INTERLOCUTIONS BETWEEN QUALITATIVE CONTENT ANALYSIS AND WEBQDA DATA SOFTWARE IN EDUCATIONAL RESEARCH

INTERLOCUÇÕES ENTRE ANÁLISE QUALITATIVA DE CONTEÚDO E SOFTWARE DE DADOS WEBQDA NA PESQUISA EM EDUCAÇÃO

INTERLOCUCIONES ENTRE ANÁLISIS CUALITATIVO DE CONTENIDO Y SOFTWARE DE DATOS WEBQDA EN LA INVESTIGACIÓN EN EDUCACIÓN

Denise Santos da CRUZ[1]
Adriana Moreira da ROCHA-VEIGA[2]
Luís Miguel Dias CAETANO[3]

ABSTRACT: The article presents a theoretical-methodological approach to qualitative research in education, of the descriptive-interpretative type, and the possible interlocutions between Qualitative Content Analysis and the Qualitative Data Analysis Software webQDA. The memorials and reports of pedagogues working in public schools of Early Childhood Education and Early Years of Elementary School were analyzed, from the Freirean perspective, the experience of the self in Jorge Larrosa and the (self) formation in Marie-Christine Josso. The concepts of Content Analysis (BARDIN, 2016) and the webQDA Qualitative Data Analysis Software are presented, as well as the approximation points between the two methods of qualitative data analysis. In the end, it is described how the application of these methods contributed to the researchers' work, stimulating other pairs, so that research in education can advance towards the use of qualitative information analysis technologies to facilitate the construction of the research corpus.

KEYWORDS: Research in education. Content analysis. Software webQDA.

RESUMO: O artigo apresenta recorte teórico-metodológico de pesquisa qualitativa em educação, do tipo descritivo-interpretativa, e as possíveis interlocuções entre a Análise Qualitativa de Conteúdo e o Software de Análise Qualitativa de Dados webQDA. Foram analisados os memoriais e os relatos de pedagogos atuantes em escolas públicas de Educação Infantil e dos Anos Iniciais de Ensino Fundamental, a partir da perspectiva Freireana, da experiência de si em Jorge Larrosa e da (auto)formação em Marie-Christine Josso. Apresenta-se as conceituações da Análise de Conteúdo (BARDIN, 2016) e do Software de Análise Qualitativa de Dados webQDA, bem como os pontos de aproximação entre os dois métodos de

---

[1] Federal University of Santa Maria (UFSM), Santa Maria – RS – Brazil. Postdoctoral Student in Education. ORCID:https://orcid.org/0000-0003-0223-8795. E-mail: denisedacruz57@gmail.com

[2] Federal University of Santa Maria (UFSM), Santa Maria – RS – Brazil. Associate Professor in the Department of Educational Foundations and permanent Professor in the Graduate Programs in Education and Public Policy and Educational Management. PhD in Education (UNICAMP). ORCID: https://orcid.org/0000-0002-5804-3375. E-mail: adrianaufsm@gmail.com

[3] University of International Integration of Afro-Brazilian Lusophony (UNILAB), Fortaleza – CE – Brazil. Professor. PhD in Education - Educational Technology (UAc/Portugal). ORCID: https://orcid.org/0000-0002-0907-831x. E-mail: prof.migdias@gmail.com

análise qualitativa de dados. Ao final, descreve-se como a aplicação destes métodos contribuíram para o trabalho dos pesquisadores, estimulando outros pares, para que a pesquisa em educação possa avançar no sentido do uso das tecnologias de análise qualitativa de informações para facilitar a construção do corpus de pesquisa.

PALAVRAS-CHAVE: *Pesquisa em educação. Análise de Conteúdo. Software webQDA.*

RESUMEN: *El artículo presenta un abordaje teórico-metodológico de la investigación cualitativa en educación, de tipo descriptivo-interpretativo, y las posibles interlocuciones entre el Análisis Cualitativo de Contenido y el Software Cualitativo de Análisis de Datos webQDA. Se analizaron los memoriales y relatos de pedagogos que actúan en escuelas públicas de Educación Infantil y Primeros Años de la Enseñanza Fundamental, desde la perspectiva freireana, la experiencia del yo en Jorge Larrosa y la (auto)formación en Marie-Christine Josso. Se presentan los conceptos de Análisis de Contenido (BARDIN, 2016) y el Software de Análisis Cualitativo de Datos webQDA, así como los puntos de aproximación entre ambos métodos de análisis cualitativo de datos. Al final, se describe cómo la aplicación de estos métodos contribuyó al trabajo de los investigadores, estimulando otros pares, para que la investigación en educación avance hacia el uso de tecnologías cualitativas de análisis de información para facilitar la construcción del corpus de investigación.*

PALABRAS CLAVE: *Investigación educativa. Análisis de contenido. Software webQDA.*

Introduction

Research is a complex task. It is necessary to get involved and undress oneself from previous judgments, but not from the experience that allows knowing and, also, not knowing. When research moves the researcher, it makes him uncomfortable and, at the same time it gives him pleasure, it makes the investigative act more challenging and, therefore, it instigates him to investigate his object of study.

In this research, in particular, it was stimulating to put together the various pieces that in the end fit together and gave direction to the goal of production, referenced in the Scientific Bricolage, from Kincheloe (2006, 2007), Kincheloe and McLaren (2006), Kincheloe and Berry (2007) and Berry (2007). As we penetrated the network of meaning, organized with the information gathered, from the collaborators' training memorials and reflective accounts, we realized the advantages of the qualitative approach and how it could behave as scientific research, methods, instruments and techniques of data analysis. Synthetically, we reinforce the idea of the methodological flow of Scientific Bricolage, still emerging in Research in Education.

The information resulting from the research - the academic memos, the reflective questions, and the portfolios - were described and commented on from the records of images and the testimonies of the participants, in the year 2020, and two doctors in Education, a master's degree and a doctoral student in the Graduate Program in Education, working in municipal public schools, were selected. All participants are in the Program or are graduates of it, which gives them a common selection criterion. The resulting materialities, demonstrated throughout the text, were analyzed from theoretical-conceptual references of relevance to Education and Teacher Education (FREIRE, 1996, 2000, 2013, 2020; JOSSO, 2007, 2010; LARROSA, 2011; SENNETT, 2019).

That said, we reinforce the decision to enter the field of research without apriorism, to weave together the weft, dyeing here and there with colors and feelings in the shared desire to experience learning in public schools, and in the primordial context of school learning.

Methodological interweaving of information/data

The fluidity of this research suggests the production of new paths and openings in educational research. According to Rodrigues et al. (2016, p. 981, our translation), "this perspective is not restricted only to the field of scientific research, specifically, because, in fact, it is a multireferential reason to understand reality and everything that involves the human being. Notably, a continuous, infinite learning, encompassing the human life cycle in all existence and depth.
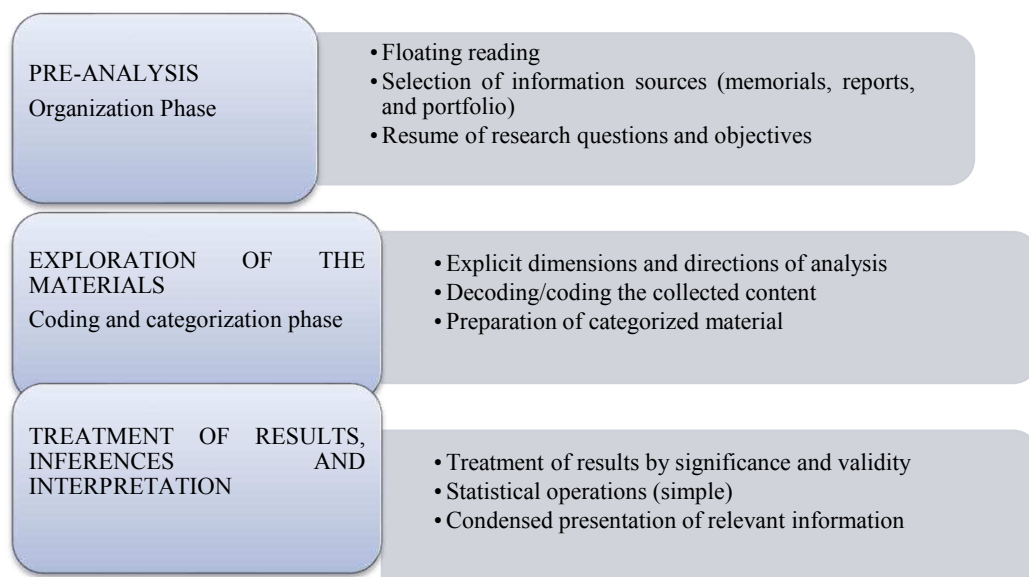
Our goal was to give meaning to the processes of "weaving the weft together", moving the good experiences with pedagogical handicrafts in teaching into learning environments reinvented by the artisan educators and students, producing pedagogical bricolages. In summary, the research information was: important excerpts from the training memorials; important excerpts from the narratives arising from the reflective question and, finally, the handcrafted accounts of the educators' portfolio practices.

This information was analyzed, and each elaborated category was sized by the resonance with the memorial and the reflective report, and of these with the theoretical referential. With this informative material in hand, the data analysis technique was defined to enhance the stated categories. For this, we systematically read all the information found, once, twice, three times, over and over again, until the content impregnated our thoughts and self-organized itself into networks of meaning, opting first for Qualitative Content Analysis (BARDIN, 2016).

The Content Analysis advocated by Laurence Bardin (2016, p. 42, our translation) consists of a "set of techniques for analysis of communications aiming to obtain by systematic and objective procedures of content description of messages, which allow the inference of knowledge relating to the conditions of production/reception of these messages." In short, this is a model that notably organized the research, inhibited ambiguities, and constituted itself as a founding premise for the categorization of the research findings, by the internal and systematic coherence between the phases structured by Bardin (2016), imprinting rigor and depth in the treatment of the information. The structure advocated by the aforementioned author requires three (03) phases defined as follows: (1) pre-analysis; (2) exploration of the material, coding and categorization; (3) treatment of the results, inferences and interpretation.

Next, we present in Figure 1 the interpretation of Bardin's Model (2016), according to its unfolding in the research.

Figure 1 – Bardin's Model Interpretation (2016).

PRE-ANALYSIS Organization Phase	• Floating reading • Selection of information sources (memorials, reports, and portfolio) • Resume of research questions and objectives
EXPLORATION OF THE MATERIALS Coding and categorization phase	• Explicit dimensions and directions of analysis • Decoding/coding the collected content • Preparation of categorized material
TREATMENT OF RESULTS, INFERENCES AND INTERPRETATION	• Treatment of results by significance and validity • Statistical operations (simple) • Condensed presentation of relevant information

Source: Adapted from CRUZ (2022)

Next, seeking a strategy for interweaving with qualitative data analysis, we chose the webQDA (web qualitative data analysis) software for "qualitative data analysis, based on web resources, for researchers using qualitative research methods. It allows analyses of text, image, video, audio, tables, PDF files, videos, among others, collaboratively, synchronously or asynchronously" (webQDA, 2017), which made it possible to structure the coding of information, ensuring systematization and analytical transparency.

The webQDA allowed the structured coding of information and ensured a faster and more effective management of information; it also helped to resolve the difficulties of gauging the impact of the answers on the coding, categorization, and interpretation of the results, allowing our inferences from what we were able to process with the support of the Software, taking into account the same configuration of the content analysis.

The Qualitative Data Analysis by webQDA (software available with several options of access on the internet, from free for fifteen days) followed the treatment phases close to the content analysis: organization of the pre-analyzed material, the exploration of the material from the codified categories, and the interpretation of the results, allowing inferences to be drawn from what was processed with the support of the software. The way this analytical process was carried out was instigating: without losing the characteristic of a predominantly qualitative research, we sought quantitative data to the extent that they would contribute to clarify important aspects of the study, enabling the empirical support of the thematic proposition.

We infer that the WebQDA operations are consistent with Bardin's Content Analysis (2016), and helped us to establish the emerging categories of analysis; systematize categories in levels of complexity; minimize data entry times when reading files in different formats. The collective work of the research was favored, because the open structuring of categories supported the use of webQDA with the assumptions of Qualitative Content Analysis (BARDIN, 2016).

This finding confirmed what was indicated by Souza, Costa and Souza (2014), when they stated that, in the first stage, the survey and organization of data in webQDA, from "interviews, online interactions, classroom observations, open-ended questions from questionnaires, videos, online forums, YouTube comments, recordings of video conferences and remote classes etc.", were relevant to the floating or active reading, signaled, among others, by Qualitative Content Analysis.

The analysis by WebQDA, performed in on line access, followed treatment phases that approached the Content Analysis proposed by Bardin (2016): in the organization of the pre-analyzed material; in the exploration of the material from the codified categories; in the interpretation of the results with inferences from the support provided by the results of the Software.

Positively, the Software, for being a Qualitative Data Analysis device, facilitated the researchers' work and enhanced the analytical reading of the information. In this bias, it

organized and prepared the treatment of the information, presenting the behavior of the categories in the information from each teacher and the group of collaborating teachers.

In Table 1, below, we demonstrate the points of approach between Content Analysis (BARDIN, 2016) and the Content Analysis Software - webQDA.

Table 1 – Description of techniques and phases of qualitative content analysis

QUALITATIVE CONTENT ANALYSIS (BARDIN, 2016)	QUALITATIVE DATA ANALYSIS WITH webQDA® SOFTWARE
Pre-analysis	**Survey and organization of the material in webQDA**
Floating (BARDIN, 2016) or Active (AMADO, 2017) reading of the teaching memos and narratives from the reflective proposal.	Gathering all the information and data coming from the Floating or Active Reading support and organizing them in the WebQDA Sources System.
Performing the process of assigning codes to printed and selected documents.	Creation of analysis system with free codes and tree codes (analysis categories) with a maximum of three (3) words - synthetic analysis. Creation and structure of codes in WEBQDA, reproducing what was coded manually.
The research questions and objectives guide the process of impregnating the analyzed content and assigning codes.	Explanatory breakdown of the categories in the software - descriptive analysis.
Exploring the material	**Coding of the information content, taking into account the different validation cycles. Text selection and coding according to the codes created.**
Encoding/decoding of information content	Validation of the coded category system (tree codes). References in webQDA language, coded in dimensions, categories and subcategories. Validation of the coding capacity, by reliability and validity (PILLATTI; PEDROSO; GUTIERRES, 2010).
	Questioning of the system of coded categories (tree codes), asking questions about the relationship between the descriptive codes and the interpretive codes (free codes and tree codes). The construction of answers to our questioning was facilitated by the various tools of webQDA.
Descriptive Interpretive Process	**Preparation of the final descriptive, interpretive and triangulation text with the literature (discussion).**
The interpretive descriptive process flowed as chapters and subchapters with the research findings in a dynamic way, this is because in scientific bricolage there is no true explanation, study conclusion, or final considerations. Knowledge is transitory and always in process (KINCHELOE, 2007, p. 112).	The webQDA provided information, matrices and references in the construction of inferences and discussion of the data. The final text followed its own methodology and offered an overview of the analysis system (dimensions, categories and subcategories), rigorously using the codified data.

Source: Cruz (2022)

Combined application in the research analytical process

The perspective of Content Analysis guided by the vision of Bardin (2016) and, consistently, the Qualitative Analysis of Results by webQDA, facilitated the researchers to put in evidence the research findings, derived from excerpts of memoranda, the reflective reports and the portfolio with records of practical activities (pedagogical crafts), textual and visual. When we made the first decisions to define what would be the main sources of data, we opted for the memos, which were readily available, since they were part of the documentation presented at the time of selection to the Graduate Program in Education (PPGE) at UFSM.

We clarify that the two Ph.D.'s and one M.A. are graduates of the PPGE, and one M.A. is a doctoral candidate in the same program. The four educators work in public Kindergarten and Early Childhood Education schools. The readings and the coding/decoding of the memoirs and narratives made sense in the elaboration of the analysis categories that were explicit in the documents, and were aligned with the theoretical framework. The categories were derived from the systematized informative excerpts and to them were assigned the codes that would serve the webQDA, processing the first stage with Bardin's Content Analysis (2016).

Thus, to the idiosyncrasies of the artisan educators were added qualitative attributes that were constituted in the experience and the learning experience of the formative process (hetero/inter/auto), constituting the richness of the research corpus in the phase still of the organization of the information provided by the collaborating professors.

For Bardin (2016, p. 96), "The corpus is the set of documents taken into account to be submitted to analytical procedures." Gathering this set of informational documents became an interesting game similar to a patchwork project, for example, to organize patchwork by color codes, shapes and sizes, to interweave them into a quilt. What to do? How to do it? Which bricolors will be most interesting to describe the categories? The choice of webQDA helped us a lot, facilitating the selection of examples of each unit of meaning expressed by the categories.

An overview of this analysis system is configured in the presentation of the dimensions, categories and subcategories, following a coding/decoding path of the ideas collated from the narrative writings of the collaborating teachers. Next, a detailed and rigorous vision of the codified data is described, through matrixes and frequencies with examples of references of each code, collated from the research corpus.

In Figure 2, below, the system of analysis is presented as a graphic representation of the research path followed.

Figura 2 – Síntese do sistema de análise do conjunto informativo
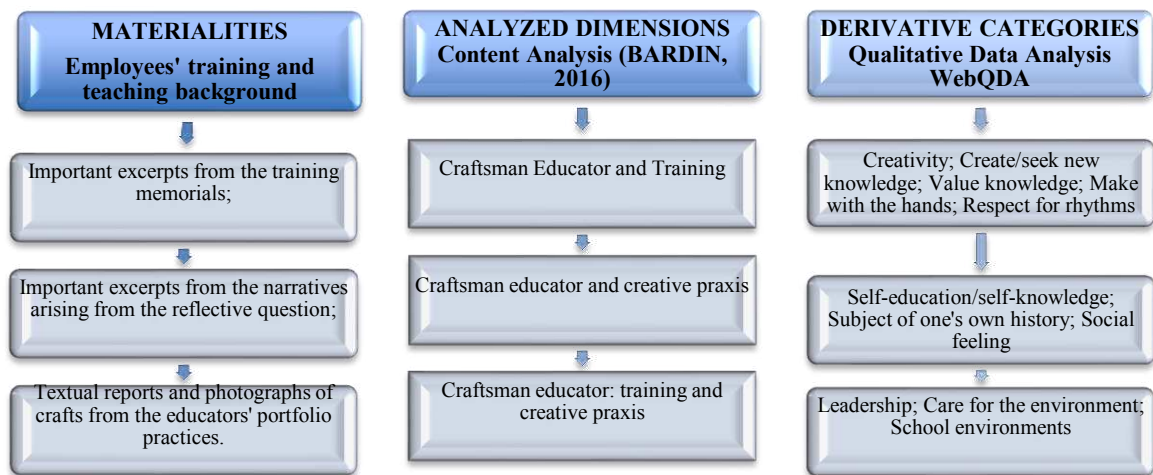
Source: Prepared by the authors

Some questions and at the same time other ideas emerged, in the sense of systematizing the materialities produced by the artisans who collaborated with the research and the categories into new emerging concepts. Then, we consider it relevant to apply the result in a comparative process between the categories, agglutinating them according to the percentage relevance, translating the results as "conceptual re-signification", giving new meaning to the qualitative information, analyzed from Bardin (2016) and the webQDA reports.

The "conceptual resignification" covers constructs that translate ethical, political, and pedagogical meanings, giving support to the Pedagogy of Bricolage, the central issue of the research, whose theoretical-methodological matrix is being exposed here. The analysis categories, generated from the codification of the research materialities and brought together by the conceptual approach, result in three axes that re-signify the theoretical-conceptual contribution itself, bringing a rereading for the present future.

In Table 2, below, we present the data that demonstrate this process of developing categories to the axes of re-signification.

Table 2 – Re-signification of the emerging categories

CATEGORIES OF ANALYSIS (webQDA)	%	SUM	RESIGNIFICATION
Creativity	12,2 %		
Creates and searches for other forms of knowledge	11,7 %		
Valuing knowledge	6,5 %	**38,2 %**	Creative teaching
Making with one's own hands	3,5 %		
Respect for rhythms	4,3 %		

Self-education and self-knowledge	3,9 %		Human bio [trans] formation
Subject of its own history	18,7 %	**41,7%**	
Social feeling	19,1 %		
Leadership	1,3 %		
Care for the environment	3,5 %	**20,0%**	Bio [trans] forming environments
School environment	15,2%		
	100,0 %		

Source: Cruz (2022)

An educational institution, regardless of the level of education, represents an important potential context to the "Human Bio [trans] formation" (41.7%). This context, when led by the people who work or study there, or even participate indirectly, such as parents or caregivers of children, becomes favorable to human development and learning (BRONFRENBRENNER, 2011). This is because the main activities developed there are meaningful and persistent; interpersonal relationships are valued and interactivity is encouraged, and there is room for everyone to assume the role of subjects, protagonists of their vital history and co-participants in the social history.

In this relational psychodynamic, in which the person and the environment transmute information, emotions and move continuously, the proximal processes are being produced and mediated. Students, educators, and all other professionals and family members involved have in this important place the creation of possibilities to think, constitute, rethink, act, do, and contribute with new/other possibilities, going beyond a mere instruction and entering the world of doing, of doing well, for the pleasure of producing something. All these mean important elements for significant learning and reflections that give meaning to humanized and transforming education.

The construct "Creative Teaching" (38.2%) strategically covers pedagogical craftsmanship and the advantages of the craft of teaching - it holds the ideas of "educator" (FREIRE, 2020) and "craftsman" (SENNETT, 2019). The Craftsman Educator understands the time to learn, valuing the pedagogical activities in his/her teaching proposal, while involving the students in the individual rhythm of how to learn, for this patience is the "craftsman's time". The craftsman educator develops a work that, not being subjected to time, produces and enjoys the pleasure of making. Every good teacher knows the importance of keeping the attention of his or her students always alive. Surprise, wonder, the pleasure of discovery, are the ingredients of all good teaching. The anticipation of what will happen in the next lesson, the suspense in the course of an experiment, or a historical account, as well as a thousand other little tricks, are at the teacher's disposal.

We also perceive a call to deepen our concept of "ambience", which is produced from objective conditions, the context; subjective, the person; and intersubjective, the interaction between people and proximal processes. The "school ambience" translates a collaborative culture permeating the pedagogical relations, from the whole of the school context, and allowing the appreciation for the promotion of learning (MACIEL, 1995, 2000; MACIEL; VIERA TREVISAN, 2013). For this, new concrete learning will mobilize the activities and pedagogical resources of all kinds, material and symbolic, because the support and encouragement of the educators-students-educators crafts will positively constitute the objective, subjective and intersubjective conditions for the learning experience, which will produce lasting marks that drive the "Bio [trans] Human formation".

The person-environment-person dynamic that configures the ambience also accesses the possibility of "Human Bio[trans]formation". In this understanding, when interactions involve joint observation and participation (BRONFENBRENNER, 2011), contexts become "Bio [trans] forming Environments." The Bio [trans] forming processes multiply in the various dimensions (physical-biological, neuropsychological, affective-cognitive, sociocultural) that constitute the person - infant/child/adolescent/young adult/elderly, in a time that is lived and re-lived as personal and social histories. When re-lived, it opens to permanent [trans]formation, of the person who is in the professional, and of the professional who is in the person.

In "*Caminhar para si*", by Marie-Christine Josso (2010), we collected the idea that feeds the search in complexity, of the continuum between the narrative of training to the training process, which is committed to the marks of life and profession made explicit, in sensitive listening and attentive look to the words given by the colleagues who collaborated in the research. The constructs proposed here are articulated, because the "Human Bio [trans] formation", involves the educator, person and professional in permanent development, in the different contexts of the "Creative Teaching", producer of "hinge" events (crucial) for the incentive and production of "Bio [trans] forming Environments". They emerged from the re-signification of the qualitative categories of Content Analysis, filtered by the percentages indicated by the webQDA Software.

Below, in Figure 3, we present a visual representation of the three axes of conceptual resignification, related to the categories emerging from the research corpus and demonstrating the continuum of the "experience learning" (CRUZ, 2017).

Figure 3 – Axes of conceptual re-signification and fundamental categories of the research
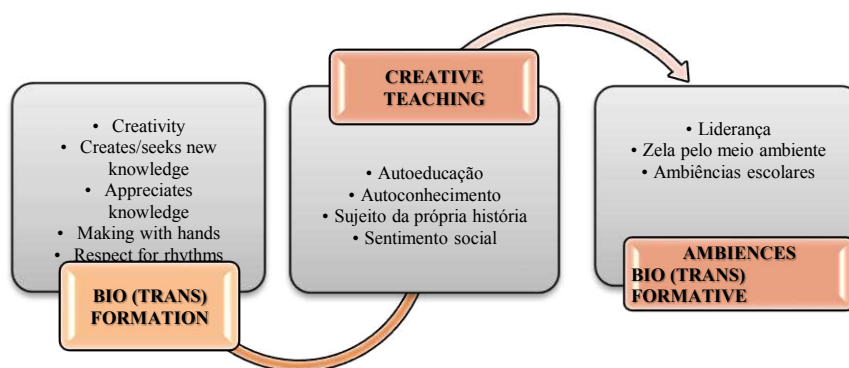
Fonte: CRUZ (2022)

The ontological vocation of being, states and reaffirms Paulo Freire (2020), is to be subject. Thus, "respect for each one's autonomy and dignity is an ethical imperative, not a favor we may or may not grant each other" (FREIRE, 1996, p. 58, our translation). The author also expresses the awareness of being inconclusive. Where there is life, there is unfinishing, that is, beings in permanent evolution. However, only man knows he is unfinished and that it is possible to go beyond the unfinishing that imposes itself as a limiting situation to be overcome. And this is how the history of each one is made; our history, men and women, is written in constant movement, in process, in construction, in dialog with the other.

Existence in the world, life, was making the human body "conscious, capturing, apprehending, transforming, creating beauty and not empty 'space' to be filled with contents" (FREIRE, 1996, p. 51, our translation). In this movement, the "hands" to a great extent, made what exists created by humans. "The greater the solidarity between mind and hands became, the more the support became the world and life, existence" (FREIRE, 1996, p. 51, our translation).

The consciousness of being the subject of one's own history actualizes it in wanting, being able to be, and coming-to-be. "It allows us to have the measure of what is at stake in all formation: the actualization of the subject in a will and power to be and to come-to-be and its objectification in the targeted sociocultural forms, those that already exist or those that he has to imagine" (JOSSO, 2007, p. 423, our translation).

Self-education and self-knowledge are categories that refer directly to the educator's personal/professional development processes. It is important to consider that these processes overcome the educator-students contradiction in the gnosiological movement (FREIRE, 2013, 2020). Such movement involves the cognizing subjects (educator-educated; educated-educator)

and the cognizable object(s), which are the mediator(s) in the dialogical relationship. The cognizing act of a subject is much more than mastering the cognizable object.

The dialogical relationship becomes part of the process of self-education and self-knowledge. To move as people, as educators, means to produce ourselves in the experience, which, significantly, translates into experiencing while learning. Learning through and in the experience is close to "experiencing by learning", because we understand that "[...] learning through experience is learning by doing, learning through action, through practice. [Experience is what we do, what we are capable of doing. And 'doing' means making, transforming" (LARROSA, 2011, p. 190, emphasis added).

The process of Bio (trans) forming stems from the teacher's commitment to invest in his or her projects, producing both personal and professional identity. Finally, in this process we produce the marks of life and profession, marks that translate the meaning of creative teaching in the singular of each educator/artisan.

Andrea Alliaud (2017) adds the pedagogical act that is produced in an unusual way in the hidden dimension of the teaching craft. The idea that there is a particular vibration in all teachers stands out. It expresses the uniqueness of the person-teacher, as the subject of his or her own history who self-educates and produces knowledge and self-care.

And thus, we have the singularity that is expressed in a continuum of living-learning-expressing in this consciousness that evolves in self-knowledge; that expresses itself in the other to whom it dedicates its care. "In this way, the educator is no longer the one who only educates, but the one who, while educating, is educated, in dialogue with the learner who, while being educated, also educates" (FREIRE, 2020, p. 95, our translation).

Final remarks

From the perspective of Bio [trans] formation, human action, protagonism, autonomy and creativity represent important tools for educators who need to be alert and attentive to the demands of society, school and people in this new scenario of drastic changes. In order to develop strategies that include everyone in this creative process, it is necessary to reinvent teaching, relying on good practices, combining with theory the ability to synthesize and apply, to innovate practices and theories with the sensitivity of placing the human being as cause and consequence.

Creative Teaching is directly linked to being as a subject - precisely, to the educator and the student as subjects of their own history. We add that these processes are humanizing,

because in the vital, and social history, protagonism is inscribed. What can hands do? We look at them and realize that "of all the members of the human body, it has the greatest variety of movements, which can be controlled as we wish. Science tries to demonstrate how these movements, coupled with touch and the different ways of holding with the hands, affect our way of thinking" (SENNETT, 2019, p. 169, our translation).

The Pedagogy of DIY produced by the protagonism of the educator and the child demonstrates the relationship between the psychic functions involved in feelings, cognitions, and the mastery of movement - preceding the process of literacy and literacy, of walking, running, pinching, catching, jumping. Recovering the knowledge that educators produce in the teaching and learning processes as "powerful support anchors" allows them to act and, potentially, think and critically reflect on their craft in order to enrich and improve it.

The dialogue about the assimilated practice and the formalized knowledge of how expertise is achieved enables them to become craftsmen or virtuosos in what they do. Practices then improve and even become craftsmanship - when information and action become knowledge and professionals become more skilled at their craft.

Understanding training as an experience that enables one to experiment, to taste and be put to the test in every circumstance is an advantage of the craft of teaching. For Alliaud (2017), doing good work means, in this dynamic, being curious, investigating, and learning from uncertainty. Doing good work today requires experimentation, investigation, exploration, as well as the possibility of continuing to learn in the situation.

Teaching/learning/teaching is nourished, therefore, by these other knowledges (teachers and students), know-how (from work, from experience, from the craft), ensuring the spheres of initial and continuing education, nourishing educators in this process. Knowledge, in this way, is not derived from the accumulation of knowledge, but from the transformations that produce it, from the experience and the lived experience of oneself and of the other. It has to do with being, with formation, [trans] formation, and Bio [trans] formation, making our time, space, and humanity more human.

The "Bio [trans] formative Ambience" can also be understood as the ideal scenario for the pedagogical crafts to have their place in Creative Teaching, produced: in the diversification of meaningful activities and materials; in the involvement of subjectivities in the creative processes demanded and motivations for teaching/learning as alternate roles between the craftsmen, educator and students; in the interpersonal relationships that mobilize good practices and shared partnerships. The good experiences are not limited to the classroom as a static icon

of the teaching and learning processes, as they must always be open to the continuum of lived experiences, adding possibilities for reinvention.

Finally, the three axes that represent the synthesis of the research findings, "Human Bio [trans] formation", "Creative Teaching", and "Bio [trans] forming Environments", constitute a relevant differential to pedagogical practices, to education with quality and equity, to the balance of tasks and knowledge, becoming effective in the experience of learning in/of one's own experience, in/of the experience of others and with others, generated in the movements of life, profession, and in the places of learning by the Pedagogy of DIY.

The Pedagogy of DIY, in fact, does not represent a preconceived structure, because it is produced by the protagonists of teaching/learning/teaching, from scenarios created with the materials available to track learning (playful and complex). Learning through this pedagogy occurs in handcrafted, collaborative making. And the subjective time of those who learn with pedagogical crafts is the time of experiencing new learning.

REFERENCES

ALLIAUD, A. **Los artesanos de la enseñanza**: Acerca de la formación de maestros con oficio. Buenos Aires: Editora Paidós, 2017.

AMADO, J. **Manual de investigação qualitativa em educação**. Coimbra: Imprensa da Universidade de Coimbra, 2017.

BARDIN, L. **Análise de Conteúdo**. Tradução: Luís Antero Reto e Augusto Pinheiro. São Paulo: Edições 70, 2016.

BERRY, K. S. Estruturas da Bricolagem e da Complexidade. *In*: KINCHELOE, J. L.; BERRY, K. S. **Pesquisa em Educação**: Conceituando a bricolagem. Tradução: Roberto Cataldo Costa. Porto Alegre: Artmed, 2007.

BRONFRENBRENNER, U. **Bioecologia do desenvolvimento humano**: Tornando os seres humanos mais humanos. Porto Alegre: Artmed, 2011.
CRUZ, D. S. **Vivenciar aprendendo**: Contribuições da pedagogia Waldorf à formação do pedagogo no Século XXI. 2017. Dissertação (Mestrado em Educação) – Universidade Federal de Santa Maria, Centro de Educação, Santa Maria, 2017. Available at: https://repositorio.ufsm.br/handle/1/25351. Access on 10 Sept. 2022.

CRUZ, D. S. **Pedagogia da Bricolagem**: Ofício de educadores e educadoras artífices. Tese (Doutorado em Educação) – Universidade Federal de Santa Maria, Centro de Educação, Santa Maria, 2022. Available at: https://repositorio.ufsm.br/handle/1/25351. Access on: 10 Sept. 2022.

FREIRE, P. **Pedagogia da Autonomia**: Saberes necessários à prática educativa. São Paulo: Paz e Terra, 1996.

FREIRE, P. **Pedagogia da Indignação:** cartas pedagógicas e outros escritos. São Paulo: Unesp, 2000.

FREIRE, P. **Pedagogia da esperança:** um reencontro com a pedagogia do oprimido Rio de Janeiro: Paz e Terra, 2013.

FREIRE, P. **Pedagogia do Oprimido.** Rio de Janeiro: Paz e Terra, 2020.

JOSSO, M. C. A transformação de si a partir da narração de histórias de vida. **Educação**, Porto Alegre, v. 3, n. 63, p. 413-438, set/dez. 2007. Available at: https://www.redalyc.org/pdf/848/84806302.pdf. Access on: 21 Jan. 2022.

JOSSO, M. C. **Caminhar para si**. Porto Alegre: EDIPUCRS, 2010.

KINCHELOE, J. L. Para além do Reducionismo: Diferença, criticalidade e multilogicidade na bricolagem e no pós-formalismo. *In*: PARASKEVA, J. (org.). **Currículo e Multiculturalismo**. Portugal: Edições Pedago, 2006.

KINCHELOE, J. L.; BERRY, K. S. **Pesquisa em Educação:** Conceituando a bricolagem. Tradução: Roberto Cataldo Costa. Porto Alegre: Artmed, 2007.

KINCHELOE, J. L.; McLAREN, P. Repensando a Teoria Crítica e a Pesquisa Qualitativa. *In*: DENZIN, N. K.; LINCOLN, Y. S. (org.). **O Planejamento da Pesquisa Qualitativa**: Teorias e abordagens. Tradução: Sandra Regina Netz. Porto Alegre: Artmed, 2006.

LARROSA, J. Experiência e alteridade em educação. **Reflexão e Ação**, Santa Cruz do Sul, v. 19, n. 2, p. 4-27, jul. 2011. Available at: https://online.unisc.br/seer/index.php/reflex/article/view/2444. Access on: 18 Oct. 2021.

MACIEL, A. M. R. **O professor-cidadão no exercício da docência.** Um modelo conceitual unificador. 1995. Dissertação (Mestrado em Educação) – Universidade Federal de Santa Maria, Centro de Educação, Programa de Pós-Graduação em Educação, Santa Maria, RS, 1995.

MACIEL, A. M. R**. Formação na docência universitária?** Realidade e possibilidade na docência universitária? Realidade e possibilidades a partir do contexto da Universidade de Cruz Alta. 2000. Tese (Doutorado em Educação) – Universidade Federal de Santa Maria, Santa Maria, 2000.

MACIEL, A. M. R.; VIERA TREVISAN, N. Repercussões da Ambiência teórica positiva no desenvolvimento profissional docente. In: CONGRESO LATINOAMERICANO DE FILOSOFÍA DE LA EDUCACIÓN, 2., 2013, Uruguai. **Anais** […]. Uruguai, 2013.

PILLATTI, L. A.; PEDROSO, B.; GUTIERREZ, G. L. Propriedades psicométricas de instrumentos de avaliação: Um debate necessário. **RBECT. Revista Brasileira de Ensino de Ciência e Tecnologia**, Curitiba, v. 3, n. 1, p. 81-91, jan./abr. 2010. Available at: https://periodicos.utfpr.edu.br/rbect/article/view/619/469. Access on: 08 Sept. 2022.

RODRIGUES, C. S. D. *et al.* Pesquisa em educação e bricolagem científica: Rigor, multirreferencialidade e interdisciplinaridade. **Cadernos de Pesquisa**, São Paulo, v. 46, n. 162, p. 966-982, out./dez. 2016. Available at https://www.scielo.br/j/cp/a/Lm5MCLHGmLMhNsGTdBTKrWG/abstract/?lang=pt. Access on: 14 Aug. 2022.

SENNETT, R. **O artífice**. Tradução: Clóvis Marques. Rio de Janeiro: Record, 2019.

SOUZA, D. N.; COSTA, A. P.; SOUZA, F. N. Importância do questionamento em todo o processo de Investigação Qualitativa. *In:* SOUZA, F. N.; SOUZA, D. N.; COSTA, A. P. (org.). **Investigação Qualitativa**: Inovação, Dilemas e Desafios. Aveiro, Portugal: Ludomedia, 2014.

Processing and publication by the Editora Ibero-Americana de Educação.
Correction, formatting, standardization and translation.