

Narratives that transform: The Influence of the Methodological Approach to the Life History of Teachers in the Construction of the Identity of Undergraduate Students in Chemistry¹

*Marlúcia Pereira Santana*²

*Hélder Eterno da Silveira*²

ABSTRACT

This dissertation aims to demonstrate how the life stories of basic education chemistry teachers can influence the perception of teaching by students in a chemistry degree at a University. To achieve this, data is constructed from recordings of classes in this teacher education program that focuses on chemistry teaching and interviews conducted by students with high school chemistry teachers. Through dialogue with educators from the basic education level, the student teachers were able to understand the reasons behind their choice of a career in chemistry education and their initiation into the teaching profession. It is understood that the teaching persona is not "born" upon completing higher education; on the contrary, it is a lengthy, complex, dynamic process that demands individual effort while also engaging with society.

KEYWORDS: Teacher Identity. Undergraduate Chemistry. Life History. Teacher Education.

¹ English version by Silvia Iacovacci. *E-mail:* siacovacci@gmail.com.

² Mestre. Universidade Federal de Uberlândia, Uberlândia, MG, Brasil. Orcid: <https://orcid.org/0009-0005-3007-6705>. *E-mail:* marluciasme@hotmail.com.

² Doutor. Universidade Federal de Uberlândia, Uberlândia, MG, Brasil. Orcid: <https://orcid.org/0000-0002-2966-2636>. *E-mail:* helder.silveira@ufu.br.

Narrativas que transformam: a Influência da Abordagem Metodológica de História de Vida de Professores na Construção da Identidade de Licenciandos em Química

RESUMO

Este trabalho tem por objetivo mostrar como a história de vida de professores de química da educação básica pode influenciar a percepção sobre a docência de estudantes de um curso de licenciatura em química de uma Instituição de Ensino Superior. Para tanto, constroem-se os dados partindo das gravações das aulas da disciplina desse curso de licenciatura que tem como foco a docência em química e de entrevistas feitas pelos estudantes com professores de química do ensino médio. A partir do diálogo com os educadores da educação básica, os licenciandos puderam conhecer os motivos pelos quais escolheram a docência em química e a iniciação na profissão docente. Entende-se que a personalidade docente não “nasce” com a conclusão do curso superior, pelo contrário, é um processo longo, complexo, dinâmico e que exige um esforço individual, mas que dialogue com a sociedade.

PALAVRAS-CHAVE: Identidade Docente. Licenciatura em Química. História de Vida. Formação de Professores.

Narrativas que transforman: Influencia del abordaje metodológico de la historia de vida de los docentes en la construcción de la identidad de los estudiantes de graduación en química.

RESUMEN

Este artículo tiene como objetivo mostrar cómo la historia de vida de los profesores de química en la educación básica puede influir en la percepción de los estudiantes de enseñanza de la carrera de química en una institución de educación superior. Para ello, los datos se construyen a partir de las grabaciones de las clases de la disciplina de esta carrera que se centra en la enseñanza de la química y de las entrevistas realizadas por los estudiantes a profesores de química de secundaria. Del diálogo con los educadores de Educación Básica, los estudiantes pudieron conocer las razones por las que eligieron enseñar química e iniciarse en la profesión docente. Se entiende que la personalidad docente no "nace" con la finalización de la carrera de educación superior, por el contrario, es un

proceso largo, complejo, dinámico, que requiere un esfuerzo individual, pero que dialoga con la sociedad.

PALABRAS CLAVE: Identidad Docente, Licenciatura en Química, Historia de Vida, Formación del Profesorado.

* * *

Introduction

Teachers are fundamental figures in our lives, often responsible for positively shaping our character, our worldview, and our future. But behind the lessons they teach is a unique and fascinating life story that often goes unnoticed. Teachers' life stories are full of challenges, accomplishments, and victories, revealing the strength, passion, and dedication of these professionals as they strive to educate and inspire generations. In this context, understanding these trajectories is a way of valuing education and the role of teachers in our existence.

The use of life story narratives is a pedagogical approach widely applied in different educational contexts, such as health education, where Kleinman (2020) used his patients' life stories to understand the human condition and chronic diseases; social science education, where historian Zinn (2015) explores social movements and cultural changes from personal perspectives and through the life stories of others; adult education, where Freire (1987) dialogues with his students and provokes reflections using their stories to promote social transformation.

According to studies by Freire (1987) and Bakhurst (1991), life story narratives are capable of bringing theoretical knowledge closer to students' real experiences. This is because narratives allow them to understand the theories and concepts presented in a more profound way, stimulating critical thinking and reflection. Listening to other people's narratives gives students the opportunity to understand and manage their emotions, which contributes to their personal and professional development.

To formulate the corpus of this research, we used the transcripts of classroom recordings from a subject of the Chemistry degree course at a Higher Education Institute in Minas Gerais, which focuses on teaching. This subject was chosen because the teacher used the methodological resource of life stories to provoke her students to reflect on teaching differently from what we are used to seeing in universities, with readings of theoretical texts and discussions about the reality of teaching.

Therefore, the aim of this study is to investigate how teachers' life stories can contribute to the perception of teaching among students in a chemistry program at a higher education institution. Based on this question, the intention is to develop the following scope: to have a deeper understanding of teaching; to develop empathy and respect for the teaching profession; to inspire future educators; to identify representations to be followed; to inform educational policies, since research on teachers' life stories can provide useful information, such as teachers' health, where the main conflicts are concentrated, among others; to improve teacher training and to promote appreciation of the teaching profession.

Furthermore, during the literature review I noticed that although there are many studies and discussions about the use of life stories in teacher training, I didn't find any publications about their use in the classroom. I think it may be that university professors are not aware of their use as a methodological resource, or that they don't give enough importance to teachers' life stories. However, these assumptions are not directly related to this work, but remain the background and motivation for further study and research.

To this end, it is shown how the use of qualitative methodology plays a fundamental role in gaining an in-depth understanding of the phenomenon under study, allowing the nuances and complexities surrounding the issue in question to be explored. In this context, the technique of documentary analysis stands out as a valuable tool. Documentary analysis, according to Minayo (2009), is a method that allows, for example, the transcription of the

videos used for data collection to be examined, providing a solid base of elements for the research.

As a result of this work, a collection of chronicles on the life stories of chemistry teachers has been produced, an e-book entitled "The chemistry of teaching: stories of inspiring teachers". The aim is to create a document that represents the memory of Brazilian teachers because, according to Candido (1995), chronicles can serve as important historical and sociological documents.

What is known about the identity formation of chemistry undergraduates in Brazil?

Recently, controversies about teacher training have occupied space in the Brazilian educational debate, generating a large volume of academic and scientific production on the construction of teacher identities. However, these studies are still insufficient to adapt to the educational realities that future teachers face, which has led the professionalization of chemistry teachers to seek new perspectives for initial training.

Researchers such as Marques (2003), Maldaner (2003), Tearrazam et al. (2008), Schnetzler (2000) and others have reflected on the teaching of chemistry and agree that initial training should be based on the development of skills that lead graduates to think critically about what they do, why they do it and how it relates to their beliefs, values, and goals. In this context, in addition to the authors already mentioned, other educational studies that deal with the process of training and building the teaching identity of Brazilian chemistry students are presented below.

Silva and Oliveira (2009) point out that newly qualified teachers are faced with complex circumstances in the school routine that were not presented to them, even hypothetically, in their initial training courses in chemistry, causing them stress and conflict. As a result, these feelings can turn into insecurity and frustration, causing teachers to have doubts about

their training and choices about teaching. The authors explain that this is because there is a tendency to prioritize the training of chemists over the training of chemistry teachers.

In general, chemistry degree programs in Brazil have sought to update and adapt to the demands of chemistry teaching today, but still face challenges in training teachers with a critical and reflective view of science and able to face the complexities of teaching chemistry in basic education. Although Terrazzan and colleagues (2008) explain that there are many undergraduate courses that use the "practical rationality" model, in which students should be encouraged to constantly reflect on their teaching actions, what we see is that this model is not very effective in practice.

As seen above, one of the concerns of educational researchers is related to initial teacher training. For researchers such as Sá and Santos (2017), Marcelo (2009), Durana (2007), Brito, Lopes and Lima (2017), before considering teaching strategies for teachers, it is first necessary to understand how teachers construct their professional identity. So let's look at what these and other researchers say about this issue.

Woodward (2009) states that professional identity is culturally constituted through representations that translate into meaning for the subject and lead them to take positions: I identify as this, I can be this, or I want to be this. For this researcher, the construction of these meanings is done by people in a power relationship that is established in the social context and in the appropriation that is made of these relationships, characterizing the "me" that I want to be.

Marcelo (2009) considers it important for teachers to perceive and recognize themselves in their identity because the way we see ourselves and the way we want to be seen influences the outcome of our work. According to the author:

Identity is not something you have, but something you develop during your life. Identity is not an attribute of a person, but a

relational phenomenon. Identity development takes place in the intersubjective realm and is characterized as an evolutionary process, a process of interpreting oneself as a person within a given context. (Marcelo, 2009, p. 4).

This reflection shows that identity has to do with the here and now, involving both the person and the context. But the author believes that in teaching, one can go further, asking what the individual wants to become, being aware that they can look for elements that improve their performance or give new meaning to what they want to be.

In addition to the above, it is necessary to discuss the transition from student to teacher. This period, according to Vonk (1996), is marked by conflicts and a search for personal balance, called insertion. The limbo in which the trainee passes from teacher in training to autonomous teacher is not empty, it is a space where their identity also undergoes transitions, where they must teach, but also learn how to teach. According to the author, reflection on practice, valuing experience, support and ongoing training are considered fundamental strategies for developing teacher autonomy and building a more meaningful and effective teaching practice.

From all this, we can conclude that the identity formation of chemistry teachers in Brazil is a complex and multifaceted process that involves not only educational aspects, but also social, cultural and political ones. It is important to emphasize that the identity of chemistry teachers is not static, but dynamic and under constant construction. In this sense, it is necessary for teacher training programs to consider not only technical and scientific knowledge, but also socio-emotional skills and critical reflection on the role of the teacher in society, to contribute to a more integrated and meaningful training of future chemistry teachers in the country.

What do life stories have to do with teacher training?

One of the pioneers in using life stories as a scientific approach to education is Antônio Nóvoa. According to this researcher, life stories are an important way to get to know the teaching profession and to understand how the knowledge of everyday school life is constructed. For this reason, Nóvoa (1997) argues that professional training is a dynamic and reflective process between the subject and the social environment, which is not cumulative, but a journey, a trajectory of personal life linked to professional life.

In relation to this concept, Bolzan, Isaias and Maciel (2013) defend the use of teachers' life stories as an object of self-reflection, meaning, and transformation. According to the authors, when a teacher tells his or her story, he or she has the possibility to understand himself or herself and interpret his or her conception of teaching because "the same subject is simultaneously engaged in telling, living, explaining and reliving his or her story" (Bolzan, Isaia, Maciel, 2013, p. 55). In addition to self-reflection on personal life, the authors believe that by telling their stories, individuals self-criticize their educational practices, seek to understand educational issues, and share their experiences to achieve new learning in a collaborative way.

In fact, the act of teaching is part of people's life stories; even those who didn't go to school are aware of the existence and importance of teachers. Representations of teachers can encourage career choices and boost dreams, as we intend to observe in the reports of the students who participated in this research, as well as in the research of Sá and Santos (2017, p.108), who characterize the example of teachers and their professionalism as "a stimulus in the pedagogical field".

Teacher education is a complex and multifaceted field that involves the acquisition of knowledge that is essential for effective pedagogical practice. Teaching knowledge, or the professional knowledge of teachers, includes not only the academic knowledge of the content to be taught, but also the

knowledge of how to teach this content competently, considering the specific context of the classroom and the needs of the students.

One of the aspects of teacher education that has been studied by various educational researchers, such as Tardif (2002) and Shulman (1986), is the way in which this teaching knowledge is constructed and reconstructed throughout the teacher's life. In this process, the authors claim that teachers' life stories play a fundamental role, where their trajectories, their personal, educational and professional experiences, profoundly shape the way the teacher approaches teaching.

Therefore, this knowledge cannot be ignored or forgotten because "[...] the new emerges and can emerge from the old precisely because the old is constantly updated through learning processes" (TARDIF, 2002, p. 36). This statement tells us that innovation and new knowledge do not arise in isolation, but are rooted in previous knowledge and experience. This means that old knowledge is constantly revived and does not remain static; it is updated and adapted over time. Remembering that the process by which this knowledge changes is through learning and the acquisition of new knowledge and skills is a fundamental process for the evolution of knowledge and the creation of new things.

Research context, analysis, and reflections

We analyzed the transcripts of the recordings of a series of 20 classes of the Chemistry course at the Federal University of Uberlândia, in a subject focused on teaching. The course had 30 students enrolled, lasted 60 hours and took place between November 2021 and April 2022. During this period, the country was facing the pandemic caused by Covid-19, and the National Education Council (CNE), under the leadership of the government, established an emergency distance learning program. To enable interaction between the teachers and students of the course, in addition to the digital platform Moodle, used by the institution as a system to support and record

academic activities, the teacher used the videoconferencing application Zoom for the weekly meetings, which lasted 100 minutes.

During the lessons, the teacher used several tools to assess the students in the subject, one of which was an interview. During this activity, the students talked to the elementary teachers about their time as students, their choice of profession, their first lesson as a teacher, the challenges of their career, and the motivations that lead them to continue teaching chemistry.

The teacher's intention with the interview was to encourage the students to reflect on the exercise of teaching through the life story of the primary school teachers, and to establish criteria for the construction of their teacher identity based on their concerns.

To answer the question posed in this paper about how teachers' life histories can influence students' perceptions of chemistry education, data were generated from recordings of Prointer I class and interviews conducted by students with high school chemistry teachers. In this context, the life story approach was used by the teacher as a way to encourage students to think about teaching and by the researcher to understand how students construct their teacher identities through their personal narratives.

The first phase of this study was to transcribe the subject's video lessons. This was done using VEED.IO software, which converts audio and video into digital text. After reading the material, we selected excerpts from the students' speeches, which were divided into three themes: a) the students' initial ideas about teaching, b) the experience with the life stories of primary school teachers, and c) the students' conclusions about teaching at the end of the course. The next step was to create the analysis tables.

In this research, three analysis frameworks were constructed: the initial ideas about teaching, the experiences with the life stories, and the graduates' conclusions about teaching, in order to identify the transformations in the graduates' perceptions and conceptions during their initial teacher education.

The intersection between the life trajectory of chemistry teachers in basic education and the construction of the teaching identity of chemistry

undergraduates provides important reflections on the complexity of teacher training.

Undergraduates' initial ideas about teaching.

In this category, the focus was on finding out the reasons that led students to enroll in the program, what they knew about teaching, and what their expectations were in relation to the subject. The main observations were:

When analyzing the students' participation in the second lesson in which the teacher of the subject asked: *Who inspired you to become a teacher or what motivated you to choose a degree in chemistry?* a pattern was identified where, of the 28 students who were online, 6 replied that teaching was not their first choice and that they did not intend to pursue the profession. As in the words of G - "I don't know if it's the same for everyone here, but I didn't join the course intending to become a teacher (...) I really want to go into engineering and work in a factory" and M - "I don't know if I'm going to be a teacher. ... like I said yesterday, I was thinking about two faculties and since I might not be able to pass, I chose this one, but I don't know if I'm going to follow it, I want to finish this one and hmm... I don't know if I'll become a teacher".

The students' comments show that, ten years later, this reality is the same as that presented by Sá and Santos (2011) in their research on the motivation for a teaching career in chemistry. The authors show that the factors that determine the search for the course are not a liking for the field or frustration at not having entered other types of courses. This reinforces the fact that teaching is hardly the first choice of students entering higher education, and even more so in chemistry.

In terms of motivation, the students' responses highlight the influence of former primary school teachers and family examples, such as their mother being a teacher: I - "I met her, and she had this love for teaching students...and I took a great love, I talked to her about the course, and she

said that she liked teaching chemistry, that it was what she wanted to do for the rest of her life, and she inspired me to be a teacher"; EL - "Hi teacher! It was actually two of my high school teachers who inspired me, I don't know if you know them. It was chemistry"; NA - "Hi teacher! Yeah, yeah, yeah... what inspired me to become a teacher was my mom, she's a teacher".

In the first excerpt, I express how a teacher who demonstrated a love of teaching and a passion for teaching chemistry inspired her to pursue a career in teaching. The personal connection with this teacher and the admiration for her dedication served as motivation for the student to consider becoming a teacher. This highlights the importance of teachers themselves in the training of future educators, and how the example and passion of teachers can positively influence students.

In the second excerpt, EL mentions that two of her high school chemistry teachers were sources of inspiration, highlighting how positive and meaningful experiences during basic education can influence career choices. It was clear that the influence of high school teachers is relevant to inspiring future educators.

In the NA excerpt, she reports that her mother, who is an educator and teacher, inspired her to pursue a teaching career. This illustrates how family members, especially those involved in education, can have a strong influence on students' career choices. Her mother's example as an educator and teacher served as a direct source of inspiration.

In this way, we can relate the students' statements to studies on motivation, which can be of two types: extrinsic and intrinsic. According to Huertas (2001), extrinsic motivation comes from outside and is related to an external contingency, while intrinsic motivation is generated by internal stimuli and an interest in the activity itself.

Based on this reflection, it is understood that motivation is a determining factor for students to pursue a teaching career and a positive understanding of this profession can, according to the author, trigger three characteristics: self-determination, competence and satisfaction in doing

something. When students report that they recognize in the language and attitudes of their former teachers a love for the profession, the way they teach and treat their students, and the example they set at home, this external motivation becomes internal. According to Huertas (2001), this can help the individual to overcome the difficulties that may arise during the learning process, as well as during initial training and the teaching profession.

When the students were asked by the subject teacher *what it means to be a teacher*, they replied G - "I think that being a teacher is... being willing to learn, it's like you're an eternal student, I think that in the light of the reports of other teachers, not only of chemistry, but also of other subjects"; E - "I need to see that he's learning, like, see that I need to know that he knows this, that what I'm giving him he's learning" and J - "I think that being a teacher is, like, transmitting knowledge. In our case, chemistry".

In the first excerpt, G emphasizes that being a teacher requires a constant willingness to learn. He compares the role of a teacher to that of a "perpetual student. This suggests the idea that teachers are constantly acquiring knowledge and growing in their practice as they learn from their own experiences and from feedback from other professionals, such as coordinators. G's perspective highlights the importance of continuous learning in a teacher's career.

In the second excerpt, E emphasizes the importance of checking that students are learning. She expresses the need to ensure that the knowledge being taught is being absorbed by the students, which may reflect the emphasis on assessment and the teacher's responsibility to ensure that her students understand the content. E's perspective shows the teaching dimension as a process of checking students' progress.

In J's excerpt, he presents a more traditional view of teaching, emphasizing the transmission of knowledge. The graduate perceives the role of the teacher as one who transmits information, particularly in the area of chemistry. This understanding focuses on the delivery of content and the transfer of knowledge to students.

It can be seen that students have not yet thought about what an individual needs to know to be a teacher. The authors Bessa, Castro and Rodrigues (2019) studied the representations of what it means to be a good teacher and concluded that the majority of the respondents believe that it is the ability to transmit, plan, stimulate learning and, above all, knowledge of their subject.

The idea that teaching is simply the transmission of knowledge is a simplistic view of teaching that has historically prevailed in our educational system. This reductionist view of the teacher's role ignores the complexity of the teaching profession, which involves much more than subject knowledge. According to Shulman (1992), this view is common because of several factors, including tradition, a lack of understanding of the multiple dimensions of teaching, and external pressures that emphasize the assessment of student performance based on quantitative results.

Another tendency observed in the graduates' reports is the idealization and stereotyping of the work of teachers. It can be seen that the following students say that there is a tendency to make the work of teaching difficult, such as having to work hard to be well paid, or to discredit it: I - "So much that people say you're a teacher? gee...what a shame...it must be a lot of work"; M - "...they said they worked a lot, a lot, a lot, they had to move cities, but they earned a lot...public school teacher, private school teacher, depending on the private school it will value the teacher more, and it varies on the quality of the teacher.... and there are teachers who have more knowledge." and H - "I think it also depends a lot on the status of the course, I see it a lot in my family, when I said I passed the chemistry exam and I said a degree, everyone was like...wow...teach, you know...and I have a cousin who's doing engineering, he doesn't have a job yet, but for his family he's better".

From this perspective, it is worth mentioning that Nóvoa (1995) examines the social representations of teachers and the idealization of the figure of the teacher as a role model. He emphasizes how these idealizations

can influence public perception and how expectations of teachers can vary widely, reflecting cultural, social, and historical perceptions.

At this point, we examined students' participation in activities related to the life stories of chemistry teachers in elementary school. At this stage, the students interviewed their former secondary school teachers and had the opportunity to listen to two primary school teachers invited by the subject teacher to tell their life stories of teaching. The category generated was "Understanding teachers' perspectives and routines" and the main observations were as follows.

It was observed that the students were able to absorb a bit of what daily life is like in a school and that teachers don't leave the university ready, as the following excerpts show: I - I found the interview very fascinating because I had the opportunity to meet the teacher and learn more about the routine in the classroom and outside the classroom, about the personal life" is when the student refers to the excerpt from a basic education teacher (DEB): DEB1 - "Every day is a box of surprises because you are dealing with the human factor and people are multiple and diverse. So I like it. Occasionally you give five lessons on the same subject, you're going to give five different lessons" and M - "They gave real examples, they talked about what it's like to be in the classroom for high school students. What they like, what they don't like, what they recommend, what they don't recommend. So it's an important moment in the course and then, as time goes on, things make more and more sense, you know?" referring to the excerpts: DEB 5 - "No. It's what works for me. The way you do it is whatever is comfortable for you. There are people who don't like to interact, and the guy's class is wonderful, so you have to go there and give it your all because it's only in the classroom that you understand what the dynamics are and how you're going to work, having that profile and developing your technique." and DEB 6 - "I don't know if I'd call it a technique, but aahh, the first thing you have to do is study, the life of a teacher is a life that you have to study.

Let's interpret the main points that these excerpts may indicate:

a) Interest in the experience of basic education teachers: I express my interest and appreciation for the opportunity to interact with a basic education teacher and learn more about her routine, both in the classroom and in her personal life. This suggests that contact with practicing teachers can enrich the training of future educators by providing insights into the reality of the profession;

b) Complexity of teaching: DEB1 emphasizes the unpredictability of the teaching profession, with each lesson being unique due to the diversity and individuality of the students. M points out that the experiences of primary school teachers shared with students include real examples of their classroom experiences, as well as their likes and dislikes. This complexity demonstrates the need for continuous adaptation and development for teachers.

c) Diverse approaches: DEB 5 emphasizes that there is no one right way to teach and that students should experiment with different approaches to find what works best for them. DEB 6 emphasizes the importance of continuous study in a teacher's life and that learning is a fundamental aspect of the profession.

Therefore, it is understood that the dynamics of students interacting with elementary teachers can provide input for future teachers to develop their own teaching and classroom management strategies based on the life stories shared in the interviews. In this way, they will learn about the "knowledge of action" that Tardif (2005) argues is essential for effective teaching practice. This knowledge refers to the practical skills and quick decision-making that teachers need to deal with unforeseen situations in the classroom.

Goodson (2020) proposes that beginning teachers, in particular, go through a significant transition in which their life stories, educational and professional experiences are intertwined. During this transition, beginning teachers may face challenges, adjustments, and changes in their professional identities, and that life stories may influence their choices of teaching strategies, pedagogical approaches, and relationships with students. In

addition, life experiences can influence the way teachers perceive diversity, inclusion, and the social context in which they work.

The students were pleased to see that basic education teachers went through similar situations at the beginning of their careers, with similar feelings of insecurity, as identified in excerpts such as E - "It was important to know that they have insecurities, that they were shaky in their first classes, just like I think it will be for me"; G - "I recognized when some teachers said that it was difficult at the beginning, but they managed it. I find it very difficult too, but if they did it and they enjoyed it, I think I'll enjoy it too"; and R - "When you're a student, you imagine that the teacher is a supreme being who doesn't dance, drink or laugh...or who only travels on holidays and breaks, but it's important to understand that they're a person like any other, who gets sick, who has family problems, who has dreams that are not just about being a student...".

In the first excerpt, Ed sees the importance of knowing that elementary school teachers also had insecurities in their first classes. This indicates that teachers are not perfect at the beginning of their careers and that they go through similar challenges as future teachers. This understanding can reduce students' pressure and anxiety about their own initial insecurities.

In G's excerpt, the graduate identifies with the teachers who shared their experiences of overcoming difficulties at the beginning of their careers. This identification is important because students realize that challenges are not exclusive to them and that it is possible to overcome them. This can build confidence and resilience. In R's excerpt, he addresses the need to understand that teachers are ordinary people with their lives, dreams and challenges. This helps to humanize the figure of the teacher and to dispel stereotypes that teachers are perfect or aloof. Students realize that teachers also have personal problems and aspirations, which can make it easier to build more genuine relationships between students and teachers.

The end of the course shows the students' perceptions of their learning. The analysis of the main observations at the end of the course led to the

category "Broadening perceptions of teaching careers", which was subdivided into the following categories:

When students enter a program, they often bring with them initial ideas about what it means to be a teacher and how education should be conducted. Throughout their educational and professional journey, however, these views may evolve as they are exposed to new theories, practices, classroom experiences, and reflections. This process of evolution and refinement is fundamental to the development of teachers who can meet the complex demands of contemporary education and create meaningful learning environments for their students.

In this context, we can see from the following excerpts how the students broadened their understanding and perspectives on teaching when the subject teacher asked if their perception of teaching remained the same as it was at the beginning: M - "How the history of professionalization of the profession is, understanding that even today some people think that being a teacher is not a profession, that it's a vocation, that you don't have to learn content or anything because the business is inspired by a higher being and so on. We understand that it's a profession that has a set of professional skills, professional knowledge. They are acquired in practice, in theory, in the connection between theory and practice"; MA - "The teacher is irreplaceable. I totally agree that the teacher is irreplaceable. There's no computer program, there's no application, there's no book, there's no self-study course, there's nothing that can replace the teacher's ability to synthesize and teach us"; and T - "What really struck me was a sentence from a teacher in the interview that goes like this: 'That's it. You're going to find your pain. Mine won't always be yours. This shows us that we have to go through all of this to find our way as teachers, no matter how prepared we are.

The excerpts provide important revelations about the undergraduates' (M and T) understanding of the teaching profession and the process of becoming a teacher. They highlight the evolution of the perception of the teaching profession, which historically was often considered a "vocation"

without the need for formal professional training. They now understand that being a teacher involves a complex set of professional knowledge that is acquired through practice and theory.

MA's excerpt emphasizes the irreplaceability of the teacher in the classroom, pointing out that the teacher's ability to synthesize information and teach cannot be replaced by computer programs, applications, or self-learning resources. This underscores the importance of the teacher's active role in facilitating student learning. While T's excerpt addresses the idea that each teacher will face unique challenges and difficulties throughout his or her career, and that these experiences are an integral part of the process of becoming a teacher. This reflects the understanding that teacher education involves building a personal professional path and the need to learn from experiences, regardless of the level of initial preparation.

According to Huertas (2001), a good teacher has teaching goals that make him or her a student motivated to learn. The author states that goals are the triggers for motivated behavior and that in order for learning to take place, there must first be motivation. Thus, at the end of the course, it was clear that most of the students were motivated by a career in teaching.

In the last class, the teacher asked each student to share what they had learned, what had stuck with them, and whether they had any prospects of continuing in their careers. In response, the following excerpts were extracted: R - "It was excellent to understand what my options are in the job market and what the advantages of each area are? So having an idea of this from the start of university is very important. I think it's significant. So, all of this was useful during this course."; N - "We also understand that it's essential, not just for you and us, for students who will be teachers to know a little about teaching, especially to demystify some issues such as teachers being underpaid." and RO - "We, you know, want to thank you, one of the aspects we're going to thank you for is studying with a doctoral teacher, and a doctorate in chemistry, I think it's a lot of things, and you showed that we have this possibility, and that teaching is as pompous as being an engineer or

a doctor. I really would like to explore all the possibilities I have in this career."

The excerpts reinforce some perspectives already discussed in this study about the importance of understanding teaching and career options from the start of academic training, such as the value of teaching, where R emphasizes the importance of students understanding their options in the job market, with an emphasis on teaching as a career. The graduate recognizes that having this understanding from the beginning of their studies is valuable, as it allows them to explore the benefits of each field. This reflects the importance of informing students about career opportunities and the benefits of teaching to increase interest in and appreciation of the profession.

Overall, these excerpts emphasize the importance of informing and inspiring students to consider teaching as a prestigious career and to develop a broader understanding of the profession from the beginning of their education. They also highlight the fundamental role of faculty and learning experiences in shaping students' perspectives on teaching. Top of the form.

At the beginning of the course, the students had superficial images of teaching. Their initial ideas were often influenced by stereotypes or simplistic views of the profession. As the course progressed, however, their understanding of teachers' perspectives and daily routines began to evolve.

Exposure to the life stories of elementary chemistry teachers had a significant impact on breaking down these stereotypes and building a deeper understanding of the profession. The students began to appreciate the complexity of teaching, including the challenges and rewards.

As the undergraduates developed a more solid understanding of teachers' perspectives and their routines, their perception of the teaching career began to broaden. They began to perceive teaching not just as an act of transmitting knowledge, but as a profession that involves the development of interpersonal skills, constant adaptation, and a commitment to student learning.

The relationship between undergraduates' initial representations of teaching and the broadening of their perception of a teaching career is remarkable. The initial representations often served as a starting point for this transformation and exposure to the teachers' life stories expanded the students' initial visions. This highlights how initial representations can be shaped and refined over time, resulting in a richer understanding of the teaching career.

Conclusion

Throughout the process, the students not only had the opportunity to explore the life stories of their mentors, the chemistry teachers, and this experience had a significant impact on their own journeys as future educators, but also on my training as an educator and teacher trainer. This approach revealed that teaching is a profession that involves values, identity and social commitment, and not just the acquisition of subject knowledge.

In this context, this research not only illustrated the importance of the "Teachers' Life Story" approach in the training of chemistry students, but also highlighted the continuing need for teachers committed to the improvement of education in Brazil. The teachers' life stories became a bridge between the past and the future, shaping the identity of the students and inspiring them to become not only competent educators, but also passionate defenders of the values they espouse. It is a tribute to my supervisor's memory that this research perpetuates her legacy and inspires future generations of educators committed to building a more inclusive and equitable world.

References

- BAKHURST, D. *Consciousness and Revolution in Soviet Philosophy: From the Bolsheviks to Evald Ilyenkov*. Cambridge: Cambridge University Press. 1991.
- BESSA, S.; CASTRO, E. A. D. S; RODRIGUES, J. G. Representações sociais de "bom professor": o que pensam os estudantes de licenciatura. *EDUCA – Revista*

Multidisciplinar em Educação, Porto Velho, v. 6, nº 16, p. 5-26, out./dez., 2019.
Disponível em: <https://doi.org/10.26568/2359-2087.2019.4003>.

BRITO, A. S.; LOPES, E. T.; LIMA, M. B. Identidade docente: reflexões de professores de Química sobre a trajetória acadêmica e profissional. *Revista Educação Pública*. Cuiabá, v. 26, n. 63, 2017, p. 907-926.

BOLZAN, D. P. V. et al. A. Formação de professores: a construção da docência e da atividade pedagógica na Educação Superior. *Ver. Diálogo Educ.*, v. 13, n. 38, p. 49–68, 2013. Disponível em:
<https://periodicos.pucpr.br/dialogoeducacional/article/view/7817>.

CANDIDO, A. *Vários Escritos*. São Paulo: Duas Cidades, 1995.

DURANA, J. M. G. Formación permanente del profesorado universitario. *Revista Iberoamericana de Educación*, Madrid, v. 43, n. 2, p. 1-7, jun. 2007.

FREIRE, P. *A importância do ato de ler: em três artigos que se completam*. 52. ed. São Paulo: Paz e Terra, 1987.

GOODSON, I. F. *Aprendizagem, currículo e política de vida: obras selecionadas de Ivor F. Goodson*. Tradução de Daniela Barbosa Henriques. Petrópolis: Vozes, 2020.

HUERTAS, J. A. *Motivación: querer aprender*. Buenos Aires: Aique, 2001.

KLEINMAN, A. *The Illness Narratives: Suffering, Healing, and the Human Condition*. Basic Book: Nova York, 2020.

MALDANER, O. A. A Formação inicial e continuada de Professores de Química: Professores, Pesquisadores. 3 ed. UNIJUÍ, 2006.

MARCELO, C. A identidade docente: constantes e desafios. *Formação Docente*, Belo Horizonte, v. 1, n. 1, 2009, p. 109-131.

MARQUES, M. O. *Formação do profissional da educação*. 4. ed. Ijuí: Unijuí, 2003, 236p.

MINAYO, M. C. S. *Pesquisa social: teoria, método e criatividade*. Rio de Janeiro, RJ: Vozes, 2009.

NÓVOA, A. O passado e o presente dos professores. *Profissão professor*, 2. ed. Porto: Porto Editora, 1995. p.13-34.

NÓVOA, A. Os professores e as histórias da sua vida. In : NÓVOA, António (Org.). *Vidas de professores*. Porto: Porto Editora, 1992.

SÁ, C.S.S; SANTOS, W.L.P. Motivação para a carreira docente e construção de identidades: o papel dos pesquisadores em ensino de química. *Química Nova*, vol. 39, n. 1, p.104-111, set, 2016. Disponível em:
<http://static.sites.s bq.org.br/quimicanova.s bq.org.br/pdf/v39n1a15.pdf>.

- SCHNETZLER, R. P. O professor de ciências: problemas e tendências de sua formação. In: SCHNETZLER, R.P.; ARAGÃO, R. (Orgs.). *Ensino de ciências: fundamentos e abordagens*. Campinas: UNIMEP, 2000. p. 12-41.
- SHULMAN, L. S. *Renewing the Pedagogy of Teacher Education: The Impact of Subject Specific Conceptions of Teaching*. Paper presented at the Symposium sobre Didáticas Específicas en la Formación de Profesores, Santiago de Compostela, 1992.
- SHULMAN, L. S. Those who understand: Knowledge growth in teaching. *Educational Researcher*. v. 15, n. 2, p. 4-14, 1986.
- SILVA, C.S.D.; OLIVEIRA, L.A.A. *Formação inicial de professores de Química: formação específica e pedagógica*. São Paulo: Cultura Acadêmica, 2009, p. 43-58.
- TERRAZZAN, E. A.; DUTRA, E. F.; WINCH, P. G.; SILVA, A. A. da. Configurações curriculares em cursos de licenciatura e formação identitária de professores. *Rev. Diálogo Educ.* 2008, v. 8, n.23, p.71-90.
- TARDIF, M. *Saberes docentes e formação profissional*. Petrópolis, RJ: Vozes, 2002
- TARDIF, M. *O trabalho docente: elementos para uma teoria da docência como profissão de interações humanas*. Petrópolis: Vozes, 2005.
- VONK, J. H. C. A Knowledge Base for Mentors of Beginning Teachers: Results of a Dutch Experience. *Teacher Education Policy*, p. 112-134. London: Falmer Press, 1996.
- WOODWARD, K. Identidade e diferença: uma introdução teórica e conceitual. In: Silva, T. T. (Org.). *Identidade e diferença: a perspectiva dos estudos culturais*. 9. ed. Petrópolis: Vozes, 2009, p. 7-72.
- ZIM, H. *A People's History of the United States*. Harper Perennial: 2015.

Received in November 2023.

Approved in February 2024