

University teaching: from bachelor to professor in Computer Science and Information Systems courses

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Abstract

This paper is part of a research that analyzed the teaching learning experience of professors with degrees in Computer Science and Information Systems at the Federal University of Uberlândia (UFU). How does bachelor's degree professors learn to teach in these courses? What are their training paths and what are the contributions of training to the development of the professional identity of these teachers? What are the main difficulties faced by the teachers of these courses in the exercise of teaching? The analysis of the data obtained indicates that the teaching knowledge is mobilized in the teaching practices themselves, with a prevalence of knowledge from experience, and the professional identity is built from the teaching references. In this sense, we reaffirm the importance of institutional policies for teacher training and professional development that contribute to the strengthening of a university pedagogy that values undergraduate teaching and professionalization of professors.

Keywords: university teaching; bachelor teacher; professional identity.

Introduction

This text is part of a survey carried out in Computer Science and Information Systems programs, which began with debates in the Study and Research Group on Teaching in Basic and Higher Education (GEPDEBS – Portuguese abbreviation), in which we identified that there are many challenges faced by these professionals working in universities. However, a large part of these studies refer to Bachelor's degree programs, which, despite having in their syllabuses courses focused on

teacher training, still present weaknesses from a theoretical-methodological point of view in their training processes.

In research on teaching in higher education, it is possible to observe that many professors who work in undergraduate courses are involved almost primarily in the development of academic research, and sometimes the professional knowledge necessary for teaching is not the focus of the training processes.

In my work as supervisor of the curricular internship of students of the bachelor's degree programs at the Federal University of Uberlândia, specifically in Computer Science and Information Systems, I felt urged to deepen my understanding of the teacher training processes of teachers who have their initial training in bachelor's degree courses. I found, through various experiences and studies carried out within the scope of the GEPDEBS, that the objectives of these courses, according to their pedagogical projects, is to train professionals for the labor market and, to a large extent, aligned with training perspectives based on technical rationality, a Brazilian university, historically, professionalizes.

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Therefore, we start from the following questions: how does the teaching learning of bachelor professors of Computer Science and Information Systems courses occur? What are their training paths and what are the contributions of training to the development of the professional identity of these teachers? What are the main difficulties faced by professors with degrees in these courses when they take up teaching at the university? Thus, the general objective of the research was to investigate how the teaching of teachers who work in the aforementioned programs at the Federal University of Uberlândia occurs.

To achieve this goal, it was necessary to: understand the training paths of bachelor professors and the pedagogical practices that contributed to their teaching activities at the university; analyze the contributions of training processes to the development of professional identity; investigate the main difficulties faced by bachelor teachers when taking up teaching in higher education; and contribute to broadening debates in the field of university teaching. In addition to understanding how the formation processes of bachelor professors were constituted, it was necessary to know their professional and family trajectories and their experiences as professors and students, that is, all the factors that drove and motivated them to become a university professor, as well as understanding its pedagogical praxis. In this way, we consider getting closer to the research object.

For Paulo Netto (2011, p. 45), "the concrete knowledge of the object is the knowledge of its multiple determinations – the more the determinations of an object are reproduced, the more the thought reproduces its real richness (concretion)". Thus, understanding how the formative trajectory of bachelor professors occurred, not only as professionals, but as social subjects, allow us to interpret the dialogical

relationship of transformations and resignifications through which these professionals build their pedagogical practices.

The research, of an exploratory nature, was developed in a qualitative approach which, according to Neves (1996), is directed, as it collects data through direct and interactive contact between the researcher and the situation under study. Neves (1996) states that the qualitative approach contributes to research work, as it involves procedures of a rational and intuitive nature, capable of contributing to a better understanding of the phenomena.

Data were obtained through a questionnaire, as we considered that this instrument would reach most of the participating professors. Therefore, it consisted of an instrument that made it possible to learn the perceptions and conceptions of teachers regarding their formative and professional trajectories in university teaching. The questionnaire was designed considering the need for closed and open questions, according to the research objectives.

The methodological path of the research was outlined with a view to answering the questions that guided the research, stated as follows: how does the teaching of bachelor professors learn? What are your training paths? What are the main difficulties faced in the exercise of teaching? We base ourselves on Cervo, Bervian and Silva (2007, p. 27), who state: “[...] in science, a method is understood as the set of processes used in the investigation and demonstration of the truth. A method is not invented; it depends, fundamentally, on the object of the research.”

The method is not the model, formula or recipe that, once applied, collects, without margin of error, the expected or desired results. It is just an ordered set of procedures that have proved to be efficient, throughout history, in the search for knowledge. The scientific method is, therefore, a working tool. The result depends on the user (CERVO; BERVIAN; SILVA, 2007, p. 28).

By investigating teaching related themes, we emphasize that the path covered is full of experiences and that this process can only be understood in context, considering the historicity of the object. Paulo Netto states that theoretical knowledge is knowledge of the object, that is, of its structure and dynamics, as it is in itself, in its real existence, and that this is independent of the researcher's desires, aspirations and representations. Also, that “[...] by theory, the subject reproduces in his thinking the structure and dynamics of the object he researches”, and this will be the truer and more correct the more faithful the subject is to the object (PAULO NETTO, 2011, p. 21). Regardless of our objectives and/or experiences lived along our investigation path, we seek to approach our object of study and present the results in their originality and concreteness.

In this way, we envision these teachers as social subjects who mobilize specific knowledge from different sources to carry out the pedagogical practice. According to Marquez and Pimenta (2015, p. 151),

The knowledge of pedagogy and didactics enables the construction of a vision of totality, essential to the training of professionals capable of carrying out analyzes and developing directions in order to enable the democratization of knowledge, overcoming the fragmented treatment of school knowledge and the articulation of action of different teachers towards the realization of a training project. Deprived of this knowledge, the teacher's action is reduced to working with a disciplinary field in a way that is disconnected from a broader pedagogical intention, which leads to the mischaracterization of the nature of teaching.

The research started from a documental study in sources from the institution itself and from the courses, the locus of our study. And also related legislation, which allowed us to contextualize the theme investigated in light of the multiple determinations and conditions that interfere in the construction of interpretations about the research object. According to Bardin (1977, p. 45-46), document analysis is defined as:

[...] an operation or a set of operations aimed at representing the content of a document in a form other than the original, in order to facilitate its consultation and reference in a later state. [...] As a treatment of the information contained in the accumulated documents, the documental analysis aims to provide a convenient form and represent this information in another way, through transformation procedures (BARDIN, 1977, p. 45-46).

Documental analysis contributes to elucidating issues and aspects that can contribute to a better understanding of the object, as its purpose, as indicated by Bardin (1977, p. 45-46), is to achieve “[...] storage in a variable form and facilitating access to the observer, in such a way that he obtains the maximum amount of information (quantitative aspect), with the maximum relevance (qualitative aspect). Document analysis is, therefore, a preliminary phase in the constitution of a documentation service or a database”.

Bardin (1977) suggests floating reading as a proposal for analysis. From a first floating reading, intuitions may arise that are suitable to be formulated in hypotheses.

We reviewed different surveys undertaken in the last five years that investigated similar themes. These studies were located in the main data platforms of graduate programs accredited by the Coordination for the Improvement of Higher Education Personnel (Capes). We also consulted literature that addresses the professional development of teachers, the teaching profession, Brazilian legislation related to the role of the university and teaching in higher education, among other related topics.

In this way, it was possible to build the research corpus, consisting of information from theoretical research, documentary and empirical sources obtained through questionnaires answered by professors who work in these courses. According to Cervo, Bervian and Silva (2007, p. 53): “The questionnaire is the most used way to collect

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data, as it makes it possible to more accurately measure what you want. Every questionnaire must be impersonal in nature to ensure uniformity in the assessment from one situation to another.”

The questionnaires were sent by e-mail to the professors and a clipping was carried out by us, with the aim of privileging the effective professors of the aforementioned programs. Altogether, we contacted 71 professors, but only 15 responded. The questionnaire had 34 questions in a mixed model, 17 closed and 21 open. Part of them sought information on the identification of teachers (age, gender, academic background, among other aspects). Others were related to the professional path (previous experiences, length of experience in teaching, course in which he has worked as a teacher, time of entry into the labor market, which research(es) the professional developed in the last year, internships supervised, among other experiences). Some of the matters, considered by us as the most interested ones, focused the questions, most of them open, about pedagogical practice. We seek to understand how this practice is exercised and from which references (the training courses they took, the teachers who marked them, exchanges between peers, beliefs, among other aspects).

The context of universities and their purposes

From the studies listed and the reflections that will be raised here, related to our object of study – the learning of university teaching by bachelor professors – it is necessary to make some considerations. The university performs key functions, diverse responsibilities and faces challenges. Connell (2000 apud ZABALZA, 2004, p. 35) places the university institution in today’s complex world, assigning it four specific responsibilities: (1) documentation, which implies maintaining its nature as an arcane of all kinds of knowledge. The university not only appears as the cradle of knowledge, but as a storage center for this knowledge, which can be turned to whenever one wants or needs; (2) virtual information network, which entails the use of the most varied communication systems and supports, which allow the greatest possible distribution of knowledge, so that it can reach potential users, whatever their geographic location or financial condition; (3) innovation, so that universities become permanent focuses of technical and social progress. In this sense, they must be able to make the most of their autonomy and availability of resources; and (4) criticism on the uses and abuses of power (in its different manifestations and in different areas) and/or the processes of loss of individual and social identity.

Zabalza (2004) highlights pertinent aspects related to training as a basic function of university teaching and also in relation to what training means in this context and how this conception of training influences the development of the teaching activities at the university.

How does the teaching staff feel in face of all the demands imposed on them? How are they organized and placed within this increasingly uncertain context?

Thus, it is evident that the impacts related to all these responsibilities affect professors, raising the following reflections: how does the teaching staff feel in face of all the demands imposed on them? How are they organized and placed within this increasingly uncertain context? What trainings can contribute to facing these challenges? These questions are directly related to the problematic of our investigation about how the teaching learning of bachelor professors takes place. Based on these considerations, we examine the university's challenges facing the demands that arise in this scenario.

According to Torres (2014, p. 74), "the university as a social educational institution came up with the challenge of consolidating scientific knowledge, at a time when this type of knowledge was considered secular and distant".

When establishing relationships with teaching, it is possible to consider that pedagogical practices aligned with the conservative perspective are "sacred", as they are validated by teachers and their peers, therefore difficult to be changed, especially because university teaching is not commonly an object of reflections, discussions or even questioning. In higher education, culture is still guided by the idea that whoever knows, knows how to teach.

The university as a social educational institution came up with the challenge of consolidating scientific knowledge, at a time when this type of knowledge was considered secular and distant

We defend that it is necessary to break with the culture of "I teach because I know" and start the culture of "I teach because I know and I know how to teach" (MELO, 2007, p. 32). This understanding invariably indicates the need for permanent reflections on what university teaching is and how it is done, that is, what the intentions of pedagogical practices are, in the context of permanent training processes.

In order for the universities to achieve the goals proposed by them, considering the public policies that protect, sustain and guide them, it is necessary to confront conflicts and positions of management groups, which, although transitory (on average, terms are of at least four years and eight years at most) print their marks, according to the ideology with which each management group identifies. Therefore, it is in the movement of the historical process experienced by universities that countless transformations took place. We emphasize that the purpose of the university must be associated with its social function and never disconnected from the pillars related to teaching, research and extension, which are fundamental for thinking about the university from the perspective of training graduate professors.

The university as a context for teaching work

Universities are primarily educational, research and extension institutions, and therefore have social responsibilities towards the communities in which they are located. However, since the establishment of the first universities in Brazil, there are so many challenges that they face that their objectives have often been subject to

external impositions, in most cases arising from policies focused on meeting the interests of the market, and not on the practice of teaching, research and extension.

For Severino (2008, p. 75), “committed to knowledge, the university must also be committed, as a result, to extension and research, as well as to teaching”. But we ask ourselves how these goals can be achieved if the university is increasingly subordinated to the logic of capital, which is constantly being altered.

In the current world situation, the specific scenario in which Brazilian society finds itself is that designed by an intense and extensive process of economic and cultural globalization, driven by the expansion of the capitalist economy, which is politically and ideologically supported by the neoliberal paradigm.

Therefore, it is a global trend that imposes on all countries the minimization of the State, the total prioritization of the market logic in the conduct of social life, the encouragement of generalized privatization, the defense of individualism, consumerism, competitiveness, private initiative. With regard to education, the theory of human capital prevails, that is, the preparation of manpower for the labor market (SEVERINO, 2008, p. 76-77).

Thus, the aforementioned author highlights that the challenges of public universities do not differ, in general, from the problems faced by all public education at its different levels and modalities, with conflicts and dilemmas pervading the contemporary Brazilian social reality, marked by

[...] confrontation between an education based on the premises of the theory of human capital and an Education that wants to be identified with the theory of human emancipation, between an education that serves the market and another that serves the construction of a more humanized condition of existence, where work is an essential mediation of people’s historical existence and not a mere mechanism of production for the market (SEVERINO, 2008, p. 87).

These challenges are attributed to the dilemmas faced, often not overcome, due to the contradiction between the university’s service to the market logic and the logic of human emancipation. In this way, the institutional identity takes new guidelines and

some conjectural factors of a structural order ended up decreeing new directions for higher education and the university in Brazil [...] a process of democratization/expansion, privatization (public-private relationship) and massification of higher education; a change in the institutional identity of universities and in the pattern of higher education management, among others (VIEIRA, 2007, p. 1).

The professor’s work stands out and the training of this professional becomes a matter of concern for international organizations that see in this subject a key element in the production chain of knowledge necessary for the development of such a society (MAUÉS, 2009). In this context, marked by the interests of financial capital, teaching work becomes the target of external assessment policies, even if indirectly.

By setting control patterns that interfere with the pedagogical dynamics of universities, these policies minimize their value. Thus, the path taken by the professor is reduced to hard work in order to ensure the requirements of the policies imposed by the regulatory State, which destabilizes the quality of their work:

This “result obligation” that is currently imposed on the professor does not take into account, in most cases, the structural and conjectural issues that involve the profession, such as working conditions, which applies to classes with more than 50 students; lack of a policy to enhance the teaching profession, which includes a job and salary plan and a continuing education plan; forms of temporary employment; a social security policy that allows teachers to retire with dignity, among other fundamental issues that are not considered in these regulations that affect the teaching work, making it more precarious and making it more flexible (MAUÉS, 2009, p. 485).

We conclude that, in this context in which universities are configured, the difficulties and impasses faced by them and by the professors result from the transformations that have taken place and the policies introduced in society. We emphasize that the intellectual aspects that should be ahead of the goals of educational institutions are separated from the economic goals, but these, in an imposing way, dictate the direction of education. And all the dilemmas faced by professors in face of these new configurations directly impact their work, depriving it of its function to meet the demands demanded by the market.

Teaching knowledge and pedagogical practice

The “teacher profession” is the target of countless debates and contradictions, often associated with volunteer work, the “gift”, or even a mission. All these characteristics reinforce the mischaracterization of a profession that, like any other, needs to be recognized and valued. According to Costa (2005), in the Brazilian context, from the reforms in the field of education carried out in the 1990s, the rhetoric about the teaching profession unfolds in the implementation of the Law of Guidelines and Bases of National Education No. 9,394/96, that in article VI it refers to “education professionals”, generating a broad debate on the teaching profession, as the theme of professionalization is not unified, arousing great controversies around the professional condition of professors in the Brazilian context (COSTA, 2005, p. 85). Also according to the research carried out by the author, professionalization is presented under different conceptions: some tend to reaffirm the implementation of reforms, others oppose their implementation. Thus, several authors, based on debates about the movements of educators, “present the concept of professionalization in a critical perspective, in which the construction of a professional identity, the valuation of the profession and recognition as professionals of the Education” (COSTA, 2005, p. 104).

It appears that issues related to the teaching professionalization are directly linked to issues such as teacher training and autonomy and the construction of an identity. According to Oliveira (2013, p. 61-62),

The notion of professionalization applied to Education has always been ambiguous. [...] the use of the term professionalization in Education has always been linked to the conceptual framework of the American sociology of professions, in which professionalization presupposes not only the practice of the profession full time, but also a legal statute that recognizes the qualification of its members as a specific training and the existence of professional associations. [...] this professionalization translates into the constitution of a common cognitive and deontological heritage, thus, the notions of professionalism and professionalization are imposed in the domain of teacher education, moving from the social level to that of professional and pedagogical practices.

Also according to Oliveira (2013), the concept of professionalization is closely linked to training processes, therefore they are in constant interface. Thus, initial and continuing education, considered one of the pillars of teacher appreciation, has been the subject of dispute among different segments.

The professor, when assuming the professional functions inherent to the position at a federal university, does so through a public examination that requires them to graduate in their area of expertise. However, this requirement does not directly imply that the teacher has had a specific pedagogical training for teaching, which constitutes a contradiction, as the specific knowledge of pedagogy is essential, as pointed out by Gonçalves (2015, p. 14):

For the exercise of teaching in Higher Education there is no legal requirement for any training in this direction. However, it is expected that the teacher participates in the preparation of the pedagogical project of the Course, knows how to build objectives appropriate to the profile of the desired graduate and the nature of the syllabuses, as well as make teaching plans and lesson plans, apply appropriate methodologies and strategies, evaluate learning, among many other specific activities related to teaching.

Given the above, we confirm that teaching practice requires different knowledge inherent to the profession, and what is found is that many professionals coming from specialized areas of the bachelor's degree and who work in teaching do not have specific training for this activity. Although there are teachers who undertake successful pedagogical practices, managing to mobilize and build knowledge that comes from various sources – such as the influence of teachers throughout their training path, reflections among peers, affinity with pedagogical issues – professional training for teaching is essential.

For Stano and Fernandes (2015, p. 45),

[...] there is a lack of knowledge and training for university professors, who generally train in the specific area of an area of knowledge, in which the proper, theoretical and technical conditions of teaching are not addressed. [...] the need to reflect the curriculum as a trajectory composed of formal and informal activities, planned and unplanned, with meanings that are being constructed by teachers and students, through the relationship between theory and practice, between doing and knowing, between thinking and acting.

In this sense, it is understood that pedagogical training allows university professors to look at their pedagogical practice, interpret and recreate it, making it also a source of learning, in a perspective of change and innovation (JUNGES; BEHRENS, 2015).

Dialoging with the data

With regards to the exercise of teaching before taking on this role at the university, we found that 11 were already teaching before taking a competitive examination at UFU and four did not have this experience. The answers given in the questionnaires point to a significant index of professors who already taught before becoming professors at the university. Regarding aspects of professional training, we recognize that the teacher builds their knowledge from different sources, thus, one of the questions in the questionnaire referred to the contributions made possible by the courses taken by them, in relation to the teaching practice.

At first, about the graduation course having provided them with good theoretical-practical training, we obtained, in all 15 answered questionnaires, the confirmation of yes, so that the professors consider the contributions arising from their initial training to be important. Then, we requested further information in order to analyze how the undergraduate course contributed.

We asked the teachers to point out the aspects of this training that they considered the strongest, as well as the weaknesses. Among the contributions they judged to be important, there was a special predominance in terms of deepening the contents of basic education, from which the learning of mathematics, statistics and programming were highlighted.

Regarding the contributions of training in both undergraduate and graduate programs, 11 answered yes, that training at these two levels contributed to their performance in teaching. Thus, we recognize the appreciation on the part of the professor regarding this relevant process of construction of scientific knowledge. The emphasis given to content, teaching and research as synonyms is evident. We recognize these concepts as distinct, as, as we have already highlighted, teaching is a complex profession and, consequently, implies a set of professional knowledge that articulate different types of knowledge: pedagogical, from the specific field and from experience.

Thus, the professor, when developing their practice based on teaching knowledge, will be able to organize the contents of their classes in order to support the learning process of their students.

The teaching activity, in the sense of a pedagogical praxis, is of a different nature from the scientific research activity. Mainly because teaching, when subsidized by research and because it takes place from the articulation with it, further indicates the need for a scientific basis that enables the bachelor professor to build theoretical-methodological subsidies that favor their teaching practice. Teaching encompasses all these processes, which demonstrates the broad and complex dimension of teaching-learning processes. One of the fundamental questions for this research is about the motivation of magistrates in their choice of profession.

We found that the term vocation was mentioned by some of them, which reinforces the process of deprofessionalization of teaching, already mentioned in this research. Thus, if teaching is considered a “vocation” and/or a “gift”, anyone can do teaching without even having training for such. A fact that caught our attention refers to the fact that most professors have stated that they chose teaching to carry out research. We emphasize, as Almeida (2012, p. 62) puts it, that “entry competitions are clearly for professors, which evidently presupposes the teaching activity. However, it is not, in many cases, the factor that attracts them and makes them decide to work in these institutions”. We reaffirm that the continuing education of teachers can contribute to the exercise of pedagogical practices based on reflection-action, that is, a pedagogical praxis that has research as the formative principle of teaching.

The pedagogical practices that the professors experienced and that they consider remarkable are related to the professors who positively influenced them and share aspects such as: more dynamic classes, interesting activities, practical projects and innovative activities in common.

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The teaching records indicate, as negative aspects that are still present in their memories, mainly the lack of planning and organization of classes, which compromises the teaching-learning process. Furthermore, they demonstrate that they are aware that the primacy of lectures, with the use of slides, contributes little to student learning. Regarding the relevance of didactic-pedagogical training, 13 of the professors answered that they considered it important and two saw it as irrelevant, which is inconsistent with other answers presented in the questionnaire by these professors.

When asked about the importance of didactic-pedagogical training, some teachers consider it important. Answers such as “Important, not mandatory”, “I think it can provide subsidies, but it is not essential” and “Our training is as a researcher, not as a teacher” demonstrate that these teachers do not recognize didactic-pedagogical training as important. However, in other answers, the use of this knowledge is explicit, or even the consequences and weaknesses

that can be remedied, if they have a scientific deepening regarding the professional knowledge of teaching.

We also obtained answers in which the professors affirm that this knowledge should be worked on, however, with a focus on exact science programs. Regarding pedagogical training, and because they do not recognize the complexity of aspects involving teaching (social, economic, cultural and political dimensions), the answers indicate that professors expect “crash courses”, practical activities, that is, they do not understand that theory and practice are inseparable and are the theoretical foundations that enable critical reflection on pedagogical practice.

In this sense, the concept of continuing education for professors is based on the understanding that “crash courses”, “more practical” and of “short duration” can solve the immediate problems of pedagogical practice. We recognize that, by professionally taking up teaching without the pedagogical knowledge inherent to the profession, teachers demonstrated that they learned the craft from their daily practices. Although experience is an important factor that contributes for the professors to build ways of being and staying in the profession, it is insufficient, given the complexity of factors, aspects and dimensions that involve teaching.

We highlight the defense that pedagogical knowledge, in addition to being essential to the professor’s practice, supports actions to overcome any needs and difficulties to be faced.

Final considerations

The research aimed to investigate how teaching learning occurs by professors holding bachelor’s degrees who work in Information Systems and Computer Science courses at the Federal University of Uberlândia. This investigation was based on the analysis of the pedagogical projects of the two courses, theses and dissertations of the last five years and data obtained through a questionnaire, analyzed in the light of bibliographic references on teacher education, specifically on bachelor teachers.

The bibliographical study allowed us to understand the historical trajectory of universities in Brazil, in addition to the public policies that refer to the creation and maintenance of these institutions, the requirements imposed on them, the dilemmas and difficulties faced. The analysis allowed us to understand the university in its historicity and totality, as a space for the professional performance of teachers, a space that is permeated by contradictions, especially regarding the formative meaning of the university. There are clearly two projects in dispute: one understands the university as an organization with commitments marked by the service to capital, that is, its formative sense focuses on the formation of human capital; another, which we defend, is the university project that understands it as an institution that has social commitments to human development. The formative goals assumed in this perspective refer to emancipation, the development of critical and creative thinking and the expression of freedom of thought and conceptions.

Is the university project that understands it as an institution that has social commitments to human development

By recovering the historical path of the university and the researched courses, it was possible to understand the social, political and economic context in which they were set. Therefore, analyzing the constitution of teaching from a critical-reflective perspective implies considering that it is at the university that professors carry out their praxis, in a dialectical movement with their individual and collective trajectories, in an interface with the history of the institution and the challenges to be faced.

We verified in the courses' pedagogical projects the emphasis on technical and scientific knowledge, marked by the commitment to the professional training of its students. A curriculum that is still fragmented, in which disciplines are structured in order to meet the National Curriculum Guidelines for bachelor's degree programs, therefore, they do not constitute a formal space for pedagogical training. When discussing the concepts of knowledge, training and professional development, among others, as crucial knowledge for the practice of teaching, we highlight the importance of a scientific knowledge base that should support pedagogical practices.

We defend the need to enable and consolidate permanent, dialogical and collaborative training processes that contribute to teacher education that actually produces changes in professors' pedagogical practices. Formative processes that allow the construction of professional knowledge in teaching, which protects them from overcoming possible difficulties and dilemmas faced in the daily life of classes, according to the adversities reported in the completed questionnaires.

With regards to the specificity of the teacher training of bachelor teachers, i.e., how they learn to be teachers, we show that this is not systematized and, therefore, it is still insufficient, especially due to the omission of postgraduate courses (master's and doctorate degrees), which do not address topics related to pedagogical knowledge. We found that the professors who work in higher education do not have a training focused on pedagogical knowledge, however, in the answers to the questionnaires, the relevance of this knowledge for their performance was clear. One of the contradictions that emerged from the analysis was: although they recognize the contributions of initial and continuing education and the value of didactic-pedagogical training, including expressing the desire to participate in training actions, they highlighted several weaknesses, as well as, in some records, they denied the relevance of this knowledge. In other words, in the answers presented, some of the teachers declare the relevance of training practices experienced at some point in their career and emphasize models of successful practices by referring to teachers who participated in their training, with these practices being provided with specific pedagogical knowledge. However, when asked about the relevance of training focused on specific knowledge of teaching practice, she states that this is not essential for acting as teachers.

We recognize, from the constructed data, the knowledge of experience as essential for the professional performance of these professors, practices resulting from experiences recognized as positive lived as students. One of the questions presented in the questionnaire referred to the motivation of teachers for choosing the profession. The satisfaction of teaching and the opportunity to undertake research were mentioned. However, it was possible to verify in some answers that the professors do not recognize the teaching-research-extension tripod, as they understand it with strands disconnected from each other. We assume that the three parts are correlated, indicating the need for involvement and appreciation of each of them.

One of the daily challenges is the need to stimulate students' interest in the content, that is, the constant concern of teachers lies in the challenge of dealing with students who are increasingly unmotivated and unprepared, needing to overcome the formative weaknesses arising from basic education.

The analysis allowed us to present some propositions for facing the demands related to teaching learning of bachelor professors:

- Strengthen university pedagogy based on valuing undergraduate education;
- Encourage the construction of a teacher training culture at the university based on collaborative and dialogical practices, systematized based on the specific training needs of teachers and prioritizing pedagogical knowledge;
- Institutionalize teacher training and professional development policies;
- Encourage the creation of collective spaces for discussing problems, dilemmas and difficulties faced in everyday university life;
- Create an institutional policy for welcoming and monitoring teachers who are entering university teaching;
- Stimulate the visibility of successful teaching practices, through teaching, research and extension projects.

Based on the reflections presented, we defend the systematization of the training processes of teachers and that graduate programs can assume the importance of didactic-pedagogical training, in order to enable training that contributes to the professional practice of teaching. We recognize that this is a complex object of research, so it will be necessary to go deeper into different aspects that contribute to the professionalization of university teaching and, consequently, to the improvement of undergraduate teaching.

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