

A agência e o desenvolvimento profissionais de pesquisadoras narrativas que ensinam matemática

**Agency and professional development of female narrative researchers who teach
Qualis A1 mathematics**

Agencia y desarrollo profesional de investigadoras narrativas que enseñan matemáticas

Agence et développement professionnel des chercheurs narratifs qui enseignent les mathématiques

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Resumo

O objetivo deste trabalho é buscar por indícios de desenvolvimento e agência profissionais nas pesquisas narrativas de três educadoras matemáticas, participantes de um grupo de pesquisa que atua colaborativamente na construção de um referencial teórico-metodológico para pesquisas (com) narrativas. Este estudo constitui-se em uma metassíntese qualitativa², cujo *corpus* de análise é formado por três teses de doutorado desenvolvidas na modalidade de pesquisa narrativa. A primeira delas foi realizada com licenciandos de matemática em uma universidade federal, com a análise de memoriais de formação; as outras duas foram desenvolvidas em salas de aula dos anos iniciais do ensino fundamental, tomando as narrativas pedagógicas como objeto de análise. O referencial teórico apoia-se nos estudos (auto)biográficos, na concepção de pesquisa narrativa de Jean Clandinin e Michael Connelly, nas ideias bakhtinianas e na perspectiva histórico-cultural. A pesquisa narrativa potencializa a tomada de consciência da própria constituição profissional e é um dispositivo de autoformação. As professoras-pesquisadoras-narradoras desenvolveram-se e exerceram a agência profissional ao atuarem na formação de estudantes da educação básica e da licenciatura em matemática.

Palavras-chave: Pesquisa narrativa, Educação matemática, Desenvolvimento profissional, Agência profissional.

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Abstract

This study aims to search for signs of development and professional agency in the narrative research of three mathematics educators, participants of a research group that works collaboratively in constructing a theoretical and methodological framework for researching (with) narratives. This study is a qualitative meta-synthesis, whose corpus of analysis consists of three doctoral theses developed in the narrative research modality. The first one was developed with mathematics degree undergraduate students at a federal university, with the analysis of their academic memorials. The other two were developed in classrooms of the early years of elementary school, taking pedagogical narratives as the object of analysis. The theoretical framework is based on (auto)biographical studies, Jean Clandinin and Michael Connelly's concept of narrative research, Bakhtinian ideas, and the cultural-historical perspective. Narrative research enhances the awareness of one's own professional constitution and is a device for self-education. The teacher-researchers-narrators developed and exercised professional agency while forming basic education and mathematics degree undergraduate students.

Keywords: Narrative research, Mathematics education, Professional development, Professional agency.

Resumen

El objetivo de este estudio es buscar indicios de desarrollo y agencia profesional en la investigación narrativa de tres educadoras matemáticas, participantes de un grupo de investigación que actúa colaborativamente en la construcción de un marco teórico y metodológico para la investigación (com) narrativa. Este estudio es una metasíntesis cualitativa, cuyo corpus de análisis está constituido por tres tesis doctorales desarrolladas en la modalidad de investigación narrativa. La primera se desarrolló con estudiantes de licenciatura en matemáticas de una universidad federal, con el análisis de memoriales de formación; las otras dos se desarrollaron en aulas de los primeros años de la educación primaria, tomando como objeto de análisis las narrativas pedagógicas. El marco teórico se basa en los estudios (auto)biográficos, el concepto de investigación narrativa de Jean Clandinin y Michael Connelly, las ideas bajtinianas y la perspectiva histórico-cultural. La investigación narrativa aumenta la conciencia de la propia constitución profesional y es un dispositivo de autoformación. Los profesores-investigadores-narradores desarrollaron y ejercieron la agencia profesional al actuar en la formación de estudiantes de educación básica y licenciatura en matemáticas.

Palabras clave: Investigación narrativa, Educación Matemática, Desarrollo profesional, Agencia profesional.

Résumé

L'objectif de cette étude est de rechercher des signes de développement et d'agence professionnelle dans la recherche narrative de trois enseignants de mathématiques, participants d'un groupe de recherche qui agit en collaboration dans la construction d'un cadre théorique et méthodologique pour la recherche (com)narrative. Cette étude est une méta-synthèse qualitative dont le corpus d'analyse est constitué de trois thèses de doctorat développées selon la modalité de la recherche narrative. La première a été réalisée auprès d'étudiants en mathématiques d'une université fédérale, avec l'analyse de mémoires de formation ; les deux autres ont été réalisées dans des salles de classe des premières années de l'enseignement élémentaire, en prenant les récits pédagogiques comme objet d'analyse. Le cadre théorique est basé sur des études (auto)biographiques, le concept de recherche narrative de Jean Clandinin et Michael Connelly, les idées bakhtiniennes et la perspective historico-culturelle. La recherche narrative améliore la prise de conscience de sa propre constitution professionnelle et constitue un outil d'auto-formation. Les enseignants-chercheurs-narrateurs ont développé et exercé l'agence professionnelle en agissant dans la formation des étudiants en éducation de base et en mathématiques.

Mots-clé : Recherche narrative, enseignement des mathématiques, développement professionnel, agence professionnelle.

Agency and professional development of female narrative researchers who teach mathematics

The use of narratives as a data source or research methodology has been present in mathematics education research in recent decades. Some thematic dossiers have already been produced and made it possible to understand the multiple meanings attributed to the narrative. Among these dossiers or thematic issues, we highlight a thematic issue of the journal *Ciências Humanas e Sociais em Revista* (Research on Human and Social Sciences) (Souza, 2010); *Revista Educação PUC-Campinas* (Azevedo, 2013); *Bolema* (Nacarato, Passos & Silva, 2014); and *Revista Brasileira de Pesquisa (Auto)Biográfica* (Brazilian Journal of (Auto)Biographical Research) (Nacarato, Passos & Lopes, 2019).

In these thematic dossiers and the multiple works related to narratives, we have identified the polysemy that involves this construct and the theoretical-methodological basis. Nacarato et al. (2017), relying on a broader project to map master's degree and doctoral theses focused on teacher education, took an excerpt of the corpus research and investigated whether the theoretical-methodological perspective used to analyze teachers' stories approached biographical studies or oral history. They concluded that the approximation point of the studies was related to the movement of listening to the teachers and, thus, identifying their voices and their role in constructing the history of mathematics education and its formation.

Another mapping study was carried out by Nacarato et al. (2019), a systematic review of national production in the (auto)biographical field in mathematics education. For this, the authors took as corpus texts published in the proceedings of qualified events in education and mathematics education. They identified diversity in the production modes and understanding of narratives by mathematics educators; many works refer to narratives but do not explain the theoretical-methodological contributions to support the discussion. The authors concluded that, at that moment, this was still a field under construction.

Since 2010 I have coordinated the research group *Histórias de Formação de Professores que Ensinam Matemática* (Hifopem) focused on (auto)biographical studies, and we have investigated the multiple possibilities of (with) narrative studies, both as a source of data and as a research methodology³. One of the group's main actions is constructing a theoretical-methodological framework for producing research that uses narratives as data production devices. By narratives as a data source, we mean those works that analyze different types of

³ The text will sometimes be written in the first person singular, assuming my authorship, sometimes in the first person plural, considering that the ideas defended here are the collective construction of a group.
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narratives without the theoretical-methodological focus being biographical studies; as a research methodology, the use of multiple narratives is an instrument for producing data consistent with the biographical method. There is also narrative research, the focus of this study.

The text is organized into three sections, in addition to the final considerations. In the next section, I discuss the understanding that we have collectively constructed about narrative research and its possibilities for (self)education processes and, consequently, professional development; then, I discuss the meaning of qualitative meta-synthesis research and present the three works that will be explored; in the third section, I analyze the signs of professional development and agency we identified in the sample.

Narrative research and interfaces with teacher education

Since the beginning of our group⁴, under my coordination, the concern has always been the construction of a theoretical-methodological path that could support master's and doctoral researchers interested in relying on the (auto)biographical method⁵, as presented by Ferrarotti (2014), and on narrative research, from the perspective of Clandinin and Connelly (2011). However, we felt we had to expand the references. Thus, we looked for authors who could contribute to our understanding of the narrative production process. As the narrative involves a historical and dialogical process, constituted in alterity, studies in Bakhtinian and cultural-historical perspectives were central to the ways of understanding and producing meanings for research (with) narratives. In this way, we embodied in our studies concepts such as experience, otherness, the surplus of vision, the role of the other, circulation of discursive genres, and semiotic mediation, among others, which guided the research of the postgraduate students and made possible the analysis of constructs such as professional development, learning, identity, and agency. Although these concepts are discussed and given meaning in our group, each researcher, as a unique subject, has their particular style of writing and their particular ways of narrating what they experienced, that is, “the unrepeatability uniqueness of each subject and each act constitutes the necessary and sufficient basis of the responsible, situated ethical act, which shares certain identifiable characteristics with other acts, but is unique and unrepeatability in terms of its performance” (Sobral, 2019, p. 44). We assume our ethical and responsible acts as researchers and respect others collaborating with our research. Narrative research presupposes

⁴ In addition to master's and doctoral students, the group has the participation of external researchers. Some are graduates of the university's postgraduate program in education, others participate as guests.

⁵ The use of parentheses in “(auto)biographical” has a double meaning, as it can mean either biographical or autobiographical material. Each unique study will use the correct expression; however, when referring to the method generically, the parentheses are present.

the researcher's responsive and ethical act, hence the importance of placing them as a research subject. Narrating the story and assigning meanings to the experiences of the other implies narrating one's own story and resignifying one's own experiences, becoming aware of one's own identity.

The sociologist Ferrarotti (2014) is the pioneer in the discussion of the autobiographical method when he breaks with the traditional model of research in human sciences by defending that, through an individual narration, it is possible to understand a human practice and, therefore, the subjectivity inherent to autobiography can constitute scientific knowledge. He says, based on Marxist theses:

Any individual human practice is a synthetic activity, an active totalization of the entire social context. *Life is a practice that appropriates social relations* (the social structures), *internalizes and reconverts them into psychological structures through its destructuring-restructuring activity*. Each human life reveals itself as the vertical synthesis of social history, even in its most generalizable aspects. (Ferrarotti, 2014, p. 70)

Among the multiple instruments for producing data consistent with the (auto)biographical method, the following stand out: academic memorials, autobiographies, narrative interviews, and pedagogical narratives. They are instruments that make it possible to analyze theoretical constructs, such as professional trajectories, formative processes, professional identity, professional constitution, professional development, professional agency, conceptions of mathematics, teaching and learning, among others. They can be used and analyzed in an investigation with a qualitative approach based on the biographical method, or they can be analyzed narratively in narrative research.

Narrative research deals with human experience. As stated by Clandinin and Connelly (2011), based on John Dewey's notions of experience, "a criterion of experience is the *continuity*, namely, the notion that experience develops from other experiences and that experiences lead to other experiences" (p. 30). With narrative, "we learn to move backwards (retrospectively) and forwards (prospectively) between the personal and the social, simultaneously thinking about the past, the present and the future, and thus acting in all expanding social *milieus*" (p. 31). To them,

Education and studies in education are forms of experience. To us, a narrative is the best way to represent and understand an experience. Experience is what we study, and we study experience narratively because narrative thinking is a key form of experience and a key way of writing and thinking about it. (Clandinin & Connelly, 2011, p. 48)

Another author that analyzes narrative thinking is Bruner (1997). To him, there are two types of thinking: paradigmatic and narrative. While the paradigmatic or logical-scientific is based on formal models and categorizations, with a language of neutrality, the narrative mode portrays the human experience; it is singular –not generalizable, it deals with human intentionality; therefore, it is singular. Bruner (1997) says that the narrative:

(...) is composed of a singular sequence of events, mental states, occurrences involving human beings as characters or actors. These are their constituents. But these constituents, so to speak, have no life or meaning of their own. Their meaning is given by the place they occupy in the general configuration of the sequence as a whole, its plot or *fable*. (p. 46)

The expression of narrative thinking requires a language of its own. As Larrosa (2014) states, “We need a language for experience, to be able to elaborate (with others) the meaning or the lack of meaning of our experience, yours, mine, each one’s, anyone’s” (pp. 67-68). The author has a peculiar view of experience: “Only the subject of experience is, therefore, open to their own transformation” (p. 28) and “the knowledge of experience takes place in the relationship between knowledge and human life” (p. 30). Thus, the narrative configures itself with the language to express the experience. Experience that is singular but built within social relationships, in the relationship with the other and with myself. We learn the language of experience by sharing our ideas and practices with and for others.

In narrative research, immersed in the investigated context, the researcher shares ideas and practices, teaches, learns, and produces meanings to the experience. And all the material produced in these social relationships is organized in an intrigue, in an entanglement, building a story from the multiple voices of research collaborators, whether they are professors, professors to-be or students. The researcher (trans)forms themselves, and (trans)forms the investigated environment. These actions occur in a three-dimensional space, as postulated by Clandinin and Connelly (2011), and involve the situation or place; temporality or continuity (past, present, and future); and interaction, which encompasses the personal and the social.

Narrative research uses two types of text: field and research. The researcher produces the field text in the empirical work, which can be narrative interviews, academic memorials, pedagogical narratives, and field diaries, among other registers. Through analysis, these field texts are transformed into research texts and comprise the researcher’s final work.

One of the greatest challenges of producing narrative research is how to place the theory into the body of the text, which is a moment of tension for the researcher. We were constituted in formalist research models, in which the theory should appear from the beginning of the text,

with broad thematic reviews on the subject; our research reports assume a canonical model of presentation: introduction, theoretical framework, methodology, data analysis, and conclusions, and the results are often generalized. In narrative research, the theory is built with empirical data to integrate unity in the narrated stories and produce meanings to the lived experience. According to Clandinin and Connelly (2011):

The contribution of narrative research is more in the scope of presenting a new perception of meaning and relevance regarding the research topic than in disclosing a set of theoretical statements that may add to the knowledge in the area. (p. 75)

Or, according to Clandinin and Connelly (2011), “the narrative researcher does not prescribe general uses and applications, but creates texts that, when well written, offer the reader a place to imagine their own uses and applications” (p. 76).

Another challenge of narrative research is the insertion of the “I” in the authorship of the text. The narrative researcher needs to assume their responsible act and subjectivity, admit their authorship and critically reflect on their own constitution process. As Passeggi (2016) states, “It is amid the current turn of subjectivity, or for some, of de-subjectivation, that it is necessary to look more carefully at the person in formation, from which point of view their perceive their way of being, of conceiving the world and of conceiving themselves in the world” (p. 72).

Reflecting on experiences and projecting oneself into the future is the condition of narrative research. Therefore, according to Passeggi (2016), it is about adopting this premise:

(...) as an epistemological and political principle [that] allows us to conceive of teachers as beings capable of recognizing the power of culture over them, but also of evaluating and designing alternatives to live better and contribute so that others also live better in their relationships with the power that emanates from culture. (p. 73)

After a decade of studies and research, our group participants produced some consensus, perhaps in a singular identity of the group: the researcher is the subject of the research, whose text begins with their memorial of formation, and their story intersects with the stories of the research participants; the theory is built throughout the text, and articulates multiple voices (of the reference authors and the research subjects) in an entanglement that presents the reader with a plausible story of people located spatially and temporally in cultural contexts, constituted by cultural mediation tools. We learned to be narrative researchers by producing narrative research (XXX, 2022).

Narrative research has enhanced self-education, professional development and agency, and allows us to become aware of who we are, of our identity. Our group's discussions have moved in this direction and approached these concepts from a cultural-historical perspective.

Professional development can be considered a part of human development, a central concept in the cultural-historical perspective. This development is linked to the cultural scope, which, therefore, is a social, interpersonal event that leads to the internalization of cultural forms of behavior and comprises a transformation of psychological activity. Such a process is based on transforming an activity primarily external into an internal activity mediated through signs, of which the word is the sign *par excellence*. The process of appropriating culture is through signs. We add that "It is not what the individual is, *a priori*, which explains their ways of relating to others, but it is the social relationships in which they are involved that can explain their ways of being, acting, thinking, relating" (Smolka, 2000, p. 30).

Professional development interrelates personal and professional life, policies and contexts in which teaching activities take place. Day (2001) affirms that professional development must be seen as the:

(...) process through which teachers, as agents of change, review, renew and expand, individually or collectively, their commitment to the moral purposes of teaching, acquire and critically develop, together with children, young people and colleagues, the knowledge, skills and emotional intelligence essential for effective professional reflection, planning and practice in each of the phases of their professional lives. (p. 21)

In this author's perspective, teacher agency is implicit, i.e., they not only passively receive changes from outside the school but also promote changes.

Lasky (2005), from the cultural-historical perspective, considers agency as a mediated practice, with priority given to social contexts and cultural tools, since human development occurs in social relationships:

Teacher agency is part of a complex dynamic; it shapes and is shaped by the structural and cultural characteristics of society and school cultures... Every decision teachers make, the actions they take, is simultaneously a consequence of past action and present context and a condition that shapes the context for future actions. (p. 900)

Professional development implies interpersonal and intrapersonal reflections; therefore, it derives from those relations and learnings constructed as an otherness, i.e., "I-for-myself, the-other-for-me, and I-for-the-other; all the values of real life and culture are arranged around these fundamental architectural points of the real world of the act" (Bakhtin, 2010, p. 114). The real world, according to the author, is the lived world in this relationship "I, the other, and I-for-the-

other”. Thus, as singular subjects, we are only constituted in the relationship with the other, “the unique singularity cannot be thought, but only lived in a participatory way... of the act, by the categories of the effective operative and participatory experience of the concrete singularity of the world” (pp. 58-59). In this alteritarian and responsive movement, we constitute ourselves and act, transforming others and transforming ourselves. As Custódio (2020) states, “The professional development is articulated with lifelong learning, since our professional constitution is not restricted to academic formative experiences, but encompasses all that learning that we build in different contexts and social spheres” (p. 129).

The temporality in professional development and agency concepts is consistent with narrative research. In temporality, the researcher reflects on their trajectory, on the actions they developed in the formative contexts they experienced with students or peers, and project themselves into the future, in the temporal movement of past-present-future, defended by Clandinin and Connelly (2011). The narrative researcher also assumes themselves as responsible for their training and their agency, as a responsible act.

These reflections constitute our theoretical contributions to the analysis of the corpus of our study.

The methodological approach

This study is defined as qualitative meta-synthesis. According to the Group of Study and Research on Mathematics Teacher Education (Grupo de Estudo e Pesquisa sobre Formação de Professores de Matemática – Gepfpm -2018),

(...) one *metasynthesis* of research work(s) consists, first, in the production of qualitative evidence (that is, small interpretative syntheses) extracted from each research analyzed about a problem, phenomenon or focus of study, to then be related (confronted or contrasted), producing other interpretations that allow composing a new synthesis of interpretations. Therefore, *metasynthesis* represents a systematic and rigorous attempt to conduct second-order readings of the interpretations found in first-order qualitative (field) studies. (pp. 247-248)

Research in this modality aims at the theoretical development of a theme. Thus, it is based on the evidence paradigm (Ginzburg, 1989), since the researcher searches for evidence in the works that comprise the corpus of the research, based on the objectives outlined for its investigation. Leandro and Passos (2021) examine the contributions of the evidence paradigm to the analysis of narratives, which they call “narrative evidence” (p. 8). They recognize that “(...) the narratives bring a type of evidence – permeated in the plot and, therefore, narrative –

linked to the subject's history" (p. 8). Thus, the analysis needs to be flexible and focused on narrative evidence that will allow for other paths of interpretation.

The corpus of analysis of this study consists of three doctoral theses in the narrative modality developed by participants of our group. To preserve anonymity in this⁶ text, I will use pseudonyms for the three researchers, members of the group: Sara, Karla, and Isabela. Sara was the first to develop narrative research, which she defended in 2016, becoming a reference for other researchers. Sara works at a federal university in a mathematics degree course. Her research was carried out with a group of six undergraduates and the supervising teacher of the basic school, participants in the Institutional Scholarship Program for Teaching Initiation (Programa Institucional de Bolsa de Iniciação à Docência - Pibid); the researcher was a teacher and biographical mediator of their academic memorials of this group, and her story intersected with theirs in different formative spaces. The undergraduate students' memorial was also produced for the Supervised Teaching Practice subject, aiming at self-education. In addition to the memorials, the researcher's field texts were constituted by her field diary and the registers from the socialization/reflection group meetings.

Since the production of this work, our group has focused on studying this type of investigation and has been building a particular way of understanding narrative research. Karla graduated in pedagogy, defended her thesis in 2020 and conducted research of her own practice with her 1st-grade elementary school students at a municipal public school, focused on the development of algebraic thinking. For this, she produced pedagogical narratives of her practice and took them as an object of analysis. Thus, her field texts were the narratives produced during the school year in each class destined to produce data for the research. She videotaped the classes and collected students' registers to produce pedagogical narratives.

Isabela, a mathematics teacher, also defended her thesis in 2020 and carried out the research in a 3rd-grade elementary school class at a municipal public school, in which she established a partnership with the class teacher and focused on the conceptual elaboration of spatial relationships. The field texts produced consisted of clippings of moments of interaction (episodes) in which spatial concepts were under discussion, records made by children, excerpts from transcripts of moments of task (re)planning, and analysis of registers and/or videos taken during the development of proposals in the classroom. These field texts were transformed into pedagogical narratives as research text.

⁶ This anonymity will cease to exist if the text is approved for publication, since the works are published.

Karla and Isabela analyzed their own professional development; Karla also analyzed her professional agency, and, in Isabela's case, she also considered these constructs in relation to her partner teacher, as both learned and transformed themselves in the process.

Professional development and agency of female narrative researchers

The three researchers tell, in their texts, their stories and those of the subjects that participated in their research; in a three-dimensional space, they look at the past lived during field research, analyze the present with the lenses available to them, and project themselves into the future. In the three works, I look for indications of how they developed and acted as educators. I choose to introduce each researcher, and, ultimately, I look for an interpretative synthesis.

The teacher-researcher-narrator Sara

Upon entering the mathematics degree course, influenced by the subject she had taken in her doctorate, Sara implements the academic memorial in the course – a powerful way of acting. The memorial was to be prepared on subjects of a more pedagogical nature that had their high point in the Pibid group under her guidance. In the memorials, Sara analyzes the formative process made possible for her seven research participants. By facilitating the production of academic memorials and promoting biographical mediation, the author reveals her agency as an educator. Biographical mediation is a concept proposed by Passeggi (2006) and refers to the moment of accompanying the writing to helping the student to produce their memorial, which is not a solitary production, but a work in collaboration with the educator and the colleagues in the group. The author presents biographical mediation as the process of co-construction of the memorial. Sara (Caporale, 2016) states that:

(...) the monitoring of the writing of the memorial is dual. The first and most important concerns the content, which refers to the interactions between the researcher-educator and the research subjects, to mobilize the reflective process regarding the experiences, which possibly can be resignified, and reinterpreted; and the second concerns guidance on the form, which includes the question of spelling correction, the structure of the text, and suggestions for readings, films, etc. (p. 211)

Mediation did not only happen in the written text but was also a collective movement in the group, as the undergraduates shared their memories in the socialization/reflection group. The researcher-trainer establishes a dialogic process among the students, understands that education takes place in alterity and promotes an alteritarian listening and the co-construction of knowledge, as stated by Sobral and Giacomelli (2020): “It is a reflection based on the idea

that if we are altered by the other, it is up to us to go, in fact, to the other and let ourselves be absorbed by their alterity (Bakhtin, 1979) so that we can return to ourselves, enriched, having enriched the other.” Sara (Caporale, 2016) also recognizes this dialogical relationship that she fostered in the undergrads’ group:

In the movement of writing, mediation, and rewriting of the memorial, the dialogical relationship between the two participants in the mediation is in question. In this sense, when reading the story of Iris and Andreia, I can also reflect on my own story. By bringing memories/experiences from the most distant past, from childhood to the present; or more recently, of practical actions in the process of initial education, prospective teachers can locate, and perceive themselves in actions that are already typical of the profession and that involve from the teacher-student relationship to the professional knowledge that is already under construction. The role of biographical mediation in this first moment is to try to help Andreia and Iris retrace their trajectory in search of new perspectives, meanings, and directions for the formative process. (p. 216)

Thus, the author reveals her agency as an educator, recognizing that life narratives enhance self-awareness on the part of the undergraduates, the supervising teacher and herself, and reflects on the modes of the professional constitution. Agency exercised as a mediated practice in a context of social relations – in Lasky’s (2005) conception, relations that explain the ways of being of those involved (Smolka, 2000). The memorials were constituted as tools of semiotic mediation because, through them, the undergrads, the Pibid supervising teacher, and the teacher-researcher could attribute meanings to the lived experiences. In sharing the memorials in the socialization/reflection group, everyone exercised their agency, as they could contribute to transforming the other, consequently promoting professional development, since agency and professional development are inseparable concepts.

Sara does not explicitly mention her professional development in her text, but she often highlights how much she learned with that group: to be a teacher-education, a Pibid coordinator, and a researcher-narrator. This is how she identifies herself in her memorial:

There I was, starting my own apprenticeship, that of teaching mathematics teachers from a (self)formative practice in which I was also inserted. By encouraging prospective teachers to prepare their formative memorial, they were allowed to go back in time and reflect on their experiences, specifically of education, of becoming a mathematics teacher; and to me, a teacher educator, the possibility of reflecting on my experiences, getting to know and trying to draw inferences about the education of each one and of the group as a whole. (Caporale, 2016, p. 47)

And this is how she ends her text:

I started this research text by telling my story as a subject. Throughout it, I assumed the position of a researcher: I gave way to the stories of seven other subjects so that, together, we would produce knowledge about the constitution of becoming a teacher. I come back to tell you that I was implicitly present in all interactions and professional learning that emerged from common contexts and formative spaces; however, with the possible meanings of being established from my place of Stay (Parada), a temporary place in constant transformation. (Caporale, 2016, p. 234)

She assumes to be a professional in constant transformation and professional development.

The teacher-researcher-narrator Karla

During her doctorate, Karla taught in municipal schools in the São Paulo countryside and worked with 1st graders of elementary school. She did research in/of her own practice to develop her students' algebraic thinking, involved them in investigative practices of mathematics learning, and produced pedagogical narratives of her classes, which were taken as an object of analysis. To produce the pedagogical narratives, Karla used episodes extracted from the video recordings of the classes and students' written registers. She selected some of these narratives to analyze. The analysis produced a new narrative, which we can call metanarrative – a term the teacher did not use. She used “narrative of the narrative”. With each narrative analyzed, Karla produced reflections that evidence her learning processes and professional agency. She sought evidence of her specialized knowledge to teach mathematics, which was built in the process of learning and teaching. The expression “in/of practice” stems from the data production context, as the research was conducted in the classroom, but the data were analyzed and reflected from the perspective of practice, consistent with the ideas of Cochran-Smith and Lytle (1999).

I present some excerpts from the narratives, in which we can identify the teacher-researcher in development and how she based herself on Paulo Freire's idea of incompleteness or of being inconclusive:

Based on these assumptions, I understand that my incompleteness enables me to search; or rather, recognizing my incompleteness makes this openness possible; my incompleteness makes me “educable”. Therefore, it was not education that made me “educable” but the awareness of my incompleteness that generated this “educability”. Thus, the essence of human education — not limited to teaching — is found in inconclusion (Freire, 2019). (Moreira, 2020, p. 155)

In other excerpts, she maintains this reflective perspective of incompleteness and continuous development: “My narrative points to evidence of the ability (of a teacher) to

develop and enhance both her knowledge and her learning as a teacher” (Moreira, 2020, p. 161). At other times, she explains that the production of knowledge in teaching practice implies political and ethical commitment: “My position in the face of limitations, challenges, conflicts, dilemmas and my political commitment as a teacher, faced from the reflection on/of my teaching practice, configures my identity constitution” (p. 164). This positioning, according to Bakhtin (2010), is marked by the responsive act: “the real recognition-affirmation of everything that I will be representative of is an act of mine personally responsible” (p. 112).

Another concept present in Karla’s narratives (Moreira, 2020) refers to alterity relations –she assumes that professional constitution only occurs in social relations, with and through the other:

(...) and when I dedicate myself to writing my narratives, in a relationship of alterity, I place myself as the other of myself. Today’s teacher writes about the teacher I was; the researcher writes about the teacher; the student writes about the teacher. I agree with Carretero (2019, p. 922) in understanding that “the narrative inquiry is fundamental to communicate who we are, what we do, how we feel and to take subjective responsibility for our choices.” I assert myself as a teacher by making myself a teacher in the world with so many others around me that are immersed in a continuous process of development and learning. (p. 165)

There is the awareness that occurs in the course of narrative production:

When writing about my practice, I become aware of what is happening to me. Making choices, thinking about what to include or what to leave out, is already an intentional act in itself. It is the result of dialogue with the other and, therefore, the inclusion of the different voices that permeate my text. (Moreira, 2020, p. 193).

In these reflections, the author discusses her identity constitution:

I wasn’t alone; my process of (trans)formation took place (and still takes place) in/by the constitutive alterity of the relationships I established with the other. It also formed in the different positions I assumed in relation to this other: the I-for-myself (what I see of myself), the I-for-the-other (what I see of the other with whom I establish an interaction) and the other-for-myself — what concerns how I face the other in (through) social relations. Here is the duality of identity: being for oneself and for the other; the singular subject, belonging to the social/collective (Bakhtin, 2010). (Moreira, 2020, pp. 195-196)

Thus, she assumes her professional agency:

My narrative reveals my choices, my conceptions of the teaching relationship, my commitment, my political position, my limitations, my conflicts, my dilemmas, and my ability to (re)make myself, (re)learn, develop my professional agency (Cyrino, 2017). (Moreira, 2020, p. 198)

An agency that is made explicit when the author states: “My commitment must be the search for knowledge, for reflection in/of practice, for my growth and, consequently, for the learning and development of my students” (XXX, 2020, p. 230).

At the end of the text, she presents a reflection that shows how development, agency, and professional identity are interrelated and how personal identity is intertwined with professional identity:

My investigation not only changed what I knew, but also who I was before it. And here I recognize the constitution of my *professional identity*. I learned to take a political stand before my profession and my students and before my formative process and all the otherness surrounding it. Today, I know that the relationships that are established with the other affect the constitution of personal, professional identity, or, as Holland *et al.* (1998) point out, “identities”. (Moreira, 2020, p. 238)

By taking a retrospective look at her professional practice, she analyzed the evidence of students’ learning and their professional development and agency, pointing out the dilemmas they experienced and their ability to remake themselves and relearn in the face of the challenges of promoting their students’ conceptual elaboration in a subject unknown to them until then – algebraic thinking.

The teacher-researcher-narrator Isabela

From several field texts, Isabela builds her narrative and intertwines her story with that of her research partner, facing the challenge of teaching to learn and learning to teach because, throughout the research, she experienced moments of conflicts and challenges, facing a theme that she and her partner did not master enough to teach. But the collaboration established between them enabled the production of an authentic knowledge of the experience and was decisive for the professional development of both. The research reveals how both acted as agents for students’ learning and how they learned and developed in the process.

Isabela’s reflections are centered on professional development, but whose construction, based on a cultural-historical perspective, shows how she and her partner teacher acted as agents, seeking to provide access to spatial notions to 3rd-grade students. In one of the narratives, she takes the following stand:

But I also defend that the child actively participates in the teacher’s professional development. It is the webs of relationships established in the classroom that will give rise to new contexts for the use of concepts; the circulation of hypotheses of ideas; and the synthesis of all of them, organized by the teacher. From Vygotskian theory, we can conclude that we become who we are through the other. And the mediation of this other is a necessary condition for development. (Custódio, 2020, pp. 129-130)

Mediation that enables not only professional development, but social agency as a mediated practice, from the perspective of Lasky (2005). Isabela also relies on Paulo Freire to discuss professional development as something unfinished and in constant construction:

I believe that Paulo Freire's concept of incompleteness corroborates the concept of lifelong learning that I have been discussing in this text. But I believe that such learning is only possible when the teacher takes a risk, leaves the comfort zone and enters the risk zone, allowing themselves to be deconstructed by their students' doubts, questions, hypotheses and ideas. Allowing the other to express, manifest oneself, and touch us, is to take the risk of uncertainties; it is to make it possible for the voice of the other, when touching us, to mobilize the concepts with which we are working, to the point of putting them in motion, (re)signifying and re-elaborating them. This deconstruction movement, which starts with openness to students, promotes professional development. (Custódio, 2020, p. 142)

This development occurs in alteritarian relationships:

The teacher mediates the learning of a new concept; and the child mediates the teacher and the production of new meanings for such concepts. It is the webs of relationships established in the classroom that will give rise to new contexts for the use of concepts; the circulation of hypotheses of ideas; and the synthesis of all of them, organized by the teacher. From Vygotskian theory, we can conclude that we become who we are through the other. And the mediation of this other is a necessary condition for development. (Custódio, 2020, p. 231)

And, in a dialogic education, "in this type of interaction, in which different roles are assumed, in which intersubjective relations gain an alteritarian dialogical character, the "development zones", described by Vygotsky (2009b), are inevitable" (Custódio, 2020, p. 177).

This alteritarian dialogical education model is defended by Sobral and Giacomelli (2019):

It is not a question of simply talking or "dialoguing" with students, but of considering, alternately, the respective positions we occupy, curricular obligations, institutional constraints, etc. in a way that allows negotiating the teacher-student relationship in a more satisfactory way. (p. 10)

And, in the case of this research, the teacher-researcher relationship with the students and with the partner teacher; a relationship that is marked by conflicts and dramas – also a concept from the cultural-historical perspective:

Teachers and students assume different social roles; in this way, even if the drama, the conflict situation, has the same origin, the way it operates in the intrapsychological functioning is different, depending on the social role assumed. Thus, I understand that drama acts as both an instrument of conceptual elaboration and an instrument of professional development... Resuming my experiences, I understood how much they were and are permeated by dramas, conflicting situations, in the relationships that I established throughout my life and that mobilized and/or produced reflections, meanings

and, when recalled by the narrative activity, they were (re)signified. (Custódio, 2020, p. 230)

The narratives analyzed by the author bring evidence of the mediated actions that took place in the classroom to promote the process of conceptual elaboration of the students' spatial notions. She and the teacher-partner carried out mediated practices in the classroom, which showed the complexity of professional agency, although the concept of agency was not made explicit. At the end of the text, she concludes:

Regarding professional development, I identified that it occurred through the mediation of different instruments. They were: knowledge from experience; collaboration through partnership; the responsible act; alteritarian listening and response; the drama that crossed teaching and learning relationships. (Custódio, 2020, p. 231)

Thus, the researcher and the teacher-partner assumed the responsive act in the relationship with the other and with themselves. They became change-makers and developed themselves together with their students (Day, 2001).

In search of an interpretive synthesis

At the zoom given in each work, evidence of professional development and agency were identified; thus, in this final section, I seek to produce some syntheses on the results of these studies based on the focus chosen for this article.

Each researcher-teacher-narrator had her unique look during the analysis of the formative processes experienced; each text was produced in their particular style and brought the story of a context of social relations established between them and the students. It is not about comparing the contexts nor the stories told since, as Ferrarotti (2014) states, stories are not compared, but their singularity is interpreted, that is, "Everything that this act or this story holds that is absolutely specific: the uniqueness that will never be a science, but an unexplained pre-scientific residue, a case" (p. 71). Thus, we can say that each of these works constitutes a case, and narrative research has this characteristic: to narrate singular cases that make possible the construction of social history; "What makes an act or an individual story unique appears to us as an access route – almost always possible – to scientific knowledge of a social system" (p. 72).

In the uniqueness of Sara's research, we can understand the importance of producing formative trajectory memorials in a mathematics degree course, in which the writing process is not always valued, especially self-writing. These writings cannot be solitary; they need biographical mediation and sharing in groups of undergraduates. Sara's research leaves an

important “residue” for the education processes of teachers who teach mathematics: the prospective teacher, in a reflective process, becomes aware of their role as a teacher; with the experience in schools, either as a pre-service teacher or as a pibidian, they take ownership of the teaching practice and can share with the supervising teacher their doubts, difficulties, but also achievements. They stop seeing the school as students and start to understand and interpret it as their future professional field. Thus, Sara narrates, throughout her text, how she, by promoting (trans)formations in her students and supervising teacher of the Pibid, also transformed and developed professionally. In this movement, she leaves clues about her professional agency.

Karla dared to produce pedagogical narratives of her practice in a 1st-grade class of elementary school (initial years), faced with the challenge of working with the development of algebraic thinking, a topic that was not part of her teaching practice, and, when producing the narratives of the narratives, in the research text of her work, she evidences the co-construction of a specialized knowledge to teach mathematics built in the interaction with the students and with the colleagues of the research groups of which she was a participant⁷. The pedagogy graduate, without specific formation to teach mathematics, could count on the collaboration of other teachers, both for the preparation of tasks and for the analytical process and production of narrative research. She narrates how relevant her awareness is to her professional development and the moments she found herself exercising her professional agency. What is learned from this research: the importance of dialogical and alteritarian relationships that allowed the teacher-researcher-narrator to step out of her comfort zone and risk inserting content not previously studied in her classroom. It is evident how the teacher’s work cannot be solitary and how much narrative research opens up countless possibilities for the teacher to research his own practice, reflect on events and systematize the actions taken, leaving contributions to other teachers.

By establishing a partnership with a pedagogy graduate who teaches the 3rd grade of elementary school, Isabela highlights the importance of collaboration for the (self)education processes. She narrates her learning processes, and those of her teacher-partner, for working with spatial notions; both learned to teach and, by teaching, could learn and appropriate possibilities for meaningful work with the students. Like Sara, she also emphasizes professional development. However, the entire partnership process between the two teachers and their actions in the classroom leave clues to the professional agency of both as a mediated practice

⁷ If the text is approved for publication, I will highlight the groups and the contributions to their participants.

(Lasky, 2005) and how they learned and developed in the process. As Isabela highlighted, this process is marked by uncertainties, conflicts, and drama. But, in overcoming the drama, other learning emerges and promotes development.

The three researchers relied on Paulo Freire to reflect on their own incompleteness, which shows how important this concept is to discuss professional development as continuous and unfinished.

These three studies corroborate Clandinin and Connelly's (2011) perspectives that narrative research is the best way to represent experience; the narrative is the proper language to discuss this experience. The three works bring the three-dimensionality of narrative research: the narrations of the place where the actions took place and the situations experienced by the researchers; temporality, which is present throughout the text, with the analysis of facts from the past being carried out in the present, with projections to the future; and the interactions promoted by the social relations that each researcher experienced in the context of the research.

Producing narrative research is not a simple task; it requires the researcher to move away from paradigmatic thinking to develop narrative thinking. This demands time and new ways of elaborating a research text, in which the data that emerge from the field texts are analyzed narratively, coherently and in a constant dialogue with the authors taken as reference. This practice of producing research cannot be a solitary job; it needs theoretical-methodological and collaborative support. This is our group's contribution: here, we studied together, discussed in-progress research, and learned to be narrative researchers. The discussions held in the group reverberate in the research of its participants.

We have also defended the ethical and responsible commitment of the narrative researcher. Hence my belief that narrative research requires the researcher's immersion in the context of the investigation, and it proves to be a coherent device for researching one's own practice, since the researcher will take their work context as the subject of study. Acting as an educator, the teacher has intentionality and assumes their responsive act with the pre-service students. They transform themselves and transform the context in which they operate. Therefore, narrative research promotes (self)formation.

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