TEACHING WORK AND PEDAGOGICAL INNOVATION IN THE CONTEXT OF FEDERAL INSTITUTES: THE EXPERIENCE OF CONTINUOUS FORMATION BY PROBLEM-BASED LEARNING AND PROBLEMATIZATION METHODOLOGY

TRABALHO DOCENTE E INOVAÇÃO PEDAGÓGICA NO CONTEXTO DOS INSTITUTOS FEDERAIS: A EXPERIÊNCIA DA FORMAÇÃO CONTINUADA POR MEIO DA APRENDIZAGEM BASEADA EM PROBLEMAS E DA METODOLOGIA DA PROBLEMATIZAÇÃO

TRABAJO DOCENTE E INNOVACIÓN PEDAGÓGICA EN EL CONTEXTO DE LOS INSTITUTOS FEDERALES: UNA EXPERIENCIA DE LA FORMACIÓN CONTINUADA POR MEDIO DEL APRENDIZAJE FUNDAMENTADO EN PROBLEMAS Y LA METODOLOGIA DE LA PROBLEMATIZACIÓN

Sônia Regina de Souza FERNANDES[1]
Filomena Lucia Gossler Rodrigues da SILVA[2]

ABSTRACT: This article aims to contribute to the reflection on teaching's theme in college education especially as regards pedagogical innovation processes developed within Postgraduation Program in Education of the Federal Institute of Education, Science and Technology of Santa Catarina (IFC), based on the active methodologies. Its central concepts are pedagogical innovation, Problem Based Learning (ABP/PBL) and Problematization Methodology (MP/PM). The research has a qualitative nature using data content analysis which was collected through students' evaluative records around the curricular components worked as from the ABP/PBL and the MP/PM on the studied Program. The results reveal that pedagogically innovating in the development of curricula, policies and practices requires dialogicity between those involved in the educational and formation processes as well as the problematization of reality, by means of methodologies that have research as one of the founding principles of formation.

KEYWORDS: Teaching. Pedagogical innovation. Federal institutes. Problem Based Learning. Continuous formation.

RESUMO: Este artigo objetiva contribuir com a reflexão acerca da temática da docência no ensino superior, notadamente no que diz respeito aos processos de inovação pedagógica desenvolvidos no Programa de Pós-Graduação em Educação do Instituto Federal de Educação, Ciência e Tecnologia Catarinense (IFC), com base nas metodologias ativas. Toma como conceitos centrais a inovação pedagógica, a aprendizagem baseada em problemas (ABP/PBL) e a metodologia da problematização (MP). A pesquisa possui natureza qualitativa

---

[1] Federal Institute of Education, Science and Technology of Santa Catarina (IFC), Camboriú – SC – Brazil. Teacher of Basic, Technical and Technological Education/Teaching Department. PhD in Education (UNISINOS). ORCID: https://orcid.org/0000-0001-6788-6238. E-mail: sonia.fernandes@ifc.edu.br

[2] Federal Institute of Education, Science and Technology of Santa Catarina (IFC), Camboriú – SC – Brazil. Teacher of Basic, Technical and Technological Education/Teaching Department. PhD in Education (UFSC). ORCID: https://orcid.org/0000-0002-8275-7714. E-mail: filomena.silva@ifc.edu.br

com uso de análise de conteúdo dos dados coletados por meio dos registros avaliativos dos estudantes em torno dos componentes curriculares trabalhados a partir da MP e da ABP/PBL no programa estudado. Os resultados revelam que inovar pedagogicamente no desenvolvimento de currículos, políticas e práticas exige dialogicidade entre os envolvidos nos processos educativos e formativos e problematização da realidade por meio de metodologias que têm a pesquisa como um dos princípios fundantes da formação.

PALAVRAS-CHAVE: Docência. Inovação pedagógica. Institutos federais. Aprendizagem baseada em problema. Formação continuada.

RESUMEN: Este artículo objetiva contribuir con la reflexión alrededor de la temática de la docencia em la enseñanza superior, especialmente sobre lo que dice respeto a los procesos de innovación pedagógica desarrollados em el Programa de Posgrado em Educación del Instituto Federal de Educación, Ciencia y Tecnología Catarinense (IFC), con base em las metodologias activas. Trae como conceptos centrales la innovación pedagógica, el aprendizaje baseada en problemas (ABP/PBL) y la metodología de la problematización (MP). La pesquisa poseé naturaleza cualitativa con uso del análisis de contenidos de dados coletados por medio de los registros evaluativos de los estudiantes alrededor de los componentes curriculares trabajados a partir de MP y de la ABP/PBL em el programa estudiado. Los resultados muestran que innovar pedagógicamente em el desarrollo de los currículos, políticas y prácticas exige dialogicidad entre los envueltos em los procesos educativos y formativos y la problematización de la realidad por medio de metodologias que tienen la pesquisa como uno de los princípios fundantes de la formación.

PALABRAS CLAVE: Docencia. Innovación pedagógica. Institutos federales. Aprendizaje baseada en problema. Formación continuada.

Introduction

The contemporaneity of the theme that involves teaching in higher education, through its various problems, brings us a set of reflections and challenges, including the issue of inclusion, interculturality and pedagogical innovation. For this article, we elected to address teaching work in the context of the Federal Institutes of Professional, Scientific and Technological Education (FI), notably with regard to pedagogical innovation processes, based on active learning methodologies, particularly (ABP/PBL) and the problematization methodology (PM). It is worth mentioning that the teaching work in these institutions requires acting in a vertical manner, through the different formative itineraries and technological axes, as well as by the levels of education/formation that it offers - from high school Professional Education to Post-Graduation -, as we will detail the follow.

As central concepts, we chose pedagogical innovation; problem-based learning (ABP/PBL) and problematization methodology (PM), based on Cunha's reflections (1998;

2003; 2008; 2016; 2018); Fino (2007; 2016) and Berbel (1998). We take as a part of the works the experience that the research group has been developing at the Federal Institute of Santa Catarina (IFC, Portuguesa initials) - Campus Camboriú, carried out within the scope of an Institutional Program for Continuing Education for Teachers and Education Workers between the years 2016 and 2018, which had curricular innovation, dialogicity and research as founding principles.

We organized this article as follows: initially, we presented a theoretical reflection on teaching work and pedagogical innovation in the context of IFC; and, subsequently, the analysis of data about the experiences of students in a Postgraduate course in Education, with six of its eight axes implemented (Figure 1) during the mentioned period, which were collected through the evaluative records of students around the curricular components worked through the Problem-solving Methodology (PM) and Problem-Based Learning (ABP/PBL) and compared by the content analysis methodology (BARDIN, 2011).

Teaching work and pedagogical innovation in the context of the Federal Institute of Santa Catarina: an analysis of the Continuing Formation Program for Teacher Education in *lato sensu* Postgraduate courses

The social imaginary about the activities that involve the teaching profession does not reveal the complex dynamics that it has. What is observed is that the complexity and diversity of roles assumed by teachers in the exercise of their profession vary according to the stages, levels and institutions of their performance. Thus, in order to understand the specificities and the complexity of the teaching work, it is necessary to know the context in which it takes place.

What we want to say is that in the same way that, "to read society we need to investigate what this society produces"[3] (SILVA, 2014, p. 162), to understand the dynamics of the teaching work of teachers working in FI, it is necessary to know the specificities that involve the educational and formative processes developed by these institutions and their impacts on the ways of being and being in the profession. We say this considering that "teachers have their own characteristics, related to their trajectories and conditions of professional practice. Thus, they are men or women, young or mature, who work at different levels of education and in their own institutional spaces"[4] (CUNHA, 2003, p. 46). From the above, we understand that it is

---

[3] "para ler a sociedade precisamos perquirir o que produz essa sociedade"
[4] "os professores possuem características próprias, relacionadas com suas trajetórias e as condições de exercício profissional. Assim, eles são homens ou mulheres, jovens ou maduros, que atuam em níveis de ensino diversos e em espaços institucionais próprios"

necessary to consider that "[...] it is within the educational policies and the reality of the teaching work, which have an interdependent relationship, that the professional identity of the teachers is being constituted"[5] (SILVA, 2014, p. 163).

In spite of the teaching work carried out in the FI, it is essential to consider the performance of teachers at different levels of education, among which we mention: the professional qualification of workers, high school in different forms of articulation with professional education (integrated, concomitant or subsequent) and higher education in undergraduate courses (at the technological level, bachelor's and teaching degrees) and postgraduate *Lato* and *Stricto Sensu*. This verticalization of the performance of teachers differs from any other type of educational institution and presents among its challenges the development of policies, cultures and practices that make it possible to meet the specificities of each level and stage of training. According to research carried out with professors who work at IFC - Campus Camboriú, the specifics of teaching at this institution are:

> [...] the work on courses with specific purposes and characteristics, both in terms of levels of formation, as well as the conception of courses, the age groups of students (whose interests, behaviors and needs are also varied, both with regard to the formation paths as well as the other aspects that involve the teaching-learning process in an omnilateral formation perspective); the course's working shift, which implies different dynamics (day and night courses, working students); the need for a theory and practice relation; mastery of the specific area of expertise; the need to understand curricular integration and the importance of contextualizing knowledge, which implies knowing the specificity of each course/qualification that the teacher takes and the economic, political, social and cultural aspects in which we are inserted; meet local productive arrangements; having skills and knowledge that meet the demands of quality education for the intellectual, cognitive, human and citizen development of students; develop a more humane look for the student (SILVA *et al.,* 2019, p. 147).[6]

When considering the specificities of the teaching work mentioned by the authors and the institutionality of the Federal Network of Professional and Technological Education, we

---

[5] "[...] é no interior das políticas educacionais e da realidade do trabalho docente, as quais possuem uma relação de interdependência, que a identidade profissional dos professores vai sendo constituída"

[6] [...] o trabalho em cursos com finalidades e características específicas, tanto em termos de níveis de formação, quanto de concepção dos cursos, as faixas etárias dos estudantes (cujos interesses, comportamentos e necessidades também são variados, tanto no que se refere aos percursos de formação quanto os demais aspectos que envolvem o processo de ensino-aprendizagem em uma perspectiva de formação omnilateral); o turno de funcionamento do curso, que implica dinâmicas distintas (cursos diurnos e noturnos, estudantes trabalhadores); a necessidade da relação teoria e prática; o domínio da área específica de atuação; a necessidade de compreender a integração curricular e a importância da contextualização dos conhecimentos, o que implica conhecer a especificidade de cada curso/habilitação que o professor atua e os aspectos econômicos, políticos, sociais e culturais em que estamos inseridos; atender aos arranjos produtivos locais; ter competências e saberes que atendam às demandas de uma educação de qualidade para o desenvolvimento intelectual, cognitivo, humano e cidadão dos estudantes; desenvolver um olhar mais humano para o aluno (SILVA *et al.,* 2019, p. 147).

observe that teaching in these institutions has both a complex and innovative character. According to Fernandes, Hoepers and Silva (2001), teaching in this network requires understanding teaching work as a dynamic process, educational principle and professional and social practice, woven in its relations with the means of production and in the appropriation and dissemination of knowledge and knowledge.

In the wake of studies of this nature, the reflections made by the Study and Research Group on Education, Teacher Formation and Educational Processes with the International Observatory for Inclusion, Interculturality and Pedagogical Innovation, point out the concern with carrying out research that allows the identification and the analysis of institutional policies with possibilities to contribute to the development and consolidation of cultures and practices committed to the pedagogical innovation of the formative and educational processes carried out. From such studies, we come to understand that the development of policies, cultures and practices aligned with the perspectives of pedagogical innovation usually produce "[...] tension, imbalance, conflict and rupture with the existing forms of cultural exclusion and homogenization promoted through the epistemological paths legitimized by educational institutions"[7] (CAMPANI *et al.*, 2018, p. 21).

That was how we initially perceived the proposition of curricular design that systematizes the proposal of the Institutional Program for Continuing Education for Teachers and Education Workers developed by IFC, particularly the concept of formation existing in the proposal built by a collective of teachers. As we can see in Figure 1, the mentioned Program makes it possible to offer short and medium-term courses, *lato sensu* Postgraduate courses in Education with eight emphases, a Master's course in Education and improvement courses.

---

[7] "[...] tensão, desequilíbrio, conflito e ruptura com as formas existentes de exclusão e homogeneização cultural promovidas pelos caminhos epistemológicos legitimados pelas instituições de ensino"

Figure 1 - Program curriculum matrix 2015[8]
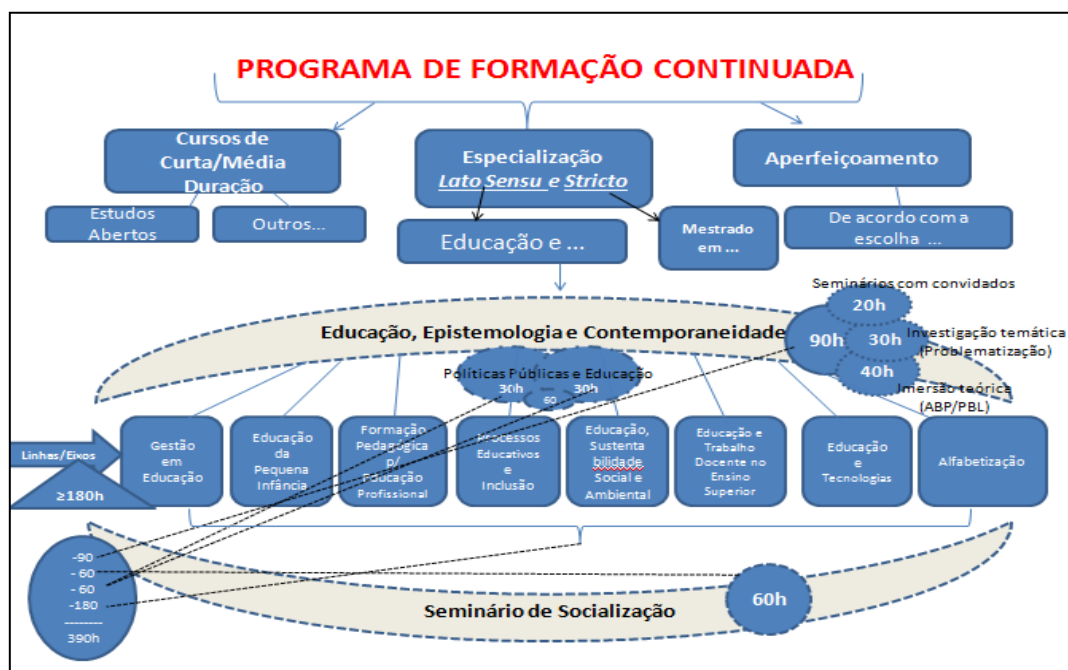
Source: IFC, 2015

The organic character of the different possibilities and opportunities for formation occurs through a curricular organization that contemplates the discussion about Public Education Policies and the epistemological issues of Education and research. Such discussions are based on a pedagogical conception that has *in* and *with* research the articulating principle of formative and educational processes; and, as an objective, to produce innovations. According to Fino (2007, p. 1), "[...] pedagogical innovation implies qualitative changes in pedagogical practices and these changes always involve a critical position, explicit or implicit, in relation to traditional pedagogical practices"[9].

Also according to the author, "innovation necessarily involves practices", and it is not curricular reforms produced outside the context in which they will be carried out that will promote changes, as they require "a process from within, which implies reflection, creativity

---

[8] We read on the image: Title – Program of continuous formation / First line, from left to right: Short/Medium duration courses; Specialization *Lato sensu* and *Stricto*; Improvement / Second line: Open Studies; Other…; Education and…; Master's in…; According choice…; Third line: Subcategory – Education, Epistemology and Contemporaneity; 90h; 20h – Seminars with guests; 30h – Thematic investigation (problematization); 40h – Theoretical immersion (ABP/PBL) / Fourth line, the time bubbles: Public policies 30h and Education 30h, 60h / Fifth line: Arrow – Lines/axes; Management in Education; Early Childhood Education; Pedagogical formation for professional education; Education processes and inclusion; Education, Social and Environmental Sustainability; Education and teaching work in Higher Education; Education and Technology; Literacy / Bottom line (crescent): Socialization Seminar 60h.

[9] "[...] a inovação pedagógica implica mudanças qualitativas nas práticas pedagógicas e essas mudanças envolvem sempre um posicionamento crítico, explícito ou implícito, face às práticas pedagógicas tradicionais"

and a critical and self-critical sense"[10] (*Ibidem*, p. 2). Nor can pedagogical innovation be understood in a reductionist way, as pointed out by Cunha (2016, p. 92), restricted to the "inclusion of digital and technological devices in educational institutions"[11]. In this sense, it is essential to assume that there is a difference between information and knowledge. This difference, according to Cunha, is to understand that:

> The information results from the more or less systematic exposure of the advance of science and human experience that generates an explanatory set about a certain phenomenon. It is generalist and intended to favor the base that contributes to the advancement of science. Knowledge, however, is more complex, as it assumes subjectivity as a value. Knowledge derives from a personal, autobiographical act, as stated by Santos (1988), in which the subject interferes and reframes information, according to his ways of seeing the world and the purpose of his learning. Each learner interacts with information based on their cognitive, cultural and emotional structures and, then, builds their knowledge (CUNHA, 2016, p. 92).[12]

Given this differentiation, considering the role of educational institutions in the dissemination of information and in the construction of knowledge, we understand that active teaching methodologies are potentially capable of contributing to the success of this task. The processes of teaching and learning, anchored in such methodologies, modify the way of being and being in the profession, but also of being and being of the student, tend to expand the conditions of a solid formation, mobilizing both subjects of learning in a dialogical and collaborative. Based on this understanding, among the methodologies used in the Continuing Education Program for Teachers and Education Workers, we make use of the Problem-solving and Problem-Based Learning Methodology to develop the activities of some curricular components, particularly with regard to reflections on Education, Epistemology and Contemporaneity.

It is worth mentioning that the Problematization Methodology, whose first reference is the Arch Method, by Charles Maguerez, known for the scheme presented by Bordenave and Pereira in 1982, consists of the development of five stages, developed from reality or from an outline of reality, namely: observation of reality; key points; theorization; hypotheses of

---

[10] "um processo de dentro, que implica reflexão, criatividade e sentido crítico e autocrítico"
[11] "inclusão de aparatos digitais e tecnológicos nas instituições de ensino"
[12] A informação resulta da exposição mais ou menos sistematizada do avanço da ciência e da experiência humana que gera um conjunto explicativo sobre determinado fenômeno. É generalista e se destina a favorecer a base que contribui para o avanço da ciência. O conhecimento, entretanto, é mais complexo, pois assume a subjetividade como um valor. O conhecimento deriva de um ato pessoal, autobiográfico, como afirma Santos (1988), no qual o sujeito interfere e ressignifica a informação, segundo suas formas de ver o mundo e a finalidade de sua aprendizagem. Cada aprendiz interage com a informação a partir de suas estruturas cognitivas, culturais e emocionais e, então, constrói seu conhecimento (CUNHA, 2016, p. 92).

solution and application to reality (practice). Likewise, Problem-Based Learning/PBL involves seven steps, which are developed through a tutorial group: reading the problem; identifying and clarifying unknown terms; identification of the problems proposed by the statement; formulation of explanatory hypotheses for the problems identified in the previous step (students use this stage of their knowledge on the subject); summary of hypotheses; formulation of learning objectives (it is the identification of what the student should study to deepen the incomplete knowledge formulated in the explanatory hypotheses); individual study of the issues raised in the learning objectives; and return to the tutorial group to re-discuss the problem in light of the new knowledge acquired in the previous study phase (BERBEL, 1998, p. 141-142).

As the author explains, this process aims at formation through the practice of *praxis* and the possibility of forming awareness of *praxis*, notably in problematization, as well as the development of more complex forms of thinking and group learning. Berbel (1998, p. 150) also points out that, both the MP and the ABP/PBL "include hypotheses to be formulated by the students" whose purpose is "to stimulate them from the knowledge they already have, through their previous experiences"[13].

In this way, the author demonstrates that it is possible to develop teaching work considering students as subjects of prior knowledge, deconstructing the belief in the 'blank slate' and, perhaps, overcoming Banking Pedagogy and the positivist perspective of knowledge, based on technical-instrumental rationality.

Problematization Methodology and Problem-Based Learning Methodology in IFC's Continuing Formation Program for Teachers and Education Workers: What do students say?

Studies carried out on teaching in Higher Education have revealed that changes are needed in the way of being and being in the profession, as previously mentioned. This is due, in particular, to the demands of contemporary society. In the studies carried out by Cunha (2016), there are at least three conditions on which it is necessary to reflect. They are: the paradigmatic change; the increasing expansion of digital technologies and their implication in the ways of teaching and learning in academic spaces; and the changes in the world of work, the fluidity of traditional professions and the unpredictability of paths that current students will face.

---

[13] "incluem hipóteses a serem formuladas pelos alunos" que tem como propósito "estimulá-los a partir dos conhecimentos que já dispõem, pelas suas experiências anteriores"

With regard to paradigmatic change, Cunha (2016, p. 89) mentions that, "[...] historically, educational institutions have taken the paradigm of modern science as an assumption, given the historical context in which they were created"[14]. This paradigm, according to the author, based on the positivist perspective of knowledge, is based on technical rationality; takes the nature and observation of its movements as a reference; and seeks to ban the researcher's subjective interpretations, made possible by a rigorous science method. Such a method, in turn, is "constituted basically of verifying the frequency and constancy of the phenomena in order to guarantee: the rigor of science, as well as the neutrality in its production"[15] (CUNHA, 2016, p. 89-90).

According to the author and guided by other studies, we can observe that the impacts produced by this conception of science in school education allow us to understand and analyze the predominant conception of educational and formative processes. After 300 years of positive science, the figure of the teacher as the holder and transmitter of the knowledge historically produced and accumulated by science/scientists, under the rigor of an objective/mathematical method, is still recognized as a model of socially accepted teacher. In the same way, students are recognized as individuals who repeat through tireless exercises what science and scientists have produced or produce, without question. It should be mentioned, however, that:

> Criticism of the paradigm of modern science helps us to outline other possibilities of doing science, incorporating socio-cultural and subjective dimensions in understanding reality. We understand, mainly, that the epistemological dialogue is linked to the affective dialogue and that reason and emotion are inseparable constituents of man, as announced by Freire and Shor (1986) (CUNHA, 2016, p. 90).[16]

Bearing in mind the questions of a paradigmatic order, a second question needs to be considered when we take into account the teaching work and pedagogical innovation in contemporary times: the "[...] increasing expansion of digital technologies and their implication in the ways of teaching and learning in academic spaces"[17] (*Ibidem*, p. 91). As previously mentioned, innovation cannot be understood as a synonym for the inclusion of digital and

---

[14] "[...] historicamente, as instituições escolarizadas assumiram o paradigma da ciência moderna como pressuposto, dado o contexto histórico em que foram criadas"

[15] "constituído basicamente em verificar a frequência e a constância dos fenômenos de modo a garantir: o rigor da ciência, assim como a neutralidade em sua produção."

[16] A crítica ao paradigma da ciência moderna nos ajuda a delinear outras possibilidades de fazer ciência, incorporando as dimensões socioculturais e subjetivas na compreensão da realidade. Compreendemos, principalmente, que o diálogo epistemológico está articulado ao diálogo afetivo e que razão e emoção são constituintes inseparáveis do homem, como anunciaram Freire e Shor (1986) (CUNHA, 2016, p. 90).

[17] "[...] crescente ampliação das tecnologias digitais e sua implicação nas formas de ensinar e aprender nos espaços acadêmicos"

technological devices, but it necessarily involves changing the attitude of teachers and students in relation to the construction and appropriation of knowledge and formation. It is therefore essential to move away from the "modern paradigm of universal truths and laws" and "interact with the idea of knowledge in motion, always relative and liable to change"[18] (CUNHA, 2016, p. 92).

As a third factor of impact of the demands and influences of contemporaneity on teaching work, particularly in higher education, according to the studies by Cunha (2016), but which we understand is reaching basic education, particularly its last stage, are the "[.. .] changes in the world of work, the fluidity of traditional professions and the unpredictability of the paths that current students will face in this area"[19] (*Ibidem*, p. 93). Such changes impact not only the teaching work, but also the formation and educational processes. In this context, "[...] the knowledge that is being built today may no longer be useful in a very short time, with profound repercussions on the trajectories of the subjects, even in the context of the same profession"[20] (CUNHA, 2016, p. 93).

Bearing in mind this scenario, the educational and formative processes need to be rethought in order to take into account the place and the socio-cultural, political, economic and emotional condition of each and every one in society. In this sense, we understand that it is necessary to change the epistemological bases, since:

> The innovations are materialized by the recognition of alternative forms of knowledge and experiences, in which objectivity and subjectivity, common sense and science, theory and practice, culture and nature are interwoven, nullifying dichotomies and seeking to generate new knowledge. Understood as a paradigmatic rupture, they demand reconfiguration of knowledge from teachers and favor the recognition of the need to work towards transforming, as Santos (2000, p. 346) refers, "restlessness" into emancipatory energy. They involve the recognition of difference and imply, to a large extent, a job that consists, especially, in managing social relations with its students (CUNHA, 2016, p. 94).[21]

---

[18] "paradigma moderno das verdades e leis universais" e "interagir com a ideia de conhecimento em movimento, sempre relativo e passível de mudança"

[19] "[...] mudanças no mundo do trabalho, da fluidez das tradicionais profissões e da imprevisibilidade dos trajetos que, nessa área, enfrentarão os atuais estudantes"

[20] "[...] o conhecimento que hoje se constrói pode não mais ser útil daqui a muito pouco tempo, com profundas repercussões nas trajetórias dos sujeitos, mesmo no contexto de uma mesma profissão"

[21] As inovações se materializam pelo reconhecimento de formas alternativas de saberes e experiências, nas quais se imbricam objetividade e subjetividade, senso comum e ciência, teoria e prática, cultura e natureza, anulando dicotomias e procurando gerar novos conhecimentos. Entendidas como ruptura paradigmática, exigem dos professores reconfiguração de saberes e favorecem o reconhecimento da necessidade de trabalhar no sentido de transformar, como refere Santos (2000, p. 346), a "inquietude" em energia emancipatória. Envolvem o reconhecimento da diferença e implicam, em grande medida, um trabalho que consiste, especialmente, em gerir relações sociais com seus alunos (CUNHA, 2016, p. 94).

Attentive to these studies and to the IFC reality, we focus on conducting research that has produced reflections on theoretical and practical aspects in a global, but also institutional, local context. In this sense, we bring a snippet of these studies carried out with students enrolled in the Postgraduate Program of IFC - Campus Camboriú and their teachers for this article. In the analyzes we carry out, we seek to identify the understanding of these subjects directly involved in the educational and formative processes of teachers in the mentioned formation program and how they understand pedagogical innovation. The responses obtained and systematized in a previous publication reveal that:

> [...] pedagogical innovation is related to the use of information and communication technology resources and active methodologies. Apparently, however, they attribute the innovative character of the pedagogical activity, in addition to technicality, by giving preponderance to the purposes of educational action in relation to the technical means used. In this way, they emphasize the criticality resulting from reflective thinking: "use of methodologies that favor knowledge and critical reading of reality" (SILVA *et al.*, 2018, p. 1271, our highlights).[22]

Bearing in mind this understanding and continuing our investigations, particularly with regard to teaching in higher education, we ask students of the IFC Postgraduate Program in Education - Camboriú Campus to signal which of the teaching methodologies or strategies used by their teachers favor knowledge and critical reading of reality. Among the answers, we observed that the realization of experiences with activities based on problems, particularly through the methodology of problematization, was mentioned as an innovative approach for students. The students consider that this process gave them the opportunity to develop a *"[...] process, as dialogical and collaborative, contributing to self-education"*[23] (E1), and that this methodology, by breaking the traditional character of the class, allows students students develop positions and reflections in *"[...] a critical, reflective and transformative way of reality"*[24] (E2).

According to E3,

> *When we sit in a classroom desk, positioned as a student, the posture that has always been adopted and that has been taught to us since the early school years automatically appears. Sit and wait for what will be postulated by the knowledge holders. And this was the position I found myself in when I came*

---

[22] [...] a inovação pedagógica está relacionada com a utilização de recursos de tecnologias de informação e comunicação e de metodologias ativas. Aparentemente, porém, atribuem o caráter inovador da atividade pedagógica, para além do tecnicismo, ao dar preponderância às finalidades da ação educativa em relação aos meios técnicos utilizados. Desse modo, ressaltam a criticidade resultante do pensamento reflexivo: "utilização de metodologias que favorecem o conhecimento e a leitura crítica da realidade" (SILVA *et al.,* 2018, p. 1271, grifos dos autores).

[23] *"[...] processo, como dialógico e colaborativo, contribuindo para a autoformação"*

[24] *"[...] forma crítica, reflexiva e transformadora da realidade"*

across PBL. To my surprise, being in the role of co-author of my knowledge caused discomfort and forced me to leave the comfort zone in search of my knowledge. Starting from a problem situation, raising hypotheses and assumptions, caused a reflection on what I really knew about the subject. [...] it was an enriching experience, which I intend to improve, to take it into my teaching practice.[25]

In this statement, we observed how the experience of the PM and the PBL not only contributed to the process of formation of the postgraduate student but also made her think about her own practice. It is also important to say that experiencing these methodologies, for many postgraduate students, represented a novelty: *"[...] it was the first contact I had with this work methodology and I believe that [...] it is probably one of the best ways to to learn, because it gives the student responsibility for his learning"*[26] (E26). With regard to the role of teachers in this methodology and in the organization of the curriculum, some responses indicate that the lived experience allowed students to understand that the presence of the teacher in the classroom starts to have the purpose of organizing the discussions, that is, *"[...] is someone who would conduct the process so that everyone could present their ideas and research"*[27] (E7). In this regard, there are students who state that "*[...] the methodology is challenging for the teacher in the sense of encouraging the student to leave his/her comfort zone, transposing the role of the student from listener to participatory subject of knowledge formation, forming opinions and responding to problems*"[28] (E11).

Another important statement, which allows establishing relations with the dialogues established with Cunha in this text regarding the need for paradigmatic changes today, can be seen in the following answer:

> *The methodology breaks with the linearity and segmentation of the proposed content, removes both the teacher and the students from the comfort zone in which they are used, the traditional way of teaching, instead of the learning go from one to all, it happens from all and to all, promoting student autonomy, which, when seeking information, ends up becoming much more critical and*

---

[25] *Quando nos sentamos em uma carteira de sala de aula, posicionado como aluno, automaticamente surge a postura por sempre adotada e que nos foi ensinada desde os primeiros anos escolares. Sentar e aguardar o que será postulado pelos detentores do conhecimento. E foi esta a posição em que me encontrava quando me deparei com PBL. Para minha surpresa, estar no papel de coautora do meu conhecimento causou um desconforto e obrigou-me a sair da zona de conforto em busca de meus conhecimentos. Partir de uma situação problema, levantando hipóteses e suposições causou uma reflexão sobre o que eu realmente conhecia sobre o assunto. [...] foi uma experiência enriquecedora, a qual pretendo aperfeiçoar, para levá-la em minha prática docente.*
[26] *"[...] foi o primeiro contato que tive com essa metodologia de trabalho e acredito que [...] é provavelmente uma das melhores maneiras de se aprender, porque dá responsabilidade ao estudante sobre o seu aprendizado"*
[27] *"[...] é alguém que conduziria o processo de forma que todos pudessem expor suas ideias e pesquisas."*
[28] *"[...] a metodologia é desafiadora para o docente no sentido de incentivar o aluno a sair da sua zona de conforto, transpor o papel do aluno de ouvinte para sujeito participativo da formação do conhecimento, formador de opiniões e de respostas aos problemas"*

> *reflective than simply listening to the teacher speak in an expository class* (E13).[29]

We also observed that the students noticed changes in the attitude of teachers and their peers, since, based on this curricular/pedagogical experience, the roles of both are reviewed, leaving them to "*[...] leave their comfort zone to take on new postures, [...] both benefit from this model in terms of commitment and sharing*"[30] (E10). In addition, they mentioned in their responses that "*[...] this learning format allows the student autonomy and commitment, as it is not something ready and finished, knowledge is built collectively, with the participation of everyone*"[31] (E9). Among the positive aspects highlighted by the students, it was mentioned that this way of organizing the curriculum requires:

> *[...] rethinking the educators process of "teaching". These need to perceive themselves as mediators in a continuous learning process in their teaching practice. The teaching practice should allow and encourage the student to think in a critical, creative and reflective way, where the final result - "grades" - is not the primary objective, but one that provides the student with the construction and development of his own knowledge and his identification as an active and independent subject, who develops his skills and knowledge necessary to build a society that stimulates new ways of experiencing the construction of knowledge. This methodology demands multidisciplinary learning, which enables the connection between the disciplines and requires the continuous improvement of the teacher, which also provides the integration between the disciplines (E11).*[32]

It should also be mentioned that students understand that the Problematization and Problem-Based Learning Methodology even changes the conception of teaching work and requires a theory-practice relation:

> *The teacher is no longer the powerful untouchable who knows everything. He is a democratic and emancipatory subject who assists the skills and*

---

[29] *A metodologia rompe com a linearidade e segmentação de conteúdo proposto, tira tanto o professor quanto os alunos da zona de conforto em que estão habituados, o modo tradicional de ensino, ao invés de a aprendizagem partir de um e ir para todos, ela acontece de todos para todos, promovendo a autonomia do aluno, que, ao buscar informações, acaba se tornando muito mais crítico e reflexivo do que simplesmente ouvir o professor falar em uma aula expositiva.* (E13).

[30] "*[...] sair da sua zona de conforto para assumirem novas posturas, [...] ambos ganham com esse modelo no que diz respeito a comprometimento e compartilhamento*"

[31] "*[...] esse formato de aprendizagem possibilita ao aluno autonomia e compromisso, pois não é algo pronto e acabado, o conhecimento é construído coletivamente, tendo a participação de todos*"

[32] *[...] um repensar no processo de "ensinar" dos educadores. Estes precisam perceber-se como mediadores em contínuo processo de aprendizagem em sua prática docente. A prática docente deve permitir e incentivar o aluno a pensar de maneira crítica, criativa e reflexiva, onde o resultado final – "notas" – não seja o objetivo primordial, mas sim aquele que propicia ao estudante a construção e desenvolvimento do seu próprio saber e sua identificação como sujeito ativo e independente, que desenvolve suas habilidades e saberes necessários à construção de uma sociedade que estimula novas maneiras de experienciar a construção do conhecimento. Essa metodologia demanda uma aprendizagem multidisciplinar, o que possibilita a conexão entre as disciplinas e requer o aperfeiçoamento ininterrupto do docente, o que propicia também a integração entre as disciplinas.* (E11).

> competences of each student and makes the student the protagonist of the learning process. It allows the student to share his experiences, livings and opinions, identify the same opinion or reflect on new ones. He learns from his own reflection and research, mediated by the teacher. He becomes a critical subject, emancipated and autonomous from his learning, he learns with doubt and with the desire to seek more knowledge and understanding. It encourages the student to answer questions and keeps him motivated and attentive until he finds the answers, or more questions for the problematized topic. It requires the student to take a proactive stance in order to question, discuss, evaluate, and strengthen learning. It allows the student to leave the guesswork and go to the scientific foundations, through research, studies, readings and observations. PBL reaches students in a meaningful and concrete way, through its problematization, students feel valued, they feel part of a knowledge process, and not just the audience of a pedagogical discourse (E16).[33]

This response, although extensive, demonstrates the richness of adopting forms of organization of the curriculum that allow us to innovate our practices and move in the direction of building and strengthening new paradigms of education and science. These paradigms that enable other looks at reality, that can teach us to "*[...] listen to others, exercise dialogue, actively participate in the learning process [...]*"[34] (E19).

The experience of this process provoked reflections on how to conceive knowledge itself, as we can see in the following answer:

> During this practice, I realized the different ways of analyzing and conceiving knowledge, and that the elaborations and reflections are directly influenced by our professional and / or life experiences, and this opportunity for exchanging knowledge induces new re-elaborations of the knowledge in question. I considered it a dynamic, engaging and motivating class (E43).[35]

In addition to these aspects, among the students' responses we have the indication that both processes (PM and PBL) "*[...] require a different effort from the conventional one that modifies the routine of face-to-face meetings, in which subjects are replaced by situations-*

---

[33] *O professor não é mais o poderoso intocável que sabe de tudo. É um sujeito democrático e emancipador que auxilia as habilidades e competências de cada aluno e faz do estudante o protagonista do processo de aprendizagem. Proporciona ao aluno dividir suas experiências, vivências e opiniões, identifica a mesma opinião ou reflete sobre novas. Aprende com sua própria reflexão e pesquisa, mediada pelo professor. Torna-se sujeito crítico, emancipado e autônomo de sua aprendizagem, aprende com a dúvida e com a vontade de buscar mais conhecimento e compreensão. Instiga o aluno a responder perguntas e o mantém motivado e atento até encontrar as respostas, ou mais perguntas para o tema problematizado. Exige que o aluno tenha uma postura proativa no sentido de questionar, discutir, avaliar, e fortalece a aprendizagem. Permite que o aluno saia do achismo e parta para os fundamentos científicos, através de pesquisas, estudos, leituras e observações. A PBL alcança os alunos de forma significativa e concreta, através de sua problematização, os alunos se sentem valorizados, sentem-se parte de um processo do conhecimento, e não apenas plateia de um discurso pedagógico. (E16).*
[34] "*[...] escutar os demais, exercitar o diálogo, participar ativamente no processo de aprendizagem [...]*"
[35] *Durante essa prática, percebi as diferentes formas de analisar e conceber o conhecimento, e que as elaborações e reflexões sofrem influências diretas de nossas experiências profissionais e/ou de vida, e essa oportunidade de trocas de saberes induz a novas reelaborações do conhecimento em questão. Considerei uma aula dinâmica, envolvente e motivadora. (E43).*

problem"[36] (E43), and "*the exercise of freedom to seek knowledge from various sources, such as the internet, books, articles, etc.*"[37] (E62).

Final considerations

The reflections made in this article, particularly with regard to listening to the voices of students in the Continuing Formation Program for Teachers and Education Workers, reveal the importance of returning to the founding elements of the current research carried out by the Study and Research Group in Education, Teacher Formation and Educational Processes, namely: curricular innovation, dialogicity and research.

With regard to curricular innovation, particularly with regard to the implementation of proposals for initial and continuing teacher formation, we have identified that the understanding of the complex and plural dynamics that involve teaching work in Federal Institutes is also more urgent and also the construction of spaces and times for self-formation of the collective of teachers of the institution itself, that is, it is urgent to think about the formation of formators[38]. We say this considering that the implementation of curricula with innovative proposals for initial and continuing teacher formation offered at Federal Institutes has demanded the opening of new vacancies and the creation of new courses. Such demands are raised both by the community in general, which seeks the institution in search of formation, and by the public and private bodies and institutions in the region, which require professionals with the characteristics indicated by Cunha in this article.

In this way, we understand that the formation of formators who reach this perspective requires us to understand the plurality of requirements that involve teaching, understanding it "[...] as a complex action that requires disciplinary, cultural, affective, ethical, methodological knowledge, psychological, sociological and political"[39] (CUNHA, 2018, p. 10). Thinking about formation in this perspective requires assuming that the principles of the intended formation should aim to provide formators with the knowledge that involves the methodological and

---

[36] "*[...] exigem um empenho diferente do convencional que modifica a rotina dos encontros presenciais, nos quais se substitui disciplinas por situações-problema*"

[37] "*o exercício da liberdade de buscar o conhecimento em várias fontes, como internet, livros, artigos etc.*"

[38] Formators here is understood as those who form/educate, the role of the teacher of teachers, as in the use of the word formation as a translation of "*formação*" (which would be translated as train in a literal way) the intent is to incorporate the meanings that go beyond the simple training, when forming someone not just a training of skills occurs, there is also a construction of character, culture, knowledges, citizenship, the construction of an integral human being (Translator notes).

[39] "*[...] como ação complexa que requer saberes disciplinares, culturais, afetivos, éticos, metodológicos, psicológicos, sociológicos e políticos*"

epistemological aspects of pedagogical practice, which may contribute to the production of changes in curricula and pedagogical practices, but also the clarity about the required corporate project when an education perspective and a conception of society are committed to the socially referenced quality of educational and formative paths, with the inclusion and experience of citizenship and, therefore, of democracy.

Therefore, we understand that such a perspective of formation, the concept of education and the project of society mentioned must be built collectively, that is, it involves a second fundamental aspect of our studies: the dialog between those involved in the educational and formative processes. The understanding of dialogue that we assume is that of "[...] a meeting that reflects and reflects the actions of its subjects addressed to the world to be transformed and humanized"[40], and therefore "[...] cannot reduce it is an act of depositing ideas from one subject to another, nor does it become a simple exchange of ideas to be consumed by the exchange students"[41] (FREIRE, 1987, p. 45).

As we can see, this understanding of dialogue necessarily implies attentive listening to the other, listening to what perhaps words alone do not say. It requires, therefore, not only to be aware of what the subjects of the educational process tell us, but above all to know how to read and interpret the reality that these subjects live and what needs to be transformed in this reality. This listening requires an awareness of reality, surpassing, as mentioned by Freire (1979, p. 15), "[...] the spontaneous sphere of apprehension of reality, in order to reach a critical sphere in which reality occurs as a knowable object and in which man takes an epistemological position"[42]. Hence the third fundamental aspect of our studies, research. Research, in our perspective, implies constantly inquiring about reality and phenomena having as a horizon the societal project to which we are committed: a just, inclusive, intercultural, plural, secular and democratic society.

As a possible synthesis of our reflections, the contributions of the authors and the listening of students, in the perspective of the materialization of innovative pedagogical and curricular processes, we agree with Cunha (1998, p. 199): in the formative processes, "[...] teaching must incorporate investigative methodological processes. In this regard, it is important to note that there is no research without question, without question, without problem, and these

---

[40] "[...] encontro que se solidariza o refletir e o agir de seus sujeitos endereçados ao mundo a ser transformado e humanizado"
[41] "[...] não pode reduzir-se a um ato de depositar ideias de um sujeito no outro, nem tampouco tornar-se simples troca de ideias a serem consumidas pelos permutantes"
[42] "[...] a esfera espontânea de apreensão da realidade, para chegarmos a uma esfera crítica na qual a realidade se dá como objeto cognoscível e na qual o homem assume uma posição epistemológica"

are only born from reading how the scientific field is installed in practice, in reality". The study, therefore, reveals that innovating pedagogically in the development of curricula, policies and practices requires both dialogicity between those involved in educational and formative processes and problematizing reality through methodologies that have research as one of the founding principles of formation.

REFERENCES

BARDIN, L. **Análise de conteúdo**. São Paulo: Edições 70, 2011. 229p.

BRASIL. Lei n. 11.892, de 29 de dezembro de 2008. Institui a Rede Federal de Educação Profissional, Científica e Tecnológica, cria os Institutos Federais de Educação, Ciência e Tecnologia, e dá outras providências. **Diário Oficial da União**, Brasília, DF, Seção 1, p. 1, 30 dez. 2008. Available: https://bit.ly/2xKtith. Access: 20 Nov. 2018.

BERBEL, N. N. "Problematization" and Problem-Based Learning: different words or different ways? **Interface** – Comunicação, Saúde, Educação. Botucatu, v. 2, n. 2, p. 139-154, fev. 1998. ISSN 1807-5762. Available: https://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414-32831998000100008&lng=pt&tlng=pt. Access: 2 July 2019. DOI: http://dx.doi.org/10.1590/S1414-32831998000100008

CAMPANI, A. *et al.* Inovação pedagógica na universidade. **Revista Educação e Fronteiras**, Dourados/MS, v. 8, n. 22, p. 18-34, jan./abr. 2018. Available: http://ojs.ufgd.edu.br/index.php/educacao/article/view/9041. Access: 2 July 2019. DOI: https://doi.org/10.30612/eduf.v8i22.9041

CUNHA, M. I. Políticas públicas e docência na universidade: novas configurações e possíveis alternativas. **Revista Portuguesa de Educação**, Braga, v. 16, n. 2, p. 45-68, 2003. Available: https://bit.ly/2GDeRN0. Access: 2 July 2019.

CUNHA, M. I. Prefácio. *In*: CASSIANI, S. *et al.* **Lugares, sujeitos e conhecimentos**: a prática docente universitária. Florianópolis: UFSC, 2008.

CUNHA, M. I. Inovações na educação superior: impactos na prática pedagógica e nos saberes da docência. **Em Aberto**, Brasília, v. 29, n. 97, p. 87-101, set./dez. 2016.

CUNHA, M. I. Docência na Educação Superior: a professoralidade em construção. **Educação**, Porto Alegre, v. 41, n. 1, p. 6-11, jan.-abr. 2018. e-ISSN 1981-2582. Available: http://revistaseletronicas.pucrs.br/ojs/index.php/faced/article/view/29725. Access: 2 July 2019. DOI: http://dx.doi.org/10.15448/1981-2582.2018.1.29725

FERNANDES, S. R. de S.; HOEPERS, I. da S.; SILVA, J. D. F. da. A complexidade do trabalho docente no contexto dos Institutos Federais: vozes de um campus do IFC. *In*:

REUNIÃO ANUAL DA ASSOCIAÇÃO NACIONAL DE PÓS-GRADUAÇÃO E PESQUISA EM EDUCAÇÃO, 34., 2011, Natal. **Anais** [...]. Natal: ANPEd, 2011. p. 1-17. Available: https://bit.ly/2MqH11n. Access: 20 May 2019.

FINO, C. N. Inovação e supervisão Inovação Pedagógica: significado e campo (de investigação). *In*: COLÓQUIO DCE, 3., 2007, Funchal. **Anais** [...]. Funchal: UMA, 2007. p. 1-11. Available: https://bit.ly/2SdZy0t. Access: 20 June 2019.

FREIRE, P. **Conscientização, teoria e prática da libertação**: uma introdução ao pensamento de Paulo Freire. São Paulo: Cortez & Moraes, 1979.

FREIRE, P. **Pedagogia do oprimido**. Rio de Janeiro: Paz e Terra, 1987.

IFC. **Projeto pedagógico do Programa de Formação continuada de trabalhadores da Educação**. Camboriú, 2015.

SILVA, F. L. G. R. *et al*. Inclusão, interculturalidade e inovação pedagógica: problematização de práticas e de percepções de docentes, discentes e coordenadores. **Revista Ibero-Americana de Estudos em Educação**, Araraquara, v. 13. n. esp. 2, p. 1265-1280, set. 2018. ISSN: 1982-5587. Available: https://periodicos.fclar.unesp.br/iberoamericana/article/view/11643. Access: 2 July 2019. DOI: 10.21723/riaee.v13.nesp2.set2018.11643

SILVA, F. L. G. R. *et al*. O exercício da docência na educação profissional e tecnológica: o que dizem os docentes. **Revista Eixo**, Brasília-DF, v. 8, n. 1, jan./jun. 2019. Available: http://revistaeixo.ifb.edu.br/index.php/RevistaEixo/article/view/580. Access: 2 July 2019. DOI: https://doi.org/10.19123/eixo.v8i1.580

How to quote this article