teaching degree courses.

To this end, CAPES implements notices to select institutional projects from various higher education institutions. Until the first half of 2022, two notices were concluded (2018 and 2020), and a new one was published in 2022 to select projects being developed within 18 months, starting in August 2022. In this context, HEIs that wish to participate in the notices must prepare an institutional project composed of subprojects and their respective stakeholders per the program's rules and definitions. The PRP is organized around four main agents:

> *Residents* — teaching degree students; *preceptors* — basic education teachers who directly accompany residents; *teaching professor advisors* — higher education professors at the HEI that hosts the program, and the *institutional coordinator* - responsible for organization, communication, and project monitoring (Brasil, 2018, emphasis added).

Although the document above names the school's teachers as preceptors, in this article, we chose to call them "training preceptors", aiming to recognize them as essential stakeholders in the resident formative process. The PRP proposes to establish a policy that designs quality teachers based on actions that value teaching work and solid and theoretical education, seeking reflection, criticality, and dialogue, which contribute to unifying theory and practice in the commitment to quality education the society, the education of ethical professionals who

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[1] This article is an excerpt from a master's degree thesis defended in the Postgraduate Program in Mathematics Education at the Federal University of Ouro Preto, written by the first author and supervised by the second author.
[2] Available at: https://www.gov.br/capes/pt-br/centrais-de-conteudo/06012020-edital-1-2020-residencia-pedagogica-pdf; access: 28 Apr. 2023.

consolidate collective teaching work, and the articulation between initial and continuing education.

Tinti, Silva, and Faria (2021) show us the importance and scope of the PRP and an overview of the distributions of quotas in Notice 01/2020, as shown in Table 1.

Table 1: Distribution of quotas for Notice 01/2020 by region

Region	Priority Quotas	General Quotas	Total
Northeast Region	6168	3600	9768
Southeast Region	4224	3600	7824
South	2664	3120	5784
North	1800	1656	3456
Midwest	1824	1440	3264
Total	*16680*	*13416*	*30096*

Source: Own elaboration based on data released by Tinti, Silva, and Faria (2021)

The data for this distribution respected the forecast in Annex III of the notice, i.e., the number of quotas allocated to each Brazilian region. Another essential aspect to be observed in this distribution is that it does not meet the requirements set out in item 7.1 of the notice (Brasil, 2020) since 55.42% (16,680) of the quotas were allocated to priority areas and 44.58% (13,416) to general areas.

Thus, when analyzing the data, we noticed that 37 HEIs requested quotas only for general areas, and 75 HEIs were granted only 24 quotas, thus supporting non-compliance with item 7.1 of the notice in question. Although the data analyzed only refers to the number of resident quotas, considering the structure of the centers (subprojects), it is possible to estimate the number of training preceptors needed to meet the demand for approved quotas. So: "Pedagogical Residency Center: a group formed by one professor advisor, three training preceptors, 24 scholarship residents and up to six volunteer residents" (Brasil, 2020, p. 2).

Therefore, there is one training preceptor for each group of eight residents. As 30,096 resident quotas were approved, 3,762 training preceptors would be needed, i.e., "a teacher at the basic education school responsible for planning, monitoring, and guiding residents in the activities carried out in the field school" (Brasil, 2020, p. 2).

Given the importance of the Pedagogical Residency Program, investigating the professional identity (PI) of teachers who teach mathematics (TTM), especially that of the training preceptor, in addition to being an emerging field of research, involves investigating the training contexts, TTM's working conditions, public policies and training programs, among others (By Paula & Cyrino, 2018).

The school teacher (the training preceptor), who also acts as a teacher educator, has had little prominence in the literature. Therefore, it is necessary to invest in this issue of the professional identity of this teacher educator, considering that being a teacher goes beyond knowing specific content or how society views it. Therefore, below, we will present our main theoretical framework.

2 Theoretical perspective

Some studies today present a diversity of theoretical perspectives on professional identity, which, due to the broad research backgrounds, do not describe or characterize the PI, specifically the TTM's. Cyrino (2017) states that the teacher is the protagonist of their training

process. However, she says that it is fundamental that we take a stand regarding PI to trigger reflections on the matter.

To this end, some fronts help us characterize the TTM's PI. One is based on Étienne Wenger's social learning perspective, in which identity is formed in social contexts. Wenger (1998, p. 5) apud Cyrino (2017, p. 703) affirms that it is "a way of talking about how learning changes who we are and creates personal stories of transformation in the context of our communities". Thus, the assumptions of the community of practice led to a contribution to approach teacher learning from the perspective of social learning and discuss the identity of the TTM.

In this type of training, teachers give up consuming knowledge produced by others and start producing their own knowledge; that is, there is nothing better than the teachers themselves to problematize their learning. Cyrino (2017) says it is necessary to consider what they know and feel about the need to learn and take responsibility, thus being protagonists of their own learning.

Thus, we will have as a contribution a characterization proposed by Cyrino (2017), in which TTM's PI "occurs through beliefs and conceptions interconnected with self-knowledge and knowledge regarding their profession, associated with autonomy (vulnerability and sense of agency), emotions, and political commitment" (Cyrino, 2017, p. 709).

According to the author, these elements are inseparable and interconnected. However, for study purposes and without intending to reduce them, we propose in Chart 1 a possible synthesis to help readers understand them.

Chart 1: Constituent elements of the construction of the professional identity of teachers who teach mathematics

Element		Characteristic
Beliefs/Conceptions		For example: "about mathematics, their (future) profession, what it means to be a teacher who teaches mathematics, the type of teacher they want to be, how they should teach, their role in the mathematics teaching and learning processes, among other actions of their (future) professional practice. These beliefs/conceptions are interconnected and influence how they deal with the knowledge necessary for their professional practice" (p. 704).
Knowledge		Those necessary for the exercise of their profession.
Self-knowledge		"Self-knowledge involves: self-image, self-esteem, motivation for work, perception of duties and future perspectives" (p. 705).
Autonomy	Vulnerability	"[...] which ensures the (future) teacher recognizes their mistakes and limitations, reconciles their conflicts and dilemmas arising from and related to their (future) teaching practice, so that they can overcome them." (p. 705).
	Sense of Agency	"Consequently, so that this vulnerability does not constitute fragility, we need actions that, from the established spaces, by stopping and thinking about their practices, beliefs, and conceptions, (future) teachers can operate, even in the face of vulnerability, with a sense of agency" (p. 705).
Emotions		Emotions are essential to educational practice, driven by the teacher's commitment.
Political Commitment		"Teaching presupposes a commitment to students, parents, professional colleagues, the community and, above all, social responsibility, which involves moral, political, emotional, and knowledge dimensions. It is a commitment involving action and transformation" (p. 706).

Source: Created based on Cyrino (2017)

Notably, the movement to establish TTM's PI is a continuous, complex, dynamic, temporal, and experiential process (Cyrino, 2017; Cyrino, 2018; De Paula & Cyrino, 2020). Furthermore, it is not a totalizing characterization, i.e., uncontestable, but a guideline to not weaken the analyses. This theoretical and methodological positioning is necessary so that it does not reduce the process of data analysis and discussion.

3 Methodology

In this study, we used the precepts of qualitative research, which receive classifications according to the type of activity to be developed. Therefore, this investigation is classified according to a) the nature of the research, b) the problem approach, and c) the technical procedures adopted. Gil (2008, p. 35) highlights:

> i) Regarding nature: this is applied research, as it aims to generate knowledge for practical application focused on solving possible specific problems presented in society. Within the scope of this work, these problems are directly related to the Pedagogical Residency Program;

> ii) Regarding the approach: this research addresses qualitative aspects and allows the researcher to verify relevant data from reality and, thus, understand the behavior of the subjects involved in the proposed study. According to Gil (2008), this approach proposes the formulation of new theories that can collaborate with the development of society;

> iii) Regarding technical data collection procedures: this research used data collection instruments, such as interviews carried out with training preceptors and the systematic survey of specialized literature, to capture the reality of the researched environment.

From a qualitative perspective, we usually seek to understand how the research field is configured beyond conceptions, our experiences, and knowledge as researchers of a given topic; that is, it goes beyond verifying hypotheses.

In research in mathematics education, the qualitative approach, Fiorentini and Lorenzato (2006, p. 110) state, "seeks to investigate and interpret the case as an organic whole, a unit in action with its own dynamics, but which has a strong relationship with its surroundings and sociocultural context". Researchers who adopt qualitative research respect all possible forms of records, stating that, in addition to the results or products, there is a concern with the investigation process (Bogdan & Biklen, 1994). As Bogdan and Biklen (1994) tell us, in qualitative research, the researcher is the main instrument in the natural environment, analyzing data inductively and adopting strategies and procedures to consider experiences according to the subject's point of view.

The choice of this method is justified by the fact that we used interviews as a source of investigation. Also, this approach allows the training preceptor to narrate their experiences and reflect on them. We are interested in knowing how the training preceptor typically behaves. Bogdan and Biklen (1994, p. 68, authors' emphasis) point out that "if people are treated as 'subjects of investigation', they will behave as such, which is different from how they usually behave". Finally, good interviews make participants feel free to speak freely about their points of view; consequently, data that reveals their perspectives and experiences can be produced.

The instrument to produce the data was an interview, remembering that, as pointed out by Lüdke and André (1986), it is central that the interviewer is aware of their skills to conduct a good interview, which, well structured, is developed through a plan of pre-established questions, without the flexibility often used in questionnaires. On the other hand, an

unstructured interview allows for greater interaction. It unfolds without the need to follow a script chronologically.

For this research, we will use the semi-structured interview perspective (Minayo, 2001), which, although using a previous script prepared by the researcher, has a flexibility that seeks to leave the interviewee free so that they can express themselves spontaneously. A significant feature is the interviewer's possibility to combine or lead the interview based on the most relevant questions.

To carry out the interview, initially, we structured a script with guiding questions based on the elements proposed by Cyrino (2017) that would help us understand how the movement towards establishing professional identity (PI) takes place. The research participants were two teachers who worked as training preceptors within the scope of the PRP in Ouro Preto. Participation was voluntary, respecting the ethical principles of the research.

Following the guidelines of the Research Ethics Committee (Comitê de Ética em Pesquisa - CEP)[3] from the Federal University of Ouro Preto, we opted for the anonymity of the school and participants due to the possibility of identification. Thus, they were called Preceptor A and Preceptor B to have their identities preserved. In this study, we will discuss Preceptor's A participation. The choice to focus on just two training preceptors is in line with what De Paula (2018, p. 171) indicates: "A reduced number of participants is more conducive to identifying its analytical elements and, consequently, exploring them in detail" (De Paula, 2018, p. 171).

The interviews were carried out individually with each training preceptor, with a one-day interval between each interview. The interviews were online, with a previously scheduled day and time, lasted an average of 80 minutes each, and took place through Google Meet.

To analyze the interviews and understand the aspects that help us investigate the signs of the movement of the identity of the educator of the teacher who teaches mathematics, we considered the elements proposed by Cyrino (2017) as categories of analysis.

4 Analysis and discussion of data from the interview with Preceptor A

The teacher-student relationship presents a scenario that has been one of the main concerns in the school environment. The training preceptor must understand that the teaching task has a social and political role. Although not considered a simple understanding, the training preceptor must take a critical stance before their performance.

Therefore, in light of our theoretical framework, we explore how these elements are highlighted throughout the PRP participation and how they can contribute to the teacher educators' identity. These elements are interconnected and are evident when we look at the interactions between the training preceptors, or between the training preceptor and the resident, or between the training preceptor and the professor advisor during their participation in the PRP.

Preceptor A is a graduate of the mathematics degree course at the Federal University of Ouro Preto; after completing his degree, he immediately started his teaching career in public schools in the city. Thus, looking into his professional trajectory, we see that Preceptor A can be considered a beginning teacher. He approached the PRP after reading the publication of a training preceptor selection notice by the school management where he worked as a teacher. However, Preceptor A reveals that he did not know much about the programme:

[...] before taking the selection test, I didn't know anything, I knew the PIBID, because there (at the school

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[3] Project approved by CEP/UFOP. CAE Process: 46687421.0.0000.5150

where I work) there is the PIBID [...] to do the interview, I studied a little about the residency project. So, my first contact was a week before the interview [...] I didn't know about the project [...] my study there was close to the notice [...] I didn't know about the Pedagogical Residency (Preceptor A — interview held in March 2022).

However, when studying the PRP, Preceptor A realized it was similar to the Institutional Teaching Initiation Scholarship Program (Programa Institucional de Bolsa de Iniciação à Docência - Pibid).

When I started studying and understanding how it worked, everything was similar to PIBID. I have always enjoyed working with teacher education. And the group that wanted to be residents, the students (from the mathematics degree course), most of whom I knew. So, this really motivated me to join the project because I am always grateful for the mathematics course. Everything I have today I owe to the free education at UFOP and the mathematics course. So, for having this gratitude... whatever I can do to help the mathematics course and the students I do with very good will and heart (Preceptor A — interview held in March 2022).

However, it is necessary to highlight that although the Pibid and PRP are teacher education projects developed in schools, each has a characteristic and focus. According to the programme regulations, while Pibid brings together students from the 1st year of the degree, the PRP focuses on graduates who can develop the Supervised Practica and, therefore, implement conducting practices under the guidance of the professor advisor and the training preceptor.

Throughout the interview, Preceptor A revealed three motivations that led him to apply for such a role: the taste for teacher education, contact with residents, and the feeling of gratitude and belonging to UFOP.

[...] When I found out that some colleagues could be residents and that I could share a little of my little experience with them, I felt motivated to contribute even more. Even more so knowing that several residents studied with me or were partners in the university's academic center (Preceptor A — interview held in March 2022).

In addition to these motivations, Preceptor A revealed that receiving a scholarship of R$765.00 for up to 18 months was an opportunity to supplement his income.

[...] I thought it wouldn't work. I practically recently graduated, and the teachers who were participating (training preceptor candidates) had a high level of postgraduate qualifications and experience. During this pandemic, I was at my grandmother's house caring for her. I even mentioned (at home) that I needed to participate in this project because of the scholarship, i.e., to supplement my income. However, when I saw the names (of candidates for the role of a training preceptor), I even mentioned to my grandmother that I thought it wouldn't work, as they only had high-level teachers (Preceptor A — interview held in March 2022).

Preceptor A's speech takes us to different discussions about Brazilian teachers' wages and working conditions. However, considering the analytical focus of this article, we will not deepen this discussion. However, we must highlight that it is in this context that PRP training preceptors work and establish their professional identity.

During his selection, Preceptor A told some of his rooted *beliefs* (Cyrino, 2017), for example, that he only needed to have a good CV to be able to participate in the PRP. Concurrent with his idea of meeting one of the candidates, this aroused anxiety and a lack of hope. However,

the selection results broke this paradigm when he learned he had been selected.

> *[...] They (selection process for preceptor) separated us into pairs, and I knew my pair (name of candidate for training preceptor), I got to work with him and did the practicum, an excellent teacher, right? Then I thought: I'm done! So I just waited anxiously for the result. But when it came out (the selection result), boy, I couldn't believe it, I was very happy with the approval* (Preceptor A — interview held in March 2022).

Although we did not explain the focus of the research to the participant, Preceptor A allowed us to know how he carried out some of his activities. As a result, his memories reflect his *emotions* and *political commitment* (Cyrino, 2017).

> *[...] At first, I was very apprehensive because when I participate in projects — anything I do in my life — I try to do very well and with a lot of dedication and love* (Preceptor A — interview held in March 2022).

It is also worth remembering that the project was designed to be face-to-face, but due to the COVID-19 pandemic, the activities changed during the development of the PRP. If, on the one hand, the dynamics of in-person mathematics teaching are challenging, "discovering in real time how these practices need to be redefined in remote teaching can end up leaving teachers even more distressed without having any idea of how to act" (Marques, Carvalho, & Esquincalha, 2021, p. 23).

> *[...] I remember our first meeting with the coordinators. We said: so now, what are we going to do? How are we going to work? Because I wasn't taking classes at school, the remote system was new to me and the students. So what are we going to do?* (Preceptor A — interview held in March 2022).

As a result of this meeting, Preceptor A reported discomfort due to inexperience, recalling a difficult beginning because of the suspension of face-to-face classes, in which remote teaching was still challenging for those involved.

> *[...] And at the beginning, it was a shot in the dark... I felt butterflies in my stomach, I said, man, it won't work, it's going to end up becoming a mess here, and there will come a time when, if I keep giving them the runaround, you know, if I go to the side of nonsense, I'll give up* (Preceptor A — interview held in March 2022).

Preceptor A narrated the importance of an environment of dialogue so that activities could be carried out and attended to. Moreover, residents could take advantage of these moments of immersion and knowledge.

> *[...] We held a meeting discussing it with everyone's participation, from the coordinators to residents and then the project got on track. [...] we decided that it would mix texts (articles suggested by coordinators for group discussion) with the practice part at school, we (training preceptors) talked a lot at the beginning about what to do, you know, and then we thought, wow, we will provide assistance as if it were reinforcement, develop workshops, among other materials that are being used in the state, such as recording video classes* (Preceptor A — interview held in March 2022).

As a result, we noticed that, although the meeting was held with everyone involved, it was from the protagonism of the preceptors that ideas for developing activities in the PRP emerged. His concern to carry out activities that considered the experiences lived by teachers

remotely stands out.

> *[...] Because there is no point in taking and saying to do a workshop just for the sake of doing it because then it would be a joke with the residents, you know, giving them a task just because there has to be a task, just because they are receiving a grant, that is unethical, right, it doesn't work* (Preceptor A — interview held in March 2022).

One of the aspects involving the TTM's PI constitution process (Cyrino, 2017) is related to positioning. Taking a stand means integrating ethical and moral reflections. In the interview with Preceptor A, for example, we identified that he was solidary with the residents when the Federal Government suspended the payment of scholarships:

> *[...] I was very worried about the residents' situation because some depended on more than 50% of their income to stay here [...] My concern when there was this delay was more due to the residents* (Preceptor A — interview held in March 2022).

By pointing out the importance of scholarships, both for initial and continuing education, Preceptor A always sought to reassure and encourage residents. He stated that his involvement with the programme has been one of the reasons he chose not to give up the profession.

> *The Pedagogical Residency really reinforced my opinion that I had to enjoy working with teacher education and discussing, even during remote teaching, the practice I was developing with the prospective teachers* (Preceptor A — interview held in March 2022).

According to Saviani (2021, p. 13), education is "the act of producing, directly and intentionally, in each unique individual, the humanity that is produced historically and collectively by all human beings". Therefore, education does not just involve scientific knowledge. In addition to transmitting knowledge, it aims to make people aware of their role in society and the world.

Thus, we understand that Preceptor A recognized the difficulties in professional education, pointing out that sharing experiences is significant for the rapprochement between university and school.

> *The idea I had... and mainly because it was a project carried out online during the pandemic, was to try to bring students as close as possible to the school, despite all the difficulties, and share my experience with them during meetings* (Preceptor A — interview held in March 2022).

When reflecting on the motivation to participate in the PRP, we observed that Preceptor A expressed a *belief* (Cyrino, 2017) when commenting that, as the university is far from the reality of the students in Ouro Preto, this would be one of the reasons that made him engage in projects that aim to insert students into the university – it would be a way to shorten the distance.

> *[...] And I realized that having contact with university students significantly impacts students' lives. They exchange ideas, talk about the university, change the class dynamics, and motivate students who are so far from the university to try to continue their studies* (Preceptor A — interview held in March 2022).

Even with experience in other projects, the dynamics of new challenges show the need

to control *emotions* (Cyrino, 2017). Preceptor A demonstrated his dedication and commitment when thinking about the responsibility of participating in the PRP:

> *[...] When we are there with the responsibility of staying for 18 months, with the responsibility of a Capes grant [...], then we can't play around. At first, I was very apprehensive because when I participate in projects -anything I do in my life- I try to do very well and with a lot of dedication and love* (Preceptor A — interview held in March 2022).

Although the structuring and organization of the PRP implicitly suggests a hierarchical structure between the professor advisor and the training preceptors, the PRP subproject in which Preceptor A was inserted reflects a scenario that converges towards the notion of creative insubordination, as there were signs of "a process of collaboration between mathematics educators who work in schools and universities so that we feel confident to assume responsible subversive attitudes and actions" (D'Ambrósio & Lopes, 2015, p. 15).

> *[...] They let us very free, very calm... there was no hierarchy between coordinators, training preceptors, and residents; I think this contributed a lot to the project, you know. It seemed like we were all on the same level and had enormous freedom in our work* (Preceptor A — interview held in March 2022).

Implicitly, in this report, we perceive the figure of the professor advisor assuming a position of power. However, based on the insertion of participants in the subproject, combined with a responsible subversion, i.e., how the professor advisor acted to bring training preceptors together in dialogue, positively influenced them.

The professor advisor should not conceive of teaching as pre-established concepts without considering the knowledge of those involved in the PRP (D'Ambrósio & Lopes, 2015). The joint action between the training preceptor and the professor advisor and the sensitivity in getting to know the participants collectively made it possible for the training preceptor to become more involved with the PRP.

Preceptor A's involvement with the PRP made it possible to propose activities that could be developed remotely since the state education network suspended their face-to-face activities due to the COVID-19 pandemic. The suggested activities were intended to reveal to residents the daily school life and the pedagogical practices developed by the institution's teaching staff.

> *[...] I tried to share a little of my little experience with my colleagues. This motivated me even more to contribute. The idea I had... and mainly because it was a project carried out online during the pandemic, was to try to bring students as close as possible to the school, despite all the difficulties, and share my experience with them during meetings* (Preceptor A — interview held in March 2022).

According to Cyrino (2017), the constituent elements of identity are interconnected, as evidenced in the previous report. We noticed that Preceptor A mobilized his knowledge by mentioning his experience and beliefs when thinking about the project carried out virtually and his emotions by motivating himself with his contribution and his *political commitment* when thinking about the approach between university and school.

> *And then we (the training preceptors and professor advisors) decided that it was going to mix texts with the practice part at school, so much so that at the beginning, the professor advisors even worked on some texts with the residents* (Preceptor A — interview held in March 2022).

Preceptor A's experience report presents one of the experiences and professional practice during his participation in the programme, demonstrating his *political commitment* (Cyrino, 2017) when thinking about school practice, which contributes to the PRP residents' education. Furthermore, by proposing a practice that aligns theory (scientific texts) and practice (school context), Preceptor A reveals his *autonomy* (Cyrino, 2017) and how it mobilized strategies to provide different learning opportunities for residents.

> *So, those who are living the experience of basic education are the preceptors, so we ended up taking the ideas, and they completed them when they had to be completed; we lined up the ideas and took them to the weekly meeting with the residents* (Preceptor A — interview held in March 2022).

The previous report reveals that Preceptor A mobilized *self-knowledge* (Cyrino, 2017) by recognizing the importance of their practice and experiences, thus reinforcing the image of a teacher educator. Dialogue and exchange of experiences between participants enable new learning.

Experience reports allow professionals to share experiences, generating new knowledge and modifying existing ones. Fiorentini (2005) points out that the teacher's experiences and reflections are essential elements for the teacher's professional development, which can result in creating teaching practices based on experiences shared between peers.

Preceptor A's notes indicate that lesson planning was essential to guide the teacher's pedagogical actions. As already mentioned, using technologies during the pandemic was preponderant. However, as we saw, Preceptor A did not know much about what these tools would be like during his work in the PRP.

For greater benefit, technological tools must be part of mathematics classes to encourage students to participate effectively in the teaching process. Given this, the teacher must be attentive when using technological tools to remember the importance of interaction and socialization.

> The pencil and chalk were replaced by the digitizing pen, the mouse, the computer keyboard and the cell phone touchscreen. The break between one class and another became the time dedicated to switching links. The corridor conversations no longer exist. Interaction is done through messages, videos, and audio. Most books are accessed in digital files. Assessment reports are now sent in a photo. You can no longer hear parallel conversations, as they are carried out secretly behind the muted microphones. Voices, noise, and a distracted look have never been so missed in a classroom. There have certainly been changes in interactions. New modes of communication emerged in remote teaching and, consequently, some means of communication that we were already used to in the face-to-face environment lost space. Such changes substantially impacted the learning of all participants (Faria, 2021, p. 9).

Pepper (2002) emphasizes that teachers must have well-developed digital skills, be prepared to act in pedagogical practices to create attractive and creative processes, and encourage students to actively participate in the teaching process. Therefore, teachers must constantly seek innovations in their practices, to help students create solid paths to understand the proposed activities.

Thus, we can infer the existence of *autonomy* and a *sense of agency* (Cyrino, 2017) because training preceptors had to learn about some technological tools to work in the PRP. Although remote teaching is believed to have caused enormous losses to teaching and learning

since both students and teachers were not prepared for this sudden change in the teaching process, the damage may have derived from students' lack of engagement and effective participation, difficulty accessing technologies or dealing with digital tools, and even demotivation in the face of remote teaching, or failure in teacher education.

> *[...] You mature in your profession and you forget a little about the difficulties and we shouldn't forget, because everyone will go through this. So having this opportunity in a remote context helped me learn* (Preceptor A — interview held in March 2022).

Preceptor A mentioned that the "troubles" and difficulties during the PRP were beneficial because they triggered his learning, which brings us to the *knowledge* inherent to the teaching profession (Cyrino, 2017). For example, when teachers sought to understand the use of technological tools in teaching and learning and considerations about the experiences of the teaching profession and their aspirations.

However, on another point, Preceptor A highlighted the difficulties faced by education professionals due to the COVID-19 pandemic, as the teacher had to carry out tasks never imagined so that they could be carried out remotely by the student, which may have caused damage to the pedagogical process.

> *The project was planned to be carried out in person, and there was no way to leave (to be in person) because the project was created to be developed face-to-face, and we took these two years of remote teaching that no one had ever had experience with, the students didn't have access to the internet* (Preceptor A — interview held in March 2022).

Because of this, as pointed out by Preceptor A, the teacher's work has undergone major changes, which can be associated with *vulnerabilities* (Cyrino, 2017), as this new reality caused an increase in the demand for pedagogical tasks to avoid harming students further.

Another aspect highlighted was about receiving monthly grants:

> *I was very worried about the residents' situation as some depended on more than 50% of their income to stay here in Ouro Preto to pay their bills, so they were counting on this grant. I was more concerned with the residents when there was this delay. I talked to them, and they ended up saying they were counting on the money* (Preceptor A — interview held in March 2022).

The residents in the programme depended on receiving the scholarship to support themselves during the residency period. The scholarship helped pay expenses such as housing, food, and even spending on their families since, during the pandemic period, many returned to their parents' or family's homes and, in addition, needed to keep paying rent in the city where the university is located.

Preceptor A evaluated his participation in the PRP as very positive, as he could contribute to other teachers' education, which made them feel fulfilled:

> *The Pedagogical Residency really reinforced my opinion that I had to enjoy working with teacher education and discussing, even during remote teaching, the practice I was developing with the prospective teachers* (Preceptor A — interview held in March 2022).

Through dialogue and exchange of experiences, Preceptor A realized his contribution to the professional development of residents who could have a greater perception of the

pedagogical processes carried out in the classrooms and the difficulties encountered in state schools.

> *I will always be open-doored with an open heart and available to talk and share my experience with prospective teachers. I think this exchange contributes a lot to prospective teachers and those in-service like me* (Preceptor A — interview held in March 2022).

Given the above, in Preceptor A's report, we identified Mizukami's (2006) perspective: he assigned himself the role of a teacher educator and everyone else involved in the formative learning process. The PRP enabled Preceptor A to learn more about initial teacher education and prospective teachers' difficulties. In short, he assessed his participation as valid, as he could see his own practices with different eyes and even modify his teaching practices, which can characterize a constitution of professional identity. Furthermore, he became a supporter of the programme, seeing it as a way to collaborate with the education of several other teachers.

5 Some considerations

Taking into account the research process, we present a summary of the results and our reflections on its relevant points. However, this represents a major challenge due to the vast singularities and the particularities and influential aspects considered for the TTM's PI movement.

According to CAPES normative instructions, the PRP was established to collaborate with the education of the degree students, encouraging them to act actively in their practicum in public schools, establishing relationships between theory and practice, enabling the construction of professional knowledge. Furthermore, the PRP provides the strengthening of school institutions, as well as the implementation of more qualified education. Thus, the PRP makes it possible to improve teacher education by articulating what the graduate learns at university and the experiences lived during the PRP. These experiences allow the training preceptor to strengthen teaching practices that can result in greater quality in pedagogical processes.

In general terms, this research sought to demonstrate that training preceptors[4] have great relevance in the residents' education during the PRP development period. The training preceptor aims to contribute significantly to the residents' education, demonstrating the daily practices of the school environment and those aimed at the basic education students' education.

Furthermore, there are exchanges of experiences and pedagogical experiences, which can positively influence the construction of the resident's professional identity. The interview data revealed that the preceptor provided spaces for reflection and practice, in which it is possible to create possibilities for the residents' training process, including influencing the constitution of their professional identity.

The research data shows how much the PRP allows mathematics training preceptors to develop tasks that encourage reflection on residents' education. This movement enables residents to have direct contact with their future professional practice and interact directly with the school environment and decision-making. In the interviews, we could identify positive manifestations –even with some vulnerabilities imposed due to the pandemic and the singularities each training preceptor carries about using some technological tools. This allowed

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[4] Every time it appears in the plural, training preceptors, the fact that, in the dissertation defended, there were moments the preceptor acted together with another preceptor.

them to constitute their own education while participating in the programme.

Some reflections arise, for example: is it possible to infer that, during the work in the PRP, there were moments in which the knowledge of the training preceptor was structured and modified? Were there reflective and meaningful interactions between the training preceptor and the residents? The training preceptors' participation in the PRP revealed and made them mobilize *emotions, beliefs, conceptions, political commitment, autonomy, self-knowledge, and knowledge* characteristics of the constitution of the identity of the teacher who teaches mathematics extended to the constitution of the identity of preceptors who train prospective mathematics teachers?

Without intending to exhaust the discussion in light of the data obtained, we observed that the PRP enabled the school teacher to take on a new role (as a training preceptor) that mobilized a shift towards the constitution of his identity: his role in the PRP allowed the training preceptor to reveal signs of the constitution of a teacher educator's identity. Thus, in this process of knowledge, the teacher's representations of his profession, based on the elements proposed by our main theoretical framework, reveal signs of a movement towards the constitution of an identity of teacher educators of teachers who teach mathematics.

Another point the data produced allows us to reflect on is related to the structuring and characterization of programmes linked to the National Teacher Education Policy [Política Nacional de Formação de Professores]. When we focus on the PRP, for example, we can see that the notices do not clarify the central role of training preceptors. Such notices are limited to saying they are basic school teachers who must accompany residents. However, in practice, this action goes far beyond merely monitoring.

Therefore, considering the research data, we strongly recommend that CAPES rethink the definition, as it guides the planning of institutional projects and their implementation. We thus defend the recognition in the official PRP documents of the school teacher as a training preceptor and, consequently, in the institutional projects submitted to future notices. Furthermore, public policies require more substantial investments from public authorities to consolidate an adequate and quality policy to train prospective teachers.

Given the above, we realize that training preceptors somehow seek to carry out work intentionally, i.e., they aim to ensure that residents and all individuals can develop their professional practice, without distinction, to contribute positively to social practice.

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