

The mobilization of emotions, moral commitment, and political commitment as dimensions of the movement for the constitution of the professional identity of prospective Mathematics teachers: the Supervised Teaching Practice

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Abstract: This paper analyzes the actions of prospective teachers (PT) associated with emotions, moral commitment, and political commitment that promoted the movement of the constitution of the professional identity (PI) of prospective mathematics teachers (PMT). This study focused on the nine PMTs' reflections manifested in their final practicum reports and discussions, in the formative context, about the practicum. Given the information, we discuss the mobilization of emotions, moral commitment, and political commitment of the PMTs as dimensions of the movement for the constitution of the PIs of the nine PMTs: Performance during practicum; Practicum planning; Characteristics of students and class; Contextual characteristics that influenced the development of the practicum; Practicum supervision. The actions that promoted this movement were: Considering the role of mathematics in education; Sharing experiences, frustrations, and expectations; Realizing limitations; Reasoning about school routine and planning; Sharing information about nervousness and the desire to be well evaluated. Such actions reveal evidence of the promotion of the movement for the constitution of the PIs of the PMTs. Recognizing and analyzing the mobilization of emotions, moral commitment, and political commitment as dimensions of the PI constitution movement helps us understand the education of the PMTs in its complexity, specifically in the Brazilian scenario.

Keywords: Mathematics Education. Mathematics Teacher Education. Professional Identity. Emotions. Moral Commitment. Political Commitment.

La movilización de las emociones, el compromiso moral y el compromiso político como dimensiones del movimiento para desarrollar la identidad profesional de los futuros docentes de Matemáticas: Pasantía

Resumen: En este artículo se analizan acciones de futuros docentes de matemáticas (FDM) en la Pasantía Curricular (PC) asociadas a las emociones, el compromiso moral y el compromiso político quien promovió el movimiento para establecer su Identidad Profesional (IP). Para ello, se realizó un estudio de las reflexiones expresadas por nueve FDM en el informe final del PC y en las discusiones, en el contexto de la formación, sobre la regencia de Pasantías (RE). Los resultados muestran que las acciones quien promovió el movimiento para establecer a IP de los FDM fueron: considerar el papel de la Matemática en la Educación; compartir experiencias, frustraciones y expectativas; reconocer limitaciones; discutir sobre la rutina y la planificación escolar; compartir información sobre el nerviosismo y el deseo de ser bien evaluado. Reconocer

y analizar la movilización de emociones, el compromiso moral y el compromiso político como dimensiones del movimiento constitucional de IP ayuda a comprender la complejidad de la formación del FDM, específicamente en el escenario brasileño.

Palabras clave: Educación Matemática. Formación de Profesores de Matemáticas. Identidad Profesional. Emociones. Compromiso Moral. Compromiso Político.

A mobilização das emoções, do compromisso moral e do compromisso político como dimensões do movimento de constituição da identidade profissional de futuros professores de Matemática: Estágio supervisionado

Resumo: Neste artigo, são analisadas ações de futuros professores de matemática (FPM) no Estágio Curricular Supervisionado (ECS) associadas às emoções, ao compromisso moral e ao compromisso político que promoveram o movimento de constituição de sua Identidade Profissional (IP). Para isso, foi realizado um estudo de reflexões manifestadas por nove FPM no relatório final do ECS e em discussões, no contexto formativo, a respeito do Estágio de Regência (ER). Os resultados evidenciam que as ações que promoveram o movimento de constituição da IP dos FPM foram: considerar o papel da Matemática na Educação; compartilhar experiências, frustrações e expectativas; reconhecer limitações; argumentar sobre a rotina da escola e o planejamento; compartilhar informações sobre o nervosismo e a vontade de ser bem-avaliado. Reconhecer e analisar a mobilização das emoções, do compromisso moral e do compromisso político como dimensões do movimento de constituição da IP ajuda a compreender a complexidade da formação do FPM, especificamente no cenário brasileiro.

Palavras-chave: Educação Matemática. Formação de Professores que Ensinam Matemática. Identidade Profissional. Emoções. Compromisso Moral. Compromisso político.

1 Introduction

Professional identity (PI) has been a theme of interest for specialists worldwide, mainly regarding the teaching career. In the quest to understand the movement towards the constitution of in-service and prospective teachers' PI, these specialists observed that the teaching act is shaped by several dimensions, such as individual history, emotions, knowledge inherent to the profession, public policies, conditions of work, among others (Cribbs et al., 2022; Cyrino, 2017; De Paula & Cyrino, 2017; Keskin & Zaimoğlu, 2021; Kwon et al., 2021; Snook et al., 2022; Suarez & Mcgrath, 2022).

Therefore, in the formative processes, it is vital that (prospective) teachers are seen as social agents who play a fundamental role in individuals' education. Therefore, promoting and understanding the PI construction movement is necessary for teachers to exercise their role as educators, considering all the factors that influence their practice. After all, the teacher's role is much more than just transmitting content; teachers must be sensitive and be able to deal with the complexities of the educational process.

Within the scope of mathematics education, researchers have invested efforts in analyzing training contexts that are likely to promote this movement in the education programs for teachers who teach mathematics (TTM) (Cyrino, 2017; Darragh, 2016; Darragh & Radovic, 2019; Lutovac & Flores, 2021; Meyer et al., 2022; Polizzi et al., 2021; Teixeira & Cyrino, 2015). Discussions on how to promote the constitution of the professional identity (PI) of (prospective) teachers have shown to be promising, mainly because it appears as a propitious field to enable the implementation of public policies related to the formation of TTMs.

This movement considers different dimensions of the teacher's profession, such as

knowledge, self-understanding, emotions, beliefs, autonomy (vulnerability and agency), political commitment (Cyrino, 2017, 2021), and moral commitment (Kelchtermans, 2009). The investigation of such dimensions is relevant, since discussions on how they are constituted or mobilized open a field for research in mathematics education (De Paula & Cyrino, 2017, 2021).

This article discusses emotions, moral commitment, and political commitment in the constitution movement of the TTMs' PIs (Cyrino, 2017; Jones & Kessler, 2020; Kelchtermans, 2009) based on the analyzed information. These dimensions deserve special attention, as they directly influence the teacher's practice. Given the above, we investigated the actions of prospective mathematics teachers (PMT) in the supervised teaching practice (STP), associated with emotions, moral commitment, and political commitment that promoted the movement of the constitution of their PI in their reflections regarding the teaching practice –or practicum.

In recent years, based on our experiences as mathematics teacher educators, we have observed that enabling dynamics that prioritize collective discussion on aspects experienced by the PMTs in the RP, in addition to writing the teaching practice report, enables reflections that are not restricted to mathematics content and teaching. They may involve emotional dimensions, related to the PMT's feelings when dealing with their future professional field; moral dimensions, associated with what they consider correct or not to do; and political commitment, linked to relationships of personal interest and those established hierarchically in society.

Next, we discuss the movement towards the development of the TTMs' PI; focusing on these dimensions, we present the methodological procedures, the results of our investigation and some considerations.

2 The movement for the constitution of the professional identity of teachers who teach mathematics and the emotions and the moral and political commitment

This article assumes Cyrino's (2016, 2017, 2021) perspective regarding the movement to constitute the TTM's PI. According to the author, such a movement "takes place in view of a set of beliefs and concepts interconnected to self-understanding and knowledge about their profession, associated with autonomy (vulnerability and sense of agency) and political commitment" (Cyrino, 2017, p. 704).

Cyrino (2017) and De Paula and Cyrino (2017) argue that such a PI constitution movement is complex, dynamic, temporal, and experiential since it involves different dimensions, such as: personal, professional, intellectual, moral, and political dimensions and relates not only to what the subject thinks of themselves or what people say and think about them but also the constant reflection about their experiences. Emotions, moral commitment, and political commitment are inherent dimensions of this movement, exerting mutual influence and acting as constituents of this movement.

Prospective teachers' and in-service teachers' experiences and emotions are part of an amalgam that impacts, for example, how they understand their profession. In this amalgam, there are also intellectual and professional dimensions. Intellectual dimensions can help (prospective) teachers recognize what they think is correct in their profession, explaining characteristics of their moral commitment. The professional, projection, and future perspective dimensions make it possible to elucidate relationships of interests and, therefore, their political commitment.

A person's description of him/herself and others is not neutral; on the contrary, it expresses their orientations, tastes, and values and their (future) professional practice.

This description brings emotions, which are not essentially idiosyncratic (of personality or own style), but constitute a fundamental aspect of teaching work. Emotions are a basic part of educational practice, driven by the teacher's commitment. This is another aspect that requires investigating. (Cyrino, 2017, p. 709)

Emotions are also driven by empathy in the form of action. "Empathy goes beyond the ability to identify, to feel the emotion of the other, to understand them; it involves our action as educators, an action for the other and with the other, which reverberates our solidarity and political commitment" (Cyrino, 2021, p. 4).

Other authors (Day & Gu, 2007; Hodgen & Asken, 2007; Kelchtermans, 2009; Lasky, 2005; Søreide, 2006) similarly discuss the emotions, moral commitment, and political commitment associated /inherent to the PI.

As Lasky (2005) explains, emotions can be interpreted as an elevated state of being that moves as individuals interact with their immediate context and other contexts, which reflect on past and future events. For the author, vulnerability, pointed out by Cyrino (2017) as one of the dimensions of the movement towards the constitution of the PI, is a necessarily emotional experience since emotions, although partially biological, are predominantly socially constructed.

Since it is socially constructed, the emotional relationships between teachers and their families influence their actions as professionals, especially with their students, since many of them are seen as close to their families (Søreide, 2006). Therefore, teachers' concern with the development of their students is recurrent. A nuance of emotions within the PI is the teacher's sense of responsibility for their students' well-being and development. In this direction, Day and Gu (2007) argue that the personal dimension, based on life outside the work environment, is closely linked to family and social roles.

Hodgen and Asken (2007) also discuss emotions in the PI, for whom they relate to its figurative, in which the role of imagination and the desire for unattainable completeness stands out, in the sense that human beings need to complete something in themselves concerning the world and people. Emotions are grounded in a positional aspect of the PI, staged and constituted in specific communities. This aspect concerns the beliefs about mathematics legitimized in specific communities and how they impact the movement of the constitution of the teacher's PI, since they are related to the emotional dimensions.

According to Lasky (2005), moral commitment, another aspect of the PI constitution movement, is based on the motives and motivation that lead teachers to teach and to do what they do.

In addition to motivation and motive, Day and Gu (2007) argue that commitment is a structural feature of the teacher's profession, being part of their moral purposes since they have a professional commitment to their students and peers. In short, what they believe to be true for their profession.

Kelchtermans (2009) indicates that teaching involves taking a stand. Teachers cannot choose not to take a stand. They resort to a particular (individual) set of norms and values to support their actions. Teaching is a moral commitment; therefore, it is part of the movement to create the PI.

In this direction, Cyrino (2017) points out that

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 to action and transformation. (p. 706)

Some authors have highlighted that the political, societal contexts directly influence the movement towards the constitution of the PI since they interfere with the teacher's actions, even if they do not like or prefer not to talk about politics. (Kelchtermans, 2009; Lasky, 2005). Teachers disagree or agree with political positions taken outside their classroom and even if they do not position themselves on such movements outside their classroom, intrinsically, their actions are influenced by their political commitment.

Any teacher's action is, above all, political, including when they want to be neutral (maintenance of the current condition). Therefore, there is also a discussion about the influence of the teacher's political commitment on their professional actions (Cyrino, 2017; Kelchtermans, 2009).

Cyrino (2017) argues that political commitment, one of the dimensions of the constitution movement of the TTM's PIs, encompasses:

- Working conditions provided to them.
- Educational policies, values, and norms to which they are submitted.
- Characteristics of why to be a TTM.
- The role of mathematics as a field of knowledge for understanding and transforming the world, for quality of life, for dignity and for diversity.
- Duties and Responsibilities
- Their expectations regarding their professional future.
- Their responsibility in the constitution of future generations.

Kelchtermans (2009) relates the emotional, moral, and political domains to the idea of reflection in the context of the PI. The author criticizes a technical reflection, necessary but more instrumental, restricted to the search for solutions to immediate problems, and defends the one that is broad enough to take into account emotions, morals, and politics and mobilize reliable dimensions to every teacher's personal interpretative framework¹.

In a first approach, Kelchtermans (2009) argues that the deepening of reflection takes place to the extent that we think that teaching is an essentially moral activity, since it contributes to the creation and recreation of future generations. Teachers always make morally significant decisions as they interact with parents, students, and others. The teacher's sensitivity to thinking about what is best for their students, or what is best to do as a teacher, is closer to moral reflection than to technique. Moral commitment, therefore, can have emotional and personal implications.

Kelchtermans (2009) argues that associating moral reflection with technique is insufficient to reflect reliable domains to the personal interpretative framework. According to him, political issues should also be part of such reflection. The dimensions related to morality, within the scope of the teacher's profession, may refer to power relations and interests. Such political issues can go beyond the (individual) level of the teacher or the relationships between him/her and his/her group of students (class) and encompass other contexts of society. This

¹ Idea close to what we consider as professional identity

author also argues that reflection needs to be broad enough (encompassing political and moral issues) and take emotions into account. According to him, emotions influence any teacher's action and need to be recognized as part of educational practices, driven by moral commitment and care with whom the teacher feels responsible.

As the reflection is broad and deep, involving the four components (technical, moral, political, and emotional), and reflects reliable dimensions of the personal interpretative framework, it is considered critical, according to Kelchtermans (2009). The characteristics of this critical reflection will be used to analyze the reflections about the practicum in search of identifying PMT's actions that mobilized such components.

In the next section, we will present the methodological procedures used in this investigation.

3 Methodological procedures

We conducted a qualitative² and interpretative study with a group of prospective mathematics teachers (PMT) enrolled in the topics "Methodology and Practice of Mathematics Teaching Mathematics: Supervised Teaching Practice I" in 2016 and "Methodology and Practice of Mathematics Teaching: Supervised Teaching Practice II" in 2017. Such topics are developed, respectively, in the third and fourth year of the mathematics degree course at the State University of Londrina - UEL and include the Curricular Supervised Teaching Practice (STP), a practicum carried out in pairs and guided by professors from the mathematics education area of the Department of Mathematics at UEL.

In 2016, the practicum was held in public schools in the Londrina region during regular class times. The classroom teachers monitored the practices developed together with the advisor/supervisor teacher. In 2017, the STP was held on Saturdays, in workshops, in a public school in Londrina. The supervision was carried out by professors from the Department of Mathematics and, sometimes, by the advisors themselves.

The PMTs, when enrolled in the third year of the course, develop the practicum with elementary school students and, when enrolled in the fourth year, with high school students. The topics mentioned are held in six class hours per week each year. Two hours/week are the responsibility of a professor from the Mathematics Department (in most cases, the practicum coordinator), in which the organizational aspects of the STP are discussed (observation practicum, advisory sections, practicum conduction, writing of the final report, etc.). The other four hours/week are the responsibility of another professor in the department, in which theoretical and practical aspects of mathematics education are discussed, to prepare the PMTs for the practicum development. The first author of this study accompanied and carried out interventions in these two parts of the disciplines in the years 2016 and 2017.

To collect information, we asked the PMTs to get organized in pairs for the practicum and answer some questions (Appendix 1) about their actions in the classroom. After that, collective discussions were made possible, in the formative context, with the content of the answers. In 2016, each pair presented all their answers, and then the discussion took place without specifically scoring each question. In 2017, each question was taken as a starting point for the discussion. The discussions at stake were recorded in audio to make the analyses feasible. The STP final reports were also used as a source of information.

² Approved by the Research Ethics Committee at UEL: CAAE: 29649020.3.0000.5231.

For the analysis, we selected the reflections of nine prospective teachers³ (Diana, Kimberly, Tiffany, Carlos, Mariane, João, Joilson, Thomas, and Laura) in such discussions (D) and their respective final practicum reports (FR). We based our criterion for selecting these PMTs on those who most manifested themselves collectively (both regarding their experiences and those of their colleagues).

In Chart 1, we summarize in a framework some PI characteristics that involve emotions, moral commitment, and political commitment and will guide our analyses. Some characteristics are common to some dimensions since, according to Cyrino (2021), the constituent dimensions of the PI articulate and influence each other and should not be considered watertight. However, for analytical purposes, they are treated separately so that we express specific care for each of them.

Chart 1: PI characteristics associated with emotions, moral commitment, and political commitment

Dimensions inherent to the PI	Features that relate to dimensions
Emotions	<ul style="list-style-type: none"> • High status of being a teacher • Teacher’s relationships with their family members that interfere in their educational practice • Teacher’s sense of responsibility for students’ well-being and development • Personal dimension influences actions • Role of imagination and the desire for unattainable completeness (the figurative aspect of being a teacher) • Importance of constitution in specific communities (the positional aspect of the teacher) • Feelings related to the teacher’s moral commitment and the care for whom they feel responsible • Commitment to action and transformation
Moral commitment	<ul style="list-style-type: none"> • Teacher motivation • Reasons that lead the teacher to teach • Moral purposes (what the teacher believes to be “correct” or not in their professional action) • A particular set of norms and values that the teacher must assume • Facts that reveal the teacher’s commitment to their professional action to transform society • Morally significant decisions based on actions that reveal the teacher’s concern for what is best for the students
Political commitment	<ul style="list-style-type: none"> • Influence of external political contexts on classroom practice • Considering that every action of the teacher is political • Importance of teacher working conditions • Influence of educational policies, values, and norms of the profession on teachers’ professional performance • Characteristics of why to be a TTM • The role of mathematics as a field of knowledge for understanding and transforming the world, for quality of life, for dignity and for diversity.

³ The prospective teachers' names are fictitious and chosen by themselves. They signed an Informed Consent Form approved by the Research Ethics Committee of UEL.

	<ul style="list-style-type: none"> • Mathematics teacher's duties and responsibilities • Teachers' expectations about their future • Teacher's responsibility for future generations • Teacher's actions aimed at social transformation • Recognition of power relations and interests
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Source: Own elaboration

During the analyses, the PMTs' reflections on the practicum were grouped into five points, considering:

- a) Their performance in the practicum;
- b) Practicum planning;
- c) Characteristics of the students and the class in which the practicum was carried out;
- d) Contextual characteristics that influenced the development of the practicum;
- e) Practicum supervision.

In the next section, we will discuss each point of focus, taking into account the dimensions present in the framework and their respective characteristics. In addition, we will recognize the PMTs' actions in the formative context that made such mobilization possible. These actions are discussed in the section following the reflections on the practicum.

4 Reflecting on the practicum

To recognize STP actions associated with emotions, moral commitment and political commitment that promoted the movement to constitute the PI of the PMTs, we will discuss below the reflections regarding the practicum that became a focus point in our investigation.

4.1 Performance in the practicum

During the discussions and at the final practicum report, the PMTs reflected on actions that would need to be developed in the classroom or that they would do otherwise if they had a new opportunity. João and Tiago, when announcing what they could do in a different way from what they did in the practicum, concluded:

João: *Then, just to conclude, I have a proverb: "Teach the child the way they should take. And even when they grow old, they will not depart from it." I think [for next year] it's really about educating through mathematics, and not just teaching. I think our plan also had this idea.*

Tiago: *I think that's it. We are teachers, but in this context [considering the perspective of teaching through problem solving] it is not just being a teacher. It's being an educator.*

(D, 11/16/2017)

João's pondering in this episode, reiterated by Tiago, registers emotions, moral commitment, and political commitment. The emotions are evidenced by the fact that he **considers the role of mathematics in educating students**⁴. By saying it, he reveals his responsibility towards students' well-being and development (Søreide, 2006), since other elements beyond the teaching of mathematical content were taken into account. By recognizing his role in the education of students, in what he believes to be correct or not in his professional performance, he reveals his moral purposes (Lasky, 2005). His political commitment is observed when he understands the role of mathematics in the education of students as a field of

⁴The actions identified to achieve the objective are highlighted in bold

knowledge to understand and transform the world, to improve the quality of life, dignity, and diversity (Cyrino, 2017).

In 2017, while **sharing her not-necessarily positive experiences** in teaching arithmetic and geometric progressions (AP and GP, respectively) to high school first-graders, Laura considered:

Laura: *On the second day of the workshop, there was an activity that said that the trees were getting sick.*

Paulo: *What what? Sorry...*

Laura: *That the tree was getting sick. That every week a number got sick, it was a GP. Then the student made a sequence and set it up like this: multiplying the previous term by two, adding one more and the next was determined. So, like it or not, she was already adding them all up. And oddly enough, the 2 was the ratio. So, wow... We put it on the board. I hadn't noticed, at least I hadn't noticed in the notebook (in the groups). Then, when she put it on the board, I was confused, I couldn't explain that it wasn't a GP. Then I thought: 'OMG, what did that girl do?'. I couldn't explain, I couldn't... I started to get super nervous. Then Irina came and said: It's not a GP...*

Pamela: *It was a summation sequence...*

Laura: *I was desperate.*

(D, 11/23/2017)

Laura revealed that she was nervous, not understanding what the student had done, which paralyzed her. Emotional reactions at this point may have been driven by the moral commitment to do what she believed should be done (Kelchtermans, 2009), that is, understanding the student's resolution to discuss it. Her practicum partner, Irina, stepped in and managed to discuss the idea involved in the resolution. This represents the strength of performing the STP in pairs. In the final practicum report, Irina and Laura briefly mentioned this event:

Chart 2: Irina's and Laura's reflections on the work with AP and GP

In the problem of letter (b), the group that presented the solution showed a sequence where its terms were the values of the sum of the terms of the desired sequence, that is, the sequence was as follows: $(S_1, S_2, S_3, S_4, S_5, \dots, S_{10})$. When we analyze the resolutions, one of us had difficulty explaining that the sequence presented was not a Geometric Progression.

Source: Irina and Laura's FR

Although it was a one-off mention in the report, we emphasize the importance of **collectively discussing the reflections** since such a debate complements the formative possibilities of the report.

In 2016, Kimberly and Tiffany felt the need to **share information about mistakes made during the practicum** with a sixth-grade elementary school class. They discussed a technical error and its implications.

Kimberly: *It was a task that used manipulatives, so we took four rulers,... The ruler was blank. ... However, while preparing the problem, the rulers had marks. We were going to make marks of three divisions. ... Not to divide, but to mark there, where it was to be divided, where it was to be folded. But due to my fault, I only made the rulers, I didn't pay attention to the statement. And at the time, there were only the three rulers. So they had to fold them without the markings. Those who didn't have a ruler were like: "How do I do it?"*

Tiffany: *We decided to do multiples of three, so it wasn't a simple thing to fold, because there was a whole rationale when folding. Because it was 3, 6, 9, and 12. There were four rulers. At the time I had to show, explain...*

Kimberly: *It was chaos. We lost more than half of the class just to fold it, which was something that could be done in five minutes. And since it wasn't marked at the time, they didn't know how to fold it... I had to explain ruler by ruler.*

Tiffany: *People were super calm...*

Kimberly: *We didn't lose [our nerve]...*

Tiffany: *It was challenging. A time-consuming but attractive thing.*

(D, 12/08/2016)

Even though it was a technical error – not having marked the rulers so that the students could divide and discuss the idea of the fraction as a whole-part relationship – Kimberly and Tiffany faced such a situation, based on what they believed to be correct, that is, manifested their moral purposes at that moment (Lasky, 2005). Even in the face of a complex situation, not previously planned, Tiffany considered that the work was attractive and ended up becoming a challenge for the students. This characteristic of becoming a challenge for students may have been an initiative triggered by both aiming at students' well-being and development, an emotional aspect of professional identity (Kelchtermans, 2009). In addition, keeping calm, another emotional aspect, seems to have been another element that influenced their actions in the sense of **engaging students in a challenging situation**. In the final report, Kimberly and Tiffany reiterated these conclusions.

Chart 3: Reflections on the fraction task

We failed when we forgot the markings on the rulers and this complicated us a little, as they spent more time doing the task than we had planned, however we managed to explain how to perform the folds without a ruler, doing it together with them, going in groups of three to help them and even folding for them.

After we had overcome the problem, we realized that we must always pay more attention to what we plan, so that the activities are in accordance with what was proposed. As for the activity itself, we were very satisfied, as they did it without delay or major difficulties, including using the definition from the previous class. The supervisor also calmed us down a lot, by saying that we did well, that we worked at the class's pace, but that we could have gone faster with the folding activity.

Source: Kimberly and Tiffany's FR (2016)

In his reflection, Joilson **talked about his expectations and the importance of his psychological, technical, and emotional preparation** in the STP developed with Antonio in 2016 in a seventh-grade elementary school class.

Joilson: *We expect to be the showman [in the classroom]... It is not so. (...) But if students see that you have something to offer, they'll take you on. Giving our best and we managed to convince the students that we could give the best. The best preparation is psychological, technical, and emotional at this time. We arrived there with very good expectations. We managed to meet our expectations.*

(D, 12/22/2016)

The expectations that Joilson mentioned may be related to the emotional dimensions of his PI, insofar **as anticipating how things can happen** may play the role of imagination and the desire for unattainable completeness (Hodgen & Asken, 2007). When he argued that “*it's not so*”, this highlighted this aspect even more. As he presented in his reflection that psychological, technical, and emotional preparation would be the most appropriate at that moment, we observed that he might believe that the emotional dimension influences his actions as a teacher and, therefore, is part of educational practices (Soreide, 2006).

At the same time, when Joilson said that when he offered his best and that the students realized that it was the best for them, he emphasized his moral commitment to his students, that is, thinking about what would be best to do with them and not what would be better to do as a teacher (Cyrino, 2017; Kelchtermans, 2009).

Offering the best of himself as a teacher seems to be a duty and a responsibility for Joilson and with this, the political dimensions of his professional identity are also made explicit (Cyrino, 2017). Carlos shared the need to **recognize his limitations** when reflecting on the supervised teaching practice.

Carlos: *It is interesting [to point out] that the class [students] attended the most was on a rainy day.*

Paulo: *But were there many things that you rearranged [in the planning]?*

Carlos: *It's just that I'm trying to be calmer... I'm very anxious. So in that sense, I'm trying to improve on that part. The scaling method is simple.... They take two and a half classes to discuss it?! Calm down, it's not like that... Each one has their own time.*

(D, 11/30/2017)

The need to **recognize one's limitations** seems to be an aspect that impacts the emotional dimension of Carlos' PI, which can be associated with the question of the role of his imagination and the desire for unattainable completeness (Hodgen & Asken, 2007). In addition, the emotional dimension is part of his educational practices (Lasky, 2005), as he tried, each time, to be calmer and less anxious with students' work. The fact of concluding that everyone has their time can be a reassessment of their particular set of norms and values (Kelchtermans, 2009), which is related to the moral dimension of his professional identity.

4.2 Practicum planning

Driven by one of the proposed questions, prospective teachers often expressed reflections on planning for the practicum, mainly regarding the writing of the lesson plan and the relationship they had with the advisor.

Regarding their practice in 2016, Diana and Gabriele felt the need to **share the difficulties they experienced** in the practicum advisory process.

Gabriele: *Really, we had [difficulties with the guidance]... You come with ten exercises and leave with one good one. You come with a thought and leave with none. So it was a terrible thing, but it adjusted, but it was difficult up to a certain point. Then it started to unravel.*

Diana: *It was a very bad period, really... I cried a lot during the path. There came a time when we were ashamed to approach the advisor, because we made so many mistakes... I cried a lot, I didn't calm down... Didn't know what to do. The only thing I wanted was to do thing well. We think planning is easy. But it isn't easy... It was difficult. There was no other way, we had to do it, there was no way out. And our biggest fear, after we finished, was not being able to teach, not giving those students the best classes. They needed to understand the content, it was no wonder we were there. I think that after we finished, we reached our goal, even if we didn't finish all the classes in the plan. Everything we did was well done.*

(D, 01/12/2017⁵)

Diana's thoughts indicate an emotional dimension of her PI that was possibly driven by moral commitment. Emotions brought significant implications for developing the lesson plan for the practicum (Lasky, 2005) but did not paralyze her. In her view, she managed to do a good job. We understand that this dimension was driven by moral commitment to the purposes that

⁵ The 2016 school year was extended to 2017 due to the servers strike carried out by UEL in 2016.

led her to teach (Lasky, 2005), as she wanted to provide her students with a good experience. This aspect may be associated with their values (Kelchtermans, 2009) and what they thought was best to develop with students (Cyrino, 2017; Kelchtermans, 2009).

Diana and Gabriele did not present reflections in the FPR about the development of the lesson plan. They mentioned little how laborious, exciting, and exhausting it had been. Although we do not have enough elements to infer why they did not write about it, we can think of some possibilities. It may have been because of the political dimension of their PI, or the process of preparing the lesson plan was emotionally draining both for them and for the advisor⁶, since he was the one who would correct and assign a grade to their FR. If our conclusion is correct, we could infer that power and interest relations (Cyrino, 2017; Kelchtermans, 2009) influenced this process. The absence of a position also denotes a political position, since every teacher's action is political (Cyrino, 2017).

About the process of drawing up the workshop plans, in 2016, Thomas shared his difficulties.

Thomas: What we found most difficult was finding the problems. We had to create most of them, because we looked in textbooks, but we couldn't find the way we wanted or that would cause the impact we wanted. So most of our issues had to be created. ... We also had difficulty in controlling the room... What was attention-grabbing time and what was "normal mess". And when did that become excessive? We made a lesson plan... We didn't think we were going to have a perfect class, but we hoped... To have a perfect class, to whom we would be able to apply everything we expected... We made a plan that was revised 50 times... And getting there... [we were disappointed].

(D, 12/15/2016)

Having a specific type of problem to "impact" the students seems to represent the moral dimension of Thomas' PI, insofar as it relates to moral purposes, to what he believes is correct or not to work specifically in the practicum (Lasky, 2005). It may also represent the emotional dimension of his PI, as it may be associated with the teacher's sense of responsibility for students' well-being and development (Søreide, 2006). Also, the expectations they had about being a group to whom they could apply everything they had planned may relate to the figurative aspect of the emotional dimension of the PI, the role of imagination, and the desire for unattainable completeness (Hodgen & Asken, 2007).

Thomas, reporting that they revised the lesson plan a considerable number of times, can point to the duties and responsibilities of the mathematics teacher. Reviewing the lesson plan and detailing the entire practicum planning process reveal his commitment to his duties and responsibilities, hence his political commitment.

Chart 4: Thomas and Britney's thoughts about the development of the lesson plan

In short, we believe that all stages of preparation for the Practicum Supervision were extremely important for our performance, several actions and situations were foreseen in the lesson plan, which made application easier. The preparation of the Lesson Plan and its execution allowed us to learn a lot that will be very useful in our professional lives.

Source: Thomas and Britney's FR

4.3 Characteristics of students and class

At times, the prospective teachers reflected on the specific characteristics of the students they contacted during the practicum.

⁶ The guidelines of this specific pair were followed by the first author of this article in 2016.

Mariane felt the need to **express her disappointment in her experience with students in the practicum.**

Mariane: *[About the second workshop]. That was pretty disappointing. The first problem in the second workshop was the easiest. And they didn't understand, right away, what they should do. As they were excellent at the first workshop, we thought: "This is going to be easy for them". And they stayed [trying to solve] in this problem [a long time]... And we ended up wasting a little time. After reviewing... It's just that sometimes I want at least the majority to get something, some resolution. We could have left less time.*

(D, 11/30/2017)

The fact that the students "were excellent" at first, in her view, created an expectation for the second moment, when she would have contact with them again. We associate this fact with an emotional dimension of her PI regarding imagination and the desire for unattainable completeness (Hodgen & Asken, 2007). When reflecting on the importance of most students being able to develop some aspect of the problem, we see the moral dimension of her PI, the particular set of norms and values that underlie her actions as a teacher (Kelchtermans, 2009). As she reflects on time, she reevaluates this set and thinks about what would be best to do with students as a teacher (Cyrino, 2017; Kelchtermans, 2009).

Carlos, too, **shared his disappointment regarding students' difficulties.**

Carlos: *There was no specific task. All were disappointing. ... Students had a lot of difficulties moving from written to algebraic language. However, our advisor is great, wonderful and perfect. We always had an ace up our sleeve in this regard. So, it was wonderful, we made it. ... Although it took us three classes on the scaling method. ... And we couldn't accomplish the whole plan. But I compare a lot with the students I have contact with at PIBID...*

(D, 11/30/2017)

Students' difficulties did not prevent Carlos from developing a work that he considered terrific. He could have ignored some difficulties since they could have compromised his planning. However, it seems his moral commitment to the students led him not to ignore them, even if this also had emotional implications. The emotional dimension of the PI was driven by moral commitment (Kelchtermans, 2009). Failure to comply with the plan seems to have shaken Carlos.

The comparison with students he contacts in Pibid also represents an emotional dimension of his PI, as he created expectations for the practicum and the desire for unattainable completeness (Hodgen & Asken, 2007). Furthermore, the relationship with the guidance seems to have been an aspect that had a positive impact on his emotions.

Chart 5: Carlos and Cristina's reflection regarding the STP guidance

Our biggest difficulties were trying to answer students' doubts without taking away the pleasure of discovery, and making a good systematization of the content. Thanks to the guidance of our teachers, we overcame these difficulties and did a good job. We believe that the preparation for the Practicum supervision (guidelines and lesson planning) were important, as, through it, we were able to define methodological directions, intervention and evaluation strategies.

Source: Carlos and Cristina's FR (2017)

Thomas **manifested his frustration in his relationship with a student.**

Thomas: *When we systematized the ellipse content, the girl copied all the systematization on her sheet. Then she ripped the sheet out of the notebook and ate it... I really wanted to set her hair on fire!!!! I took*

the trash bin next to her and told her to throw it in there.

Britney: *She complained to the entire class.*

Thomas: *She got up, she sang... She thought she was Whitney Houston, then Mariah Carey. I wanted to kill her.*

Pamela: *Guys, how much evil in the heart... The teacher needs to develop a lot psychologically [patience, self-control].*

Thomas: *The supervisor wanted to get her out of the room. But taking her away was what she wanted.*

Britney: *Then we ignored her...*

Pamela: *There are situations in schools (...) much more shocking than that one... And they are not simple problems of indiscipline. Thomas: Come out, [abandon this] grudge, come in, love... Wanting to set her hair on fire [is not a solution].*

(D, 11/30/2017)

Definitely, the relationship with that student had an emotional impact on Thomas. This is a classic example of how emotions are part of and influence teachers' actions in the classroom (Lasky, 2005). Emotions are present in the teacher's personal dimension (Day & Gu, 2007), and, in this case, Thomas took what she was doing personally, since her reactions, even after the class, went beyond a teacher-student relationship. As an educator, Pamela also stressed the importance of self-control in the relationship between teacher and student.

The relationship between Thomas and the student represents the political dimension of his PI, because relations of power and interest have been established between both. Taking the trash bin to her, for example, represents a political action. Thomas and Britney did not discuss this happening in the FR, which may have also been a political option, albeit of neutrality.

4.4 Contextual characteristics that influenced the development of the practicum

The prospective teachers often reflected on aspects of the context in which they were inserted, and that influenced their actions as teachers. Tiffany **discussed about the school routine**.

Tiffany: *[We had to] understand the school routine. After the break, the teachers let them drink water all the time. And we had to understand that. Because the responsible teacher himself did that. We had to understand [accept].*

(D, 12/08/2016)

The specific contextual characteristics of what was done at school, such as the fact that students could always go to the bathroom or drink water even after a break, were cultural at school. Thus, Tiffany's action took place in a political dynamic, in a relationship of power and interests (Cyrino, 2017; Kelchtermans, 2009;), because she gave in, as a teacher, to such a school routine, possibly to avoid likely clashes, which can be exemplified in her statement: "We had to understand".

Mariane also felt the need to **discuss eventualities and adaptation of planning due to actions outside the classroom**.

Mariane: *This was a 30-minute class, we learned about it only in class because there was a meeting during the break. So the class was shorter, [but they only warned us] at the last minute.*

(D, 12/22/2016)

In general, the meetings that take place in schools indicate an internal cultural movement that aims at the well-being and development of students and professionals involved. It is a political initiative by the school that influences teachers' actions, as occurred with Mariane. There is no denying the influence that political aspects external to classroom practice have on teachers' actions. In Mariane's case, it was necessary to adapt the classes.

Chart 6: Leonardo and Mariane's reflections about the need to fit the class into the available time

This day's class lasted thirty minutes, due to the teachers' partial strike. On this day, we copied the two resolutions written on the blackboard by the students the day before, and from them we systematized the substitution method for solving systems of equations of first degree with two unknowns. Then, we distributed a problem to apply the method, which they had to solve individually. A few minutes later we set up the system on the blackboard and isolated one of the unknowns to help them. We let them finish the problem as homework. One of the students wrote $x + y = 2500$ and $3x = 2y$, and then $3x + 2x = 2500$. But at this point, class time was already over. We couldn't quite explain why it wasn't correct. We returned to this explanation in the next class.

Source: Leonardo and Mariane's FR (2016)

Regarding contextual aspects that influenced their actions, as teachers, Antonio and Joilson pondered:

Antonio: *There were two delays. One was due to the theft of a cell phone outside the school. It took a while, the police had to be called.*

Joilson: *There was a meeting, to explain to the students.*

Antonio: *The other, there was a debate about High School Reform.*

Joilson: *There was a discussion about the curriculum, you know?*

Antonio: *Two hours wasted there.*

Joilson: *Yes... There were two hours of delay. We had to change due to external forces, the final questionnaire.*

(D, 12/22/2016)

Both prospective teachers' reflections about the **need to adapt the planning** represent external political characteristics that intervene in teachers' actions (Kelchtermans, 2009). Discussions about the curriculum and the High School Reform, which at that time were quite intense, interfered with their actions and demanded that both adapt their plans. Discussing educational policies in force was very important for the PMTs, since their actions are necessarily political and will continue to be so in their respective careers.

4.5 Practicum supervision

The prospective teachers presented some of their reflections on the practicum supervision. In that direction, Tiffany **shared information about her nervousness**.

Tiffany: *I was less nervous too because of being watched. Because last year I didn't know what that meant. If the person was going to keep writing, if he/she was going to interfere... So much so that there were professors who were not our advisors observing us, and it was easy...*

(D, 11/30/2017)

Although in 2017 she was not nervous about supervision (or was less so), we have evidence that, in 2016, it shook her emotionally. Kelchtermans (2009) argues that, in essence,

everyone, students and colleagues, observe the act of teaching. It is like living in an aquarium, with different views from outsiders, from different angles. That has emotional implications for teachers, which is what happened to Tiffany in 2016, but not significantly in her practice in 2017.

Mariane: *I was writing the report and I remembered something and said: Wow, I'll tell the advisor about this. Oh no, she was there.*

(D, 11/23/2017)

For Gabriele and Diana, supervision influenced their actions.

Gabrielle: *They collaborated even more when the supervisor was there.*

Diana: *They asked: "Who is that guy over there?" [Diana answers] "The same way you are evaluated, they are evaluating us". [Student asks] "Do you only graduate if he evaluates you?" [Diana answers] "Ahem..." Then they were like: "We are doing it here"... It was great, guys.*

(D, 01/12/2017)

The university professor's supervision in Diana and Gabriele's practice impacted the power and interest relationships with the students. By **sharing that they were being evaluated**, they used their interest in getting a good grade to establish a relationship of trust with the students. We consider that such actions are related to the political dimension of their PI precisely because of personal interests and power relations.

5 Actions that enabled the mobilization of emotions, moral commitment and political commitment

Several characteristics associated with the PI, particularly regarding emotions, moral commitment, and political commitment, were mobilized in the PMTs' ⁷actions, described in their reflections on the STP, such as:

- a. Considering the role of mathematics in students' education.
- b. Sharing not necessarily positive experiences of mistakes made during the practicum, difficulties, disappointments, and frustrations.
- c. Giving arguments about expectations compared to reality.
- d. Anticipating how things might happen in the classroom.
- e. Reasoning about the need for self-control and the importance of technical and emotional aspects for the teaching profession.
- f. Recognizing their limitations.
- g. Discussing the school routine.
- h. Discussing eventualities and adaptation of planning.
- i. Sharing information about nervousness.
- j. Sharing the desire to be well evaluated.

Considering the role of mathematics in students' education (a), reasoning about the school's routine (g) and anticipating how actions can be developed in the classroom (d) are

⁷ Such actions were highlighted in bold in the analysis section.

essential actions for mobilizing the PI, as they allow understanding the teacher's role beyond teaching. Assuming this role can be a contentious political position, in addition to being related to students' well-being and emotional dimensions. Pondering the school routine and imagining how actions can be developed in the classroom allow prospective teachers to compare their beliefs with what is socially performed by other teachers. The relationship between what is believed and what is actually done is associated with morality since it impacts the absolute truths that each human being constitutes throughout their trajectory.

Sharing experiences about mistakes, difficulties, failures, frustrations (b); discussing self-control, technical and/ emotional preparation (e), expectations compared to reality (c); recognizing their limitations (f); reasoning about eventualities and adaptation of planning (h); sharing information about nervousness (i) and the desire to be well-evaluated (j) represent potential actions for the manifestation of emotions, moral commitment, and political commitment, as they demystify that such dimensions are necessarily bad. They are part of the PI and impact the repertoire of each PMT, influencing their future actions since the movement to develop the PI is not necessarily harmonious. Such demystification influences the moral dimensions of PMTs, as it allows reorganizing the set of values of each one; emotional ones, insofar as emotions are believed to condition professional actions; and policies insofar as such dimensions are evidenced from personal relationships of interest and in contexts of power relationships.

6 Considerations

In this study, we discuss the actions that mobilized different characteristics associated with emotions, moral commitment, and political commitment as inherent to the movement of the constitution of the professional identities of the teachers who teach mathematics.

Talking about personal dimensions, generally interpreted as controversial, is not simple. It requires an environment open to differences that fosters trust and commitment to each other. Mobilizing without constraint emotions, moral commitment, and political commitment in formative contexts helps sustain the belief that making mistakes is essential and that no one is free from making mistakes. Talking about such dimensions promotes self-understanding, helping recognize who the PMT are as professionals. Furthermore, it supports the belief that we all have emotions and act according to what we believe. Anyway, we all act biased by our interests.

Being able to share frustrations and anxieties, especially in initial training, is rare, even though the movement to set up the PI permeates emotions, moral commitment, and political commitment. Hence, the importance of offering spaces to reflect on successes, mistakes, and failures, disappointments is possible and show that all this is part of the teacher education process, as Lutovac and Flores (2021) pointed out.

Emotions, moral commitment, and political commitment, when mobilized, are also articulated with other dimensions of the movement for the development of the PI. For example, when the prospective teachers presented reflections related to the emotional dimension, they were also revealing characteristics of self-image and self-esteem as teachers. When they reflected on moral commitment, they presented their beliefs and knowledge about what they considered correct for mathematics teaching. When they expressed reflections related to political commitment, they mobilized the search for a sense of agency in situations of vulnerability. Self-image, self-esteem, beliefs, knowledge, experiences of vulnerability and the search for a sense of agency are constituent and inseparable dimensions of the movement for the constitution of the PMTs' PIs. This reveals that, although the dimensions of the PI

constitution movement can be taken as units of analysis in investigations, they are interconnected and mutually impact each other (Cyrino, 2017).

Analyzing the mobilization of emotions, moral commitment, and political commitment as dimensions of the PI constitution movement helps us understand (prospective) teachers in their complexity, which varies according to the context in which they are investigated. PI discussions in Brazil and other contexts must be investigated within our own characteristics as a country (Meyer *et al.*, 2022). Specific analyses on emotions, moral commitment, and political commitment, by their very nature, reveal discussions that are specific to mathematics teachers in the Brazilian scenario. Just as PI discussions are necessary for specific domains of knowledge, such as mathematics (De Paula & Cyrino, 2017), analyses are also influenced by the local context in which they are developed (Meyer *et al.*, 2022). Our investigation moves in this direction. It intends to bring to light significant elements of the training process of prospective mathematics teachers in Brazil, especially regarding the Brazilian culture of STP development (Barbosa & Lopes, 2020). In this sense, we recognize that the practicum, the development of the final report, and the collective discussions of practices do not represent just a bureaucratic or disciplinary issue to be completed in a mathematics degree course at the STP. On the contrary, they can encompass emotional, moral, and political issues and encourage a commitment to action and transformation that involves different agents, such as schools, universities, and prospective teachers.

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