NARRATIVES OF THE SELF: TEXTURES OF TEACHING LEARNING IN MATHEMATICS

NARRATIVAS DE SI: TESSITURAS DAS APRENDIZAGENS DA DOCÊNCIA EM MATEMÁTICA

AUTONARRATIVAS: TESITURAS DE LA ENSEÑANZA APRENDIZAJE EN MATEMÁTICAS

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ABSTRACT: The present study addresses the reflections of a mathematics teacher engaged in experiential learning built over their teaching career. Grounded in a qualitative approach, the text unfolds through narrative research, utilizing personal narrative as a tool for systematizing and developing knowledge and practices in mathematics education. The narrative emerges as essential in building awareness that everyday experiences and professional trajectories shape mathematics education. The conclusion emphasizes that in the field of teaching, a constructive and collaborative attitude is fundamental to sharing knowledge that develops through interaction with students and strategies used in mathematics education, resulting in the production of knowledge acquired through professional experience.


RESUMO: O presente estudo aborda as reflexões de um professor de matemática que se envolve em aprendizagens experienciais, construídas ao longo de sua carreira docente. Embasado em uma abordagem qualitativa, o texto se desenvolve a partir da pesquisa narrativa, utilizando a narrativa pessoal como um dispositivo para a sistematização e a formação dos conhecimentos e práticas no ensino de matemática. A narrativa emergiu como um componente essencial na construção da consciência de que o ensino de matemática é moldado a partir das experiências e trajetórias cotidianas da profissão. A conclusão destaca que no campo da docência, uma atitude construtiva e colaborativa é fundamental para compartilhar conhecimentos que se desenvolvem por meio da interação com os estudantes e das estratégias utilizadas no ensino da matemática, resultando na produção de saberes adquiridos por meio da experiência profissional.


RESUMEN: El presente trabajo versa sobre las autorreflexiones que teje un docente de Matemáticas al emprender el aprendizaje experiencial que ha construido al habitar la profesión docente. Anclado en una perspectiva cualitativo, el texto se desarrolla a partir de la textura de la investigación narrativa, teniendo como dispositivo la narrativa del yo como elemento de sistematización y constitución de saberes y prácticas de enseñanza en matemáticas. La narrativa surgió como un elemento de producción de conciencia de que la enseñanza de las matemáticas se teje bajo una base formativa de experiencias y trayectorias del cotidiano de la profesión Concluye explicando que en la docencia se incurre en una actitud constructiva y colaborativa para producir un compartir de saberes que se construye en la relación con sus alumnos, y con lo que ha hecho para enseñar matemáticas, y así producir conocimientos experienciales de la profesión.

Introduction

This text is an excerpt from doctoral research in Education conducted within the Postgraduate Program in Education (PPGED) at the Federal University of Sergipe. Anchored in self-narrative reflexivity, the text unfolds in the first person, facilitating the flow of the understanding I have developed while narrating my own formative and professional experiences. Thus, during my initial Education, there was always an emphasis on the notion that being a good teacher meant having a profound knowledge of mathematics and the most notable methods for problem-solving, in other words, the necessity and importance of mastering "curricular content knowledge" (ROLDÃO, 2007, our translation) as the sole premise for teaching mathematics were stressed. This ideology promoted that mathematics teachers must be experts in logical reasoning and precise language. Therefore, learning definitions and proofs at the expense of verifying the theorems and propositions related to the specified content was essential.

Given this reality, I understood that the act of teaching was enhanced when I was teaching, in practice, in the day-to-day classroom, without seeking any training that could assist me in developing the curriculum or fostering the teacher-student relationship. With that said, I affirm why this text will be narrated in the first person singular, bringing my formative experiences into the spotlight throughout my doctoral journey, aiming to present the experiential learning of the mathematics teacher along the paths of narrative research.

Indeed, I learned a great deal at the university, but I entered the school with the feeling of not knowing what to do. My initial teaching experience was strongly influenced by traditional mathematics education, where the teacher was the sole possessor of all knowledge. The content was delivered as absolute truths, and I had the opportunity to learn to be a teacher in practice. I recall that this didactic-pedagogical tradition was present in my classes through what we refer to as the "exercise paradigm" (SKOVSMOSE, 2000), which is an approach more focused on pure mathematics and repetition, without considering reflection in the exercise-solving process which is typically the sole means of generating learning.

After several years of teaching and pursuing ongoing professional development, I began to nurture a concern regarding understanding how others learn and how they can relate to mathematical concepts. I sought elements for a teaching practice in which "what?", "how?" and "why?" regarding what I should teach were clarified.

This reflection intensified when I had the opportunity to pursue a professional master's degree in Adult and Youth Education (AYE). I found myself in a context quite distinct from
what I had experienced in other settings, characterized primarily by the diversity of these students' profiles, life histories, ages, realities, needs, and aspirations.

The mathematics presented to these young adults was rigid, did not consider their prior knowledge, and was far from grounded in their daily lives. The focus was on undemanding activities where memorization was associated with strategies for solving proposed problems, often related to topics of little significance to the students, which did not facilitate the establishment of connections between mathematical knowledge and their everyday lives.

Despite these shortcomings, some of these students had life experiences that allowed them to persevere and, amidst adversity, survive; in other words, they developed their way of learning, individualized and based on their life stories. Many of these young adults had a grasp of informal mathematics, performing mental calculations, demonstrating spatial awareness, and making area and volume calculations without even knowing mathematical formulas.

Given this reality, I began to question why these students claim not to know mathematics after encountering formal mathematics? What are the obstacles preventing students from learning mathematics? From this perspective, the prior knowledge brought by the student needs to be respected and should serve as the starting point for formal mathematical knowledge, allowing each of them to express their informal learning that represents their everyday needs.

My experience during my master's degree profoundly impacted me because I realized that the learning generated through this research was highly significant. Through it, I engaged in ways of grasping the processes of teaching and learning mathematics related to real-life classroom experiences. To achieve this, it was necessary to consider the contexts of Adult and Youth Education (AYE) students, especially their learning conditions, given the events that these individuals experience in the school.

I remember that, on numerous occasions at the beginning of my teaching career, particularly in evening classes, when tired from teaching all day, I was not concerned about how the students were learning. What interested me was transmitting the content while trying to maintain order and discipline in the classroom. Mathematics was taught from a transmission perspective, where the content developed throughout the lessons was organized in the adopted textbook, and the teaching method was limited to expository lectures on concepts and the application of practice exercises, all following the same structure.

Today, I recognize that this educational practice directly impacts the student's relationship with mathematical learning, their conception of mathematical knowledge, and their understanding of the lessons. Teaching, in fact, is not merely the transfer of knowledge, as this
knowledge may not be operationalized in the teaching relationship itself. To consider the student as a protagonist and the teacher as a protagonist, with a recognition of the alterity of each, it is necessary to understand that this relationship occurs within events at the core of subjectivity. It is my experiential learning that I need to take into account based on the daily school life, the life stories of the students, and the events in the school.

This movement leads me to believe that these very practices and experientially developed knowledge within contexts value the learner's knowledge, enabling me, as a teacher, to become a protagonist in the process, fostering a dialogical relationship that emphasizes the recognition of individuals.

By understanding the school as a formative space, I, as a mathematics teacher, seek practices that allow for the transformation of the student in the construction of knowledge, particularly concerning the development of creativity, collaborative spirit, and, ultimately, autonomy as a subject of their learning. It is, therefore, about understanding that an experience does not create accumulated knowledge over time or even by developing a practice many times. Instead, it is about being touched by the singularities and intricacies of the practice that prompt the individual to consider other possibilities in their actions, generating the willingness to make their educational activity a knowledge policy for themselves and others.

Thus, from a theoretical-methodological standpoint, the study is grounded in qualitative research and the principles of narrative research (CLANDININ; CONNELLY, 2011) characterized by being an investigative process that considers the interaction between the personal and the social, based on the continuity between the past, present, and future combined with a specific situation.

The Formation of a Narrative Researcher

Narrative is a form of language, and its epistemological focus is rooted in qualitative research because language, whether oral or written, can reconstruct my experience. The development of this study presupposes an openness to a formative movement and shifts my understanding toward recognizing myself as a researcher with a life narrative that demarcates my singularity in terms of being, doing, living, thinking, and feeling as elements that help me also constitute myself as a narrative researcher.

Becoming a narrative researcher is to understand myself as a subject in (trans)formation under the influence of the phenomena studied. There is a potentiality in narrative research that
triggers in me, as a researcher, a critical examination of the condition of being and existing, as well as a critical analysis of academic and scientific productions. It requires reevaluating my self-understanding, understanding of others, and life itself, necessitating the (re)construction of these very productions and modes of comprehension to reinterpret life through a narrative, my life narrative.

In the movement of narrative research, I, as a narrative researcher, embark on a purpose that demands a shift in various dimensions of my life and changes in my conceptions. In this movement, my values, principles, political beliefs, and perspectives on the differences present in the context of teachers' pedagogical practice are questioned.

When thinking about narrative research and constructing a research plan or framework, I have the opportunity to raise questions about how this method has become a fertile and powerful space for my development as a researcher.

According to Clandinin and Connelly (2015), this space refers to everything I have experienced in dimensions of time and space, the personal and the social, between my experiences and the experiences of others. In reality, I find myself as a narrative subject living my own stories and the stories of others. In this way, I am engaged in processes that enable the production of intersubjective meanings from moments lived in the same spaces (such as the school, for example) but with different experiences.

In this case, narrative research is an epistemological space for inquiry, reflection, and discovery. Furthermore, according to Hernandez (2017, p. 59, our translation), narrative can be viewed as a space for investigation because "narrating is not just a description of a collection of experiences [...]. It presupposes that the individual opens up to the invitation to describe how feelings, [...] the memory of our journey... influenced the author of the account."

Through this research practice and becoming a narrative researcher, using narrative as a field for investigation and questioning, I find myself facing dilemmas and delicate situations related to an inherent fragility in my identity as a researcher. Over time, I have developed the conviction that research practice and the production of scientific knowledge created a division between my personal and professional spheres. Today, these conceptions are being altered. I have the opportunity, as a narrative researcher, to validate my ways of being and conducting research by presenting my life contexts and justifying my implications from my standpoint. This has prompted me to move away from this place of vulnerability and motivated me to share my experiences. This retelling of stories allows the movement characterizing the three-
dimensional space in narrative research and enables me to become narratively formed through the experience.

In narrative research, I have the opportunity to experiment and authorize myself to recount how I experience my role as a narrative researcher, revealing the meanings and significance that narratives impart. All the mechanisms narrators use to develop their descriptions carry the potential for reflection, repositioning the individual as the subject of the experience. It indicates that the act of narrating is associated with the formative reflexivity of the subject.

Narrative provides me with an understanding of life and the world's complexity. As I narrate, I critically reflect on my experiences, and as a result, these experiences become events because they are imbued with meanings. Clandinin and Connelly (2011) understand individuals' behavior as narrative expressions of their stories, occurring in a specific context and within a particular space and time. It becomes relevant to observe certain aspects, such as the moment of experiencing the story, when it was told, the location where it occurred, and the characters involved, both those living the stories and those advising them.

As a teacher, I am simultaneously learning and teaching by reflectively sharing my own experiences with others. I am learning because I have the opportunity to structure my thoughts, systematize my experiences, and thus make them meaningful. This allows me to acquire new knowledge by attributing new meanings to these experiences. I teach others connected to this narrative so they can (re)interpret their knowledge and experiences. Additionally, by organizing my thoughts, I reconstruct my experience through self-analysis, gaining a new understanding of my practice.

In conclusion, my identity as a narrative researcher empowers me to immerse myself in this process, opening additional possibilities for understanding research phenomena in education. This broadens my perspective on my formation by emphasizing the importance of narrativity.
Experiential Learning in Teaching: Reflective Journeys and Self-Narratives

The beginning of this section underscores the importance that I, as an educator, place on paying attention to details, the unforeseen, and the unexpected occurrences that often manifest in school settings. This also relates to the reflection on the feelings I develop in connection with my interactions with students, the underlying intentions of these relationships, and my desire to assist them in learning at their own pace.

By observing the daily life of the institutions where I have worked and immersing myself in their contexts, I have become a part of them, with the opportunity to transform them not as someone seeking truth but as someone aspiring to build experiences.

Larrosa (2018) led me to contemplate education from the perspective of experience and meaning. It was fascinating to read his "Tremores (Tremors)" work, which directly contributed to my current understanding of experience. It helped me comprehend that educators are often considered professionals who employ teaching techniques produced by scientists (Technicians). Thus, the teacher's action can be conditioned by applying a method; in this sense, the experience becomes understood as the result of this application.

It is important to emphasize that experience produces an individual who learns, not one who knows. I understand that there is a distinction between these words because "knowing" is contingent upon the almost immediate reproduction of a possible true answer, while "learning" is a characteristic of independent, unattached, and unfinished thinking.

In the midst of my readings on experience, I recalled the time when I was a teacher in the primary education system. I acknowledge that my years of service in this system can be divided into two phases. The first was marked by my teaching career's beginning, depriving my students of developing their autonomy. Nothing was decided with them; I did not value the knowledge each of them brought or their life realities. The assessment was exclusive and classificatory, and the textbook was my only path.

In the second phase, after undergoing continuous training sessions and engaging in readings, I understood that this mechanical teaching did not foster meaningful learning. The training and discussions I participated in deeply touched me, prompting me to reconsider my practice, value others, and develop knowledge with them, such as the knowledge of teaching mathematics. I realized that I should not think of the students but instead with them to understand how much knowledge they brought from their experiences outside the school environment could be valued in various math class contexts. However, I encountered many difficulties because I realized that what had previously gone unnoticed now troubled me and
hindered my performance in the classroom. On several occasions, I told my colleagues that activities needed to be (re)taught in accordance with the students because we could not simply apply the same strategies in the same way to all classes.

Today, teaching is treated as a fixed recipe in which the teacher follows all the steps in a specific order, independently of the students. In this sense, I align with Santos's (2010), hinting when he conceives that "instead of determinism, unpredictability; instead of mechanism, interpenetration, spontaneity, and self-organization; instead of order, disorder; instead of necessity, creativity" (SANTOS, 2010, p. 49, our translation). Reflecting on this passage, I concluded that all students could be included in the formal and regular educational system as long as education adopted an approach that did not restrict the structuring of human knowledge to linear logic.

Drawing upon the thoughts of Larrosa (2011), I configure myself as a subject of experience since I conceive it as something that escapes my control and is not, directly or indirectly, subordinated to me. However, it is within me that the experience occurs based on what is transmitted to me, affecting me and transforming me.

As a subject of experience, I recognize myself as a "surface of sensitivity," a body that suffers, changes, thinks, acts, and transforms itself with each encounter with something that demands it. It is important to emphasize that a particular event may mean nothing to one person, while, for me, it can constitute an experience, depending, of course, on how I manage such an event, how it touches me, and consequently transforms me.

Guattari (2012, p. 34, our translation) emphasizes that "the only acceptable purpose of human activities is the continuous production of subjectivity that enriches its relationship with the world." Therefore, when considering education based on teaching for all students, it is necessary to consider experience (which cannot be calculated, verified, and systematized) and the creation of meanings that relate subjectivities to all the elements involved.

Reading the work "Saberes docentes e formação profissional," I could perceive that Tardif (2010) considers teacher knowledge as plural, developed both in pedagogical practice and in the process of teacher training. According to Tardif (2000), these forms of knowledge, besides being individual and collective, are validated by experience when it allows the teacher to know how to do and be. The author believes experiential knowledge represents a set of updated, acquired, and necessary knowledge within the teaching profession and does not come from institutions or training courses.
This type of knowledge does not stem from a theory, is not found in books, nor is it learned during training courses. It is practical, and by being so, it is formed in practice and validated within it. That is, in facing unforeseen situations, handling controversial issues, and understanding the consequences of a particular action.

According to Tardif's perspective (2010), experiential knowledge provides relative certainties that facilitate the interaction process. When it comes to teaching, these forms of expertise are essential. It is premised on the idea that education is not individual but interactive, immersed in a context rich in symbols, beliefs, values, interpretations, decisions, and other characteristics.

Unlike Larrosa (2002), Tardif (2010) considers partial objectification of experiential knowledge possible. He justifies this by saying that the knowledge produced in everyday practice and professional confrontations is not something confined to individuality but is commonly shared among peers, or at least, can be shareable.

It is precisely through this sharing that it becomes possible to objectify experiential knowledge, considering the subjective certainties acquired and accumulated throughout one's professional journey. When these forms of knowledge are systematized and narrated to colleagues, the intention is to inform or educate other teachers, preparing them to face similar challenges in their pedagogical practices. The knowledge produced in the pedagogical approach acquires objectivity as it relates to other forms of knowledge, including disciplinary, curricular, and professional training.

Why have many teachers struggled to enhance their professional practices over the years significantly? Or why do teachers with many years of teaching experience not manage to produce more qualified pedagogical work than those with much less experience? I cannot conceptualize the experience associated with practice. Taking Larrosa's (2002, p. 23, our translation) conception of experience for this study, it is becoming increasingly rare in education. Experience demands time, and "in school, the curriculum is organized into ever more numerous and ever shorter packages." As a teacher, I am pressured to race against time and adhere to the proposed syllabus, working at an ever-increasing pace to cover the vast amount of content, which, according to Larrosa (2002), prevents the experience from occurring.

I recall the times I had to accelerate the content to be covered in the classroom because the end of the semester/year was approaching, and the course program needed to be completed. Things often seemed to be done abruptly without "reflecting on the temporalities and their relationship with the student's learning" (VIEIRA, 2018, p. 73, our translation). Even when
concerned about each student's pace, there was no time to develop strategies to enhance a specific learning type.

Since my master's program, when I delved into the discussions proposed by Pineau (2004) regarding the multiplicity of times, I understood that this multiplicity is individualized for each student. I acknowledge that each possesses a specific temporal competence, combined in the first person, "which gives the subject the ability to develop the learning processes autonomously" (VIEIRA, 2018, p. 73, our translation).

Reflecting on my work, I have the opportunity to discern a range of elements that can assist me in devising and implementing new strategies and behaviors when faced with problems. Thus, by immersing myself in Larrosa's readings (2002), I came to understand that experience cannot be used as a classifier or, in other words, as a bargaining chip. Today, I can comprehend that experience has nothing to do with accumulated knowledge from work, and no matter how much time I have served as a teacher, it doesn't mean I possess experience because to have experience, something must happen to me, touch me, and not just have things pass and occur. This requires "interruption, pausing to think, observe, feel, suspend judgment, the automatism of action, cultivate delicacy, attention [...] giving oneself time and space" (LARROSA, 2002, p. 25, our translation). Therefore, being a subject of experience means being an exposed, open, suffering, receptive, subjected, and suffering subject.

From these experiences, experiential knowledge is generated, validated by experience, and developed by me as a teacher based on my daily teaching practice and my knowledge of the working environment in which I operate. It is from this context that I understand the everyday as what is given to me each day, which presents itself as a novelty and reveals itself as an emancipatory way in which I must think about its actions and see in them the elements of uniqueness that make them unique and, as Larrosa (2002) points out, never repeat.

I understand that this knowledge, which occurs between learning and life, relates to my reaction to what happens throughout life and the meaning that this event promotes. This experiential knowledge cannot benefit anyone because, according to Larrosa (2002), no one learns from another's experience unless it is relived and the individual has appropriated it.

Fiorentini and Castro (2003) emphasize that, as a teacher, my training and the experiential knowledge I possess are not solely constituted in practice but manifest from the relationships I establish between what I have observed in everyday school life and what I know, study, and learn through interaction with specialized literature and other actors in this educational scenario.
This conception has been adopted as experiential knowledge (SILVA; RIOS, 2018), knowledge that emerges from the singularities of the teaching and learning processes that take place in everyday school life, determined by occurrences and insurgences. I believe that, in reality, they constitute apprehensions that occur in unexpected situations experienced by both myself and the students, situations that sometimes challenge how we relate to each other in the classroom and, likewise, the educational practices I develop, often learned in training courses.

According Amaral, Pinto and Nóbrega-Therrien (2020, p. 241, our translation) "'Being a teacher' involves a complex network of meanings and significances taken in its professional and personal aspect, which compose this individual." How many times situations like these have occurred to me, and in some moments, I was at a loss for how to handle them and how to act because when I revisited my repertoire of knowledge acquired in training, I couldn't find practical actions that could be developed at that particular moment (VIEIRA, 2022). The feeling I had was one of helplessness, fragility, and not seeing alternatives other than getting out of unexpected situations. In moments like these, experiential learning is formed and consolidates new ways and practices of being and acting in the profession.

Final considerations

In the unexpected, the uncertain, and the provocation by a student, among other situations, I construct knowledge of teaching and achieve new learning and outcomes about the instruction I deliver almost immediately. In moments like these, I question my education, realizing that, despite being necessary and vital, it was not through formal training that learning occurred for that particular moment. What generates experiential learning are the occurrences of the moment lived, the unexpected situations that provoke an excellent potential for reflection and understanding of how I should and can act in some instances to achieve success in the teaching process.

It is in experiential learning that a "process of constructing knowledge about educational practices takes place within the context of teaching, taking into account the 'truth' of the subject, the practices that regulate their behavior, and the forms of subjectivity in which their interiority is constituted" (LARROSA, 2002, p. 40, our translation).

I have learned when I engage in a constructive and collaborative approach by sharing knowledge developed in interaction with my students and the strategies I employ for teaching mathematics. In this way, I contribute to constructing experiential knowledge inherent to the profession. This condition drives me to consider the formative processes I have experienced.
throughout my professional career, leading me to understand how knowledge emerges from teaching occurrences, which address the needs and specificities of the students in the singularizing context of school mathematics knowledge. It is also the experiences lived and the knowledge I have acquired in various fields of social, academic, and professional life that shape me into the person I am (NÓVOA, 1997; 2000) through an active and dialogical process of forming myself, both as an individual and as a teacher.

Nóvoa (1997) understands that, as a teacher, I feel the need to allow my personal and professional dimensions to interact, thus providing me with the capacity to make my formative processes meaningful within the framework of "my life stories" (NÓVOA, 1997, p. 26, our translation). Therefore, my life story is where this unfolds in all its aspects.

In this context, experiential learning in the context of teaching arises from the understanding that, as a teacher actively engaged in education, I acquire, assimilate, and develop knowledge related to the teaching profession in the everyday school environment. In this way, I can affirm that experiential learning is based on a relationship established through the experiences and interactions between my students and me. In this context, the act of education does not occur unilaterally. On the contrary, it presupposes the conception that learning unfolds in interaction, sharing, and an openness to recognize that teaching is not, as Freire (2019, p. 32), tells us, merely "transferring knowledge."

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