EpucAção
&realidade

Grounded Theory: methodology applied in education research

Edna Liz Prigol[I]
Marilda Aparecida Behrens[I]

[I]Pontifícia Universidade Católica do Paraná (PUCPR), Curitiba/PR – Brazil

ABSTRACT – Grounded Theory: methodology applied in education research. It is identified that the grounded theory is little used in research in the area of Education. It presents different modes of interpretation according to whether it is Straussian or constructivist. It is questioned: how to characterize the GT steps and the possible applications in education research. It was delimited to describe the steps for the collection and analysis of the data in the research carried out with the grounded theory. Theoretical exploratory basis was used because it allows a deepening in the object of study and the establishment of bases for future researches. The experience with this methodology allowed to make the communication in a reflected way that could be of great value to the researchers in the area of education.
Keywords: **Education. Methodology. Grounded theory.**

RESUMO – Teoria Fundamentada: metodologia aplicada na pesquisa em educação. A teoria fundamentada é pouco utilizada nas pesquisas em educação e apresenta diferentes modos de interpretação, de acordo com a vertente (straussiana ou construtivista). Este artigo questiona como caracterizar os passos da Teoria Fundamentada nos Dados (TFD) e as possíveis aplicações na pesquisa em educação, limitando-se a descrever os passos para coletar e analisar os dados na pesquisa realizada com a teoria fundamentada. Para isso, utilizou-se base teórico-exploratória, por possibilitar um aprofundamento do objeto de estudo e o estabelecimento de bases para futuras pesquisas. A experiência vivida com essa metodologia permitiu fazer a comunicação de maneira refletida, que poderá ser de grande valia para os pesquisadores na área da educação.
Palavras-chave: **Educação. Metodologia. Teoria Fundamentada.**

Introduction

When one thinks of qualitative research, it is understood that, behind it, there is a theory based on philosophical presuppositions, even if they are not explicitly placed, but that helps the researcher to reflect critically on the path that must be followed in the research qualification. Philosophy allows us to look at four questions: ontological, epistemological, axiological and methodological, which have implications in the research practice, aiding in the production of data and its communication, through the theoretical corpus used.

The ontological reference allows to identify how the world is perceived and it leads the researcher to question the nature of the reality of the subject to be researched, since this can have objective and/or subjective characteristics, depending on how it is seen, giving a look under multiple perspectives.

The epistemology allows the researcher to understand how research structures their ideas and concepts, what they use as a source to justify what they know, and also, what are their limits and possibilities of knowledge. To do so, it becomes necessary to become closer to understand the social reality of researchers and, in this way, to reduce distances, in order to perceive how they know what they know about their knowledge and what they do in practice.

Qualitative research facilitates interaction with the one being researched. In this relationship, personal values - axiological dimension – may be explicit or not during the study, propitiating the approximation with the research subject's moral, ethical, esthetic and spiritual values.

To conduct a research, it is necessary to weave paths to dialogue with different information and contexts, allowing a way of thinking in actions, articulating what may be disjointed, reflecting on what may be hidden, using non-philosophical and methodological principles not as a recipe. As Morin defines (2005, p. 26):

> [...] it is not about obeying a principle of order (which excludes disorder), of clarity (which excludes obscurity), of distinction (which excludes adhesions, participations and communications), of disjunction (which excludes subject, antinomy, complexity), that is, to a principle that connects science with the simplification of logic. It is, on the contrary, from a principle of complexity, of connecting what was disjoined.

The definition of methodology in a scientific research stablishes exactly the steps and procedures that the researcher will use, as well as it communicates the type of research that he will develop in the investigation.

Faced with this preposition, this paper aims to present paths that can be traversed when the researcher defines as the method to be used in his research the Grounded Theory (GT), originally known as grounded theory of data, developed by the classic authors Glaser and Strauss (1967). One of the most recent perspectives of this theory is the

following: Charmaz's studies (2009) bringing "[…] another perspective to the dialogue on procedures. Through these different interpretations, grounded theory has gained popularity in such fields as [...] education" (Creswell, 2014, p.77). Thus, the approach investigated by Clarke (2005) and by studies by Creswell (2014) is not the subject of investigation in this study.

The data presented here are syntheses of a research funded by the National Council for Scientific and Technological Development (CNPq), carried out in the Educational Paradigms and Teacher Education – PEOPH group, in the Graduate Program in Education. This study is justified by the opportunity to present the systematized steps of the used methodology, which can be used in educational research, providing theoretical and practical foundation for its design and consolidation.

The text is organized in a structured way describing and presenting resources for the methodological construction of the method and its fundamental characteristics.

Methodological Path

Due to its objective, this research has an exploratory character; representing and characterizing analytically the facts and phenomena, by allowing the researcher an approximate and general view of the object to be investigated. Consequently, it favors the formulation of problems or the gathering of hypotheses of subjects not investigated much (Gil, 2008), as is the theme of this research, which seeks to produce knowledge to instigate reflections and discussions about the GT steps and the possible applications of research in education.

Methodological Reference: Charmaz's GT

The researcher, when he begins his research, he seeks a path that can be traced in order to structure the actions and thoughts necessary to understand relationships and connections, as well as to understand and interpret meanings and perceptions of the researched interlocutors.

GT has two perspectives, and it is presented here with Charmaz (2009) theoretical constructivist basis, a qualitative approach developed initially by Glaser and Strauss (1967) and Glaser (1978) and extended by Corbin and Strauss (1990). This methodology captures the diversity of facts, data, information, experiences of reality, beyond the multidimensionality and multi-causality of the phenomena. In addition, it fills possible gaps that may arise between theory and empirical research, as it proposes a set of principles and basic practices/guidelines, such as coding, memo writing and sampling, guiding the researcher in the steps of the research process[1], as well as the way to be traveled for the discovery of the theory.

Methodology, in the constructivist perspective of Charmaz (2009), presupposes the interaction[2] between the individuals and the context

in which they are inserted using communication to show the reflections occurred in the interactions/actions and identifying how they were developed and re-signified during the research process, to understand how and why participants construct meanings and actions in specific situations. These temporal sequences are not static, "[...] because the present is a result from the past, but it is never exactly the same thing" (Charmaz, 2009, p. 24), as it undergoes local modifications that can influence broader contexts, arising peculiarities that may represent some fluctuation, uncertainty.

Another principle from this method is the simultaneous work of interdependence and circular chaining of all the actions of the research process, favoring knowledge from the data under a new angle and the exploration of ideas about the data, allowing the researcher an analytical direction.

GT is exploratory in nature, making the researcher to be familiar with the problem, since it works directly with the phenomenon to be studied, in order to make it more explicit, to improve ideas and to obtain information for a more complete investigation. For this, it is necessary that the researcher be receptive to the information and the data, besides having a flexible posture.

The method is categorized as qualitative research, which adds, as in a puzzle, new pieces, that is, new data can be collected according to the need of the investigation, marked by identifying phenomena by observing real world situations, in order to be understood in the context in which they occur. Thus, the data are collected from the angle of those involved, rescuing the voice of the one researched. This aspect is expanded in GT, which has flexible guidelines, according to which the researcher can move between the widest and the closest focus of the data collected and vice versa, allowing for its refinement.

Charmaz's GT (2009) is structured by the sampling stages (Figure 1), data collection and production, supported by documents produced by the researcher during the investigation, known as memos.
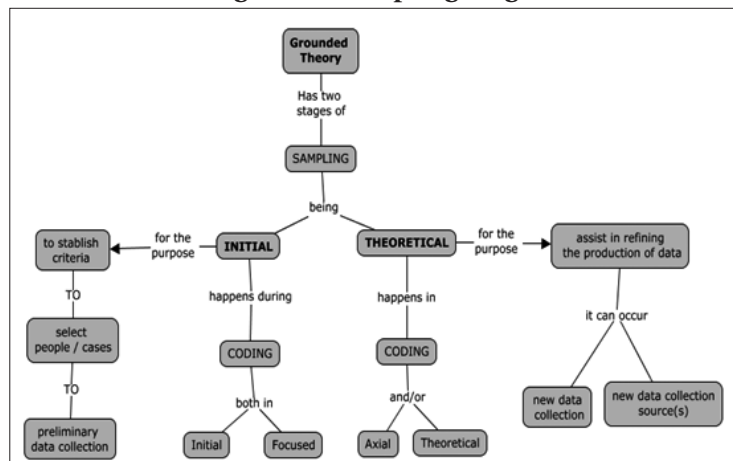
Figure 1 – Grounded Theory
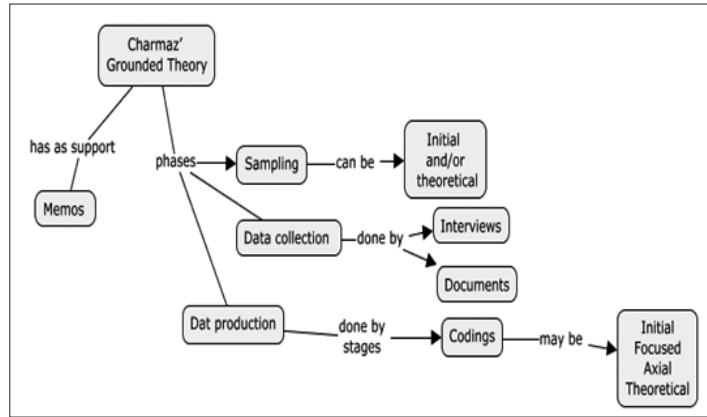
Source: the author, based on Charmaz (2009).

The Weaving of the Research Stages: sampling and data collection

The sampling (Figure 2), in Charmaz's GT (2009) has a different logic from the traditional research, and two steps may occur: the initial sampling and the theoretical sampling.

Figure 2 – Sampling Stages

Source: the author, based in Charmaz (2009).

The initial sampling is considered the research starting point, by establishing criteria to select people, cases or situations to collect and analyze the preliminary data. The theoretical sampling guides the researcher in the course that he/she will need to do to seek the refinement and obtain data to explain the categories within a conceptual and theo-

retical development. Its purpose is to return to the empirical world, to collect new data for the categories, in case they still have unknown or questionable assumptions. At this stage of GT the researcher can review the participants for the data collection and, if necessary, add, reduce or even re-train the subjects.

The theoretical sampling is a stage of the GT that allows to advance and retreat in the collection, analysis and revision of the memos, for the correction of problem areas, since it has as objectives, according to Charmaz (2009, 145), "[…] to delineate the properties of a category, to check the intuitions about the categories, to saturate the properties of a category, to establish distinctions between the emerging categories, to identify the variation in a process".

In GT, each phase is strategic; the theoretical sampling specifically prompts to predict where and how research was conducted, to find enough data to fill in gaps, to understand how a process develops and modifies, clarifying the relationships between categories to conduct its completeness. This logic of analysis and comparisons within coming and going requires the use of deductive reasoning at certain times and the inductive in others for the elaboration of theoretical assumptions, and then to verify them through a new experience. This movement is defined as abductive inference method, which "[…] implies the consideration of all possible theoretical explanations for the data, the elaboration of hypotheses for each possible explanation, the empirical verification of these" (Charmaz, 2009, p. 144).

The peculiarity of the GT method in relation to sampling is that it makes the researcher free to define the participants and the type of environment to collect data. In the theoretical sampling, the participants of the initial sampling can be redefined as the development of the study of the data occurs and the examination of the several levels of analysis is carried out successively.

From the objectives defined by the researcher, it is possible to determine the data collection (Figure 1), considering that "[...] ethnographic methods, the intensive interview process and the textual analysis provide the tools for collecting the data as we cross these paths", according to Charmaz (2009, 27), and it is not necessary to apply the three forms of data collection - this definition is at the discretion of the researcher. Another point of attention is the relevance of the data, since they need to capture the essence of the revelations of the people researched, showing in detail information, data, ideas, concepts, feelings, intentions and contexts of personal, professional and educational life.

The methods and tools help answer research questions, but the researcher needs to have a keen eye, clear ears, insights so that he can generate, extract, refine, intensify and make sense from the collected data, which are constituted by productions of the participants and observations of the analyzes made by the researcher. Both are influenced by the world, and can thus affect the view of the analyzed phenomena, since there is no pure observer.

GT instigates the researcher to revise or search for new methods or data collection tools when doubts arise, as well as giving the freedom to define the participants and the type of environment to collect data. For this, the contextual assumptions and the disciplinary perspectives that will guide the construction of the research topics and concepts must be considered, and these can be redefined as the study of the data and the analysis of successive levels of analysis take place.

The data collected must be of quality and credible; for this, they need depth. Charmaz (2009, p. 37) indicates to the researcher to question himself, with the purpose of identifying if the data are relevant and sufficient:

> Have I been able to gather enough contextual data about people, processes and environments that allow me to quickly retrieve these contexts, as well as understand and portray the full variation of the study contexts? Did I get detailed descriptions of the opinions and actions from a variety of participants? Does the data reveal what exists beneath the surface? Is the data sufficient to reveal the changes over time? Was I able to gather data that allowed me to develop analytical categories? What types of comparisons can I establish among the data? How do these comparisons generate and communicate my ideas?

In addition to identifying the expressiveness and amount of data, the researcher needs to ensure that his/her performance during the interview, first and foremost, shows respect for the opinions and actions of the one researched, learning with him to be faithful, seeing in the perspective and sensitivity of the interviewee, in order to interpret the collected data and identify what they did not declare unconsciously. For this, Charmaz (2009, p.39) advocates some actions:

> Observe actions and processes as well as words. Outline the context, scenes and action circumstances with caution. Record who did what, when it occurred, why it happened (if you can determine the reasons) and how it happened. Identify the conditions under which certain actions, intentions and processes emerge or not. Look for ways to interpret the data. Focus on the specific words and phrases to which the participants seem to attach special meaning. To discover the assumptions taken as obvious and hidden from various participants; demonstrate how they are revealed through action and how they affect it.

The data collected are the materials that will form the basis of the theory, while the analysis determines the concepts that will be constructed during the research. Both of them allow observe in the discursive movement the tetralogical order-disorder-interactions-organization (Morin, 2000) of the information extracted from the participants' reports, capturing feedbacks, recursions, self-organization, concepts, attitudes, beliefs and experiences.

In order to collect data on Charmaz's GT (2009), we suggest the use of the intensive interview, understood as a directed talk, (Lofland;

Lofland, 1984; 1995 apud Charmaz, 2009), as with it. The researcher can be more thorough and delve deeper, so as to get more clarification on some essential topics. For this, it is important to formulate "[...] open and broad" questions, ranging from a vaguely oriented exploration of the topics to semi-structured focal issues" (Charmaz, 2009, 46).

The interconnection between conducting the interview and elaborating the questions defines the stability between the accomplishment of the talk and the focus on its fundamental objectives. In order for this affinity to occur, the researcher must create a space for interaction, so that the participant becomes fully involved in the interview, considering that some differences may affect the collection of data, such as race, gender, class, age and ideologies. Charmaz (2009, p.47) suggests that the researcher

> [...] goes beyond the appearance(s) of the experiment(s) described. Stop to explore a particular statement or topic. Ask for more details or explanations. Ask the participant about their ideas, feelings and actions. Go back to an earlier point. Rephrase an idea issued by the participant to check their accuracy. Reduce or accelerate the pace. Change the following topic. Validate the participant according to their character of benevolence, perspective or action. Use social and observation skills to promote discussion. Respect the participant and express esteem for their participation.

In the elaboration of the questions, it is necessary to consider the aspects of the symbolic interactionist vision[3], allowing the questions to reach a level of deepening in order to explore the perspectives, experiences and actions of the researched ones, to know the real meanings, thus avoiding assumptions about what they want to say - the researcher needs to put himself in the position of the participant to understand him/her in its entirety.

Another method of data collection adopted in the GT is the textual analysis, considered a mode of triangular communication in which those involved are the author, the reader and the text within a context. The texts that are used by the researcher in a research form the corpus of the analysis process, being able to be elaborated in a specific way, as well as already existing materials. In order to form this corpus, a satisfactory sampling of texts is necessary to obtain valid and representative results and to reach the level of saturation required - that is, amount of information that does not produce new changes in results.

The extracted texts are those produced by the research participant through the transcription of questionnaires, interviews, observations, testimonies, notes, diaries, that is, elaborated at the request of the researcher, being able to alternate between detailed guidelines and small suggestions. This approach for the data collection has its (dis)advantages, which depend on whether the participant has the ability to express himself through writing or not and, at the same time, the tranquility to use this type of resource. "[...] the extracted texts work best

when the participants have an interest in the topics covered, experience in the relevant areas and when they see the issues as meaningful" (Charmaz, 2009: 59).

The existing named texts are various documents that have not been produced by the researcher, such as records, reports, documents and publications, public or private, among other types of material, which are also considered as supplementary data sources. A good qualitative textual analysis requires that the researcher makes a process of translation and deconstruction through the analytical elements, to identify and establish relationships between the parts and the whole of the collected data and vice versa.

The management of the data collection, performed by the analysis of documents, observations and/or interviews/re-interviews, allows identify the variation in the process, helping in the refinement to make the analysis more complex, until reaching saturation data saturation. This saturation or theoretical sufficiency is the action of finalizing the data collection, when it no longer stimulates the researcher to have new perceptions of theoretical knowledge about the data, nor does it denote new properties for the main theoretical categories.

Research Support Reports: Memos

Researchers who use GT must pass through an intermediate stage, called memos, which are elaborated and used between the data collection and the writing of the research reports. They are considered informal analytical notes, written throughout the research process concerning the data collected, from the construction of codes to the theoretical categories.

There are no norms or standards for the preparation of memos, as they are constructed using an informal language for personal use, as a space for the researcher to take notes of the perceptions, explorations and discoveries of ideas regarding what has been seen, heard, perceived and codified; it is a writing about the interpretations of the data that the researcher weaves for himself, without the purpose of presenting it to the public.

The memo record enables analyzes that raise the level of abstraction about ideas to develop the codes, because in it the researcher writes about how he can capture the thoughts and understand the processing of the comparisons and connections made. Memos are written with non-stolen data; in this way, expressive traits, implicit meanings, undeclared and condensed, are preserved, which help in the construction of partial, preliminary and provisional ideas.

This type of record allows for the structured grouping of a broad textual material, which helps to substantiate the theoretical analysis and establish a basis to make statements about it. The researcher has complete control over what he writes and researches, so he may have new insights during the memo writing, as it is seen as "[...] a space and

a place to compare data and data, data and codes, data codes and other codes, codes and categories and categories and concepts, as well as articulate conjectures about these comparisons" (Charmaz, 2009, p.107), showing how data analysis was elaborated.

The memo is considered a very important part of GT research, as it helps the researcher, during the elaboration, to follow the development of the collection and the analysis, in an analytical process. With the study of records, revisions and re-visitations of the chronologically organized data, it can be made to retrieve data and identify gaps, failures and incompleteness.

A look at codings: GT stages

For Strauss and Corbin (2008), coding must be performed in three stages: open, axial and selective coding. In the interpretation of Charmaz (2009), it can be composed by the phases: initial, focalized, axial and theoretical coding, as visualized in Figure 3.

Figure 3 – Coding in Charmaz's Interpretation
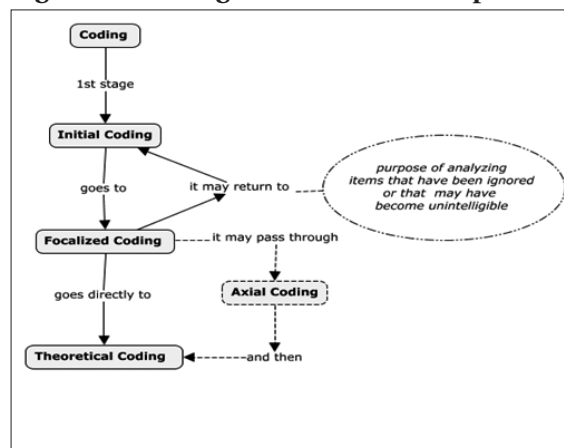
Source: the author, based in Charmaz (2009).

Coding is understood as a stage of the GT that has the purpose of analytically question the collected data, which give coordinates to elaborate those directly related to the analytical issues defined at the beginning of the process. At this stage, the researcher can study and understand the collected data in depth, also understanding emotional issues, attitudes, scenarios, reports, threads, as well as the participant's silences.

The collected data need to be selected, separated and classified, thus appearing the segments that synthesize and represent each part of them. In this way, the following step is categorized: the analytical interpretation about them. GT coding does not work with predefined codes; these need to emerge from the detailed data analysis, since it is

understood as active coding, in which the researcher incessantly interacts with the data.

When making an analogy with the construction of a house, the coding would be all the material necessary to build the foundation and the structural part of the residence; if these materials are not well defined, with a quantity that is correct for the size and style of the house, it may not be finalized or the construction may be compromised. The coding in the research has the same function: to generate all the necessary material to define the type of analytical structure that will be performed in the research; later, these materials are integrated with the theoretical foundation, to form the body of work. "[...] coding is the fundamental link between data collection and the development of an emerging theory to explain these data" (Charmaz, 2009: 70).

With coding it is possible to understand the data from different perspectives until its demystification, guiding the new data collection. Thus, it goes through at least two main phases (Charmaz, 2009: 72): "[...] initial phase involving each word, line or segment of data, followed by a focused and selective phase that uses the initial codes more meaningful or frequent to classify, synthesize, integrate and organize the data ".

Another idea to be discussed in coding is the transformation of the data into codes, as these are influenced by the form, that is, how and what is recorded. According to Charmaz (2009), the qualitative research uses the detailed interview and the interview with focal groups and, through notes or transcriptions, it develops the codes. Both means can provide a broader or narrower view, a deeper level of comprehension, or, still, run the risk of building superficial analyses.

Initial Coding

Initial coding (Figure 4), carried out in the first moments of the data collection of the research, refers to a broader and generic stage, since all the collected materials serve as data, which makes it possible to navigate through several theoretical directions, set out in the collected data.

Figure 4 – Synthesis of the Initial Coding
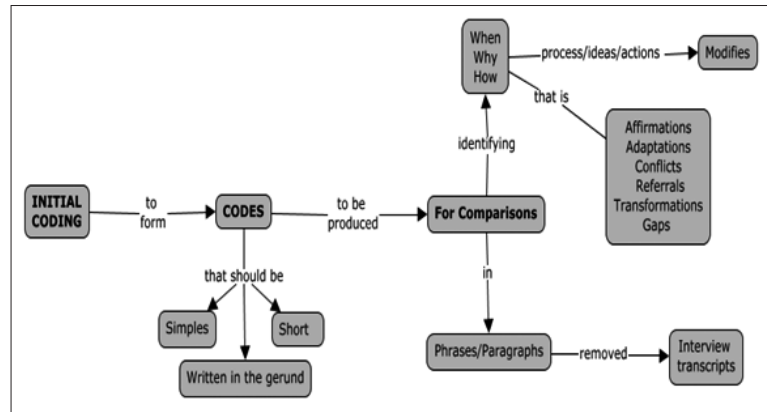
Source: the author, based in Charmaz (2009).

It identifies itself as a guiding phase, a stage that helps in the decisions and definitions of the main conceptual categories, since the unfolding of the first data is carried out, in search of analytical ideas to proceed with the new data collection and analysis, being necessary to make comparisons between them and later start the analytical identification process of the research participants.

The word that characterizes the initial coding is the provisional one. In this period, the data collection and analysis occur simultaneously, precisely to allow the deepening of the research problem and the expansion to adjust the categories, with respect to the degree of the codes that capture or condense the meanings of the actions. It is necessary, therefore, to observe the actions in each segment and codify with words, avoiding, initially, to make conceptual transitions and theoretical positions before performing the analysis exhaustively.

Of the initial codes in this phase, it is fundamental to understand them as provisional, because with them it is possible comparison, the emergence of new ideas and the identification of gaps. It is advisable to use short, simple and gerund codes because they detect processes and fix the data, conveying an idea of continuity, which is, was or will be in progress, indicating sequence and therefore preserving the natural flow of experience.

The initial coding can be done word by word - most used in document research. It is a coding that compares incident with incident of activities visualized by the researcher, out of context and without the interaction of the participants, helping in the discovery of patterns and contrasts. Another way to construct the codes is line by line, which allows us to apprehend the particularities of the data in a more critical and analytical way by identifying when, why and how the process is modified, how participants act, their behaviors, making it possible to have insights to collect new data. To do so, it is necessary to do the "[…] dissolution of the data in its constituent parts or in its properties.

Define the actions on which they are based. Explain actions and implied meanings, comparison and identification of data gaps" (Charmaz, 2009, page 78).

In this phase, it is essential to work with constant comparative methods (Glaser, 2011), since they allow to break, examine, compare, to establish analytical distinctions within each level of the process. Making comparisons of data with data aims to seek distinctions and similarities, adjust and identify the relevancies, so that the researcher can distance himself from preconceptions or assumptions and see from a new perspective, realizing how people's actions can, at the same time, become adapted or in conflict.

In the carried out research, from which the GT practical systematization was withdrawn, the interview was used in the data collection, after which the transcription was performed, that solidified into a text used in the initial coding, at which time the unfolding of the first collected data for the identification of analytical ideas. The initial codes were structured through the reading and analysis of all the transcribed texts, which made it possible to apprehend the particularities of the data, identifying when, why and how some processes are changed and how the respondents acted at certain moments. From these observations, the ideas of the respondents were compared to identify common data related to their affirmations, adaptations, conflicts, referrals, transformations and gaps.

It is a phase considered provisional because it allows, by means of comparison between the collected data, the emergence of new ideas and, consequently, changes in the construction of the codes, whose function is to capture or condense the meanings of the narrated actions.

For the construction of the initial codes, it is indicated first to read the texts of the transcriptions and, for each sentence or paragraph, to make a commentary (Figure 5), using words that synthesize the information/idea of the researched. Another feature that can be used is to put in bold meaningful words or phrases or to better elucidate what the respondent wants to state. During the reading of the interview text, it is important to prepare the logbook, to record the perceptions regarding the information of each respondent and the direction of the reading.

Figure 5 – Example of Commentary in the Narrative Text
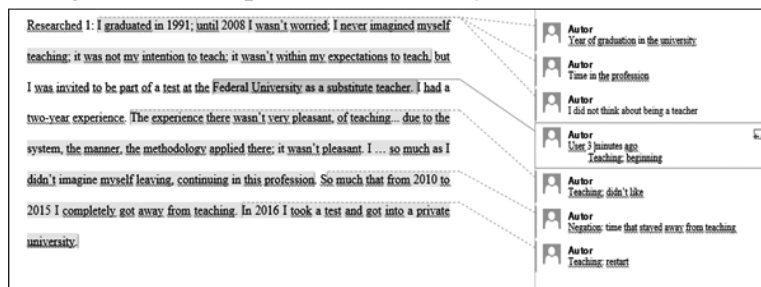
Source: the author, 2018.

**Figure 6 – Synthesis of the Initial Coding Steps**
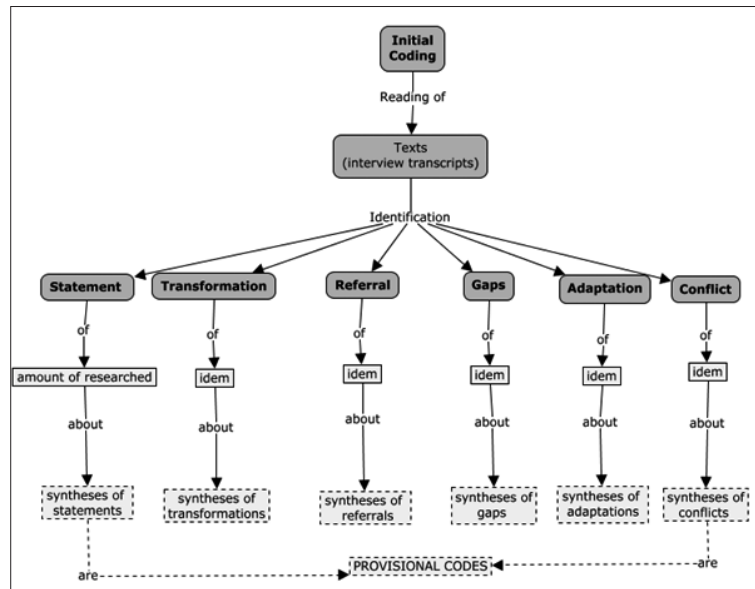
Source: the author, based in Charmaz (2009).

When you identify during reading that some information may be incomplete, confusing or truncated, it is important to talk to the respondent for completeness. In the research carried out, for example, after this phase, the subjects' narratives were identified with the approximations (Figure 6) referring to their affirmations, transformations, referrals, gaps, adaptations and conflicts reported of their personal, professional and training life, which consequently interfered in the professional performance. At that moment, the first codes of the collected data appear, which then define the categories, part of the next stage, called focused coding, being necessary to clarify how it was constituted and how the relationships with the data and codes occur.

The passage from one coding to another is not totally linear, that is, it can go from focused to linear coding, in order to analyze ignored items or that may have become unintelligible.

Focused Coding

The focused coding stage () can be understood as a research moment in which the researcher uses the codes already mapped (from the initial coding), making a rigorous evaluation to select the most significant and/or frequent initial codes that make possible a better analytical understanding to categorize the data incisively and completely.

Figure 7 – Synthesis of Focused Coding
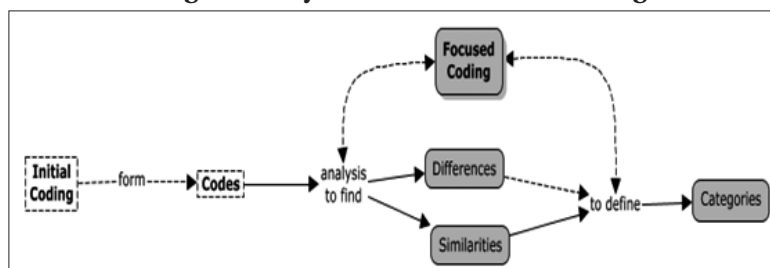
Source: the author, based in Charmaz (2009).

The comparison between the data allows moments of identification to find resonances in other experiments within the research and helps the improvement until the formation of the focal code. The collected data transformed into codes need to be systematically evaluated. For this, Charmaz (2009, p. 130) indicates that they should be raised to have a treatment that will allow them a conceptualization and analysis in the form of narrative statements that "[...] define the category; explain the properties; specify the conditions under which the category arises, is maintained and modified; describe their consequences and show how this category is related to others".

From the codes, the categories are developed, which demonstrate the actions and experiences lived by the participant, and can be presented as an analytical scheme form, establishing relationships between the implicit processes and the visible structures. The categories have the function of explaining thoughts and conceptions of the data; have points, questions, and organizations that can be found in other in vivo codes, that is, codes represented by the reproduction of the participant's speech reproduction or the retraction of a theoretical definition of the data.
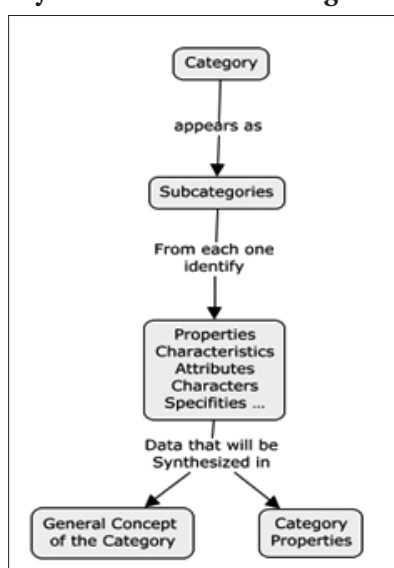
Axial Coding

Axial coding is the moment of recomposing data and give coherence to emerging analysis, pointing out its dimensions and properties within a context, enabling more precise explanations that respond to the phenomenon with questions of: when, where, why, who, how, and with what consequences, to write the experience studied in a more complete way.

Strauss and Corbin (2008) define it as a data collection and analysis stage that aims to classify, synthesize and organize data amounts to regroup them after open/initial coding, relating the categories to subcategories and questioning the way how they are interconnected. The axial coding defined by Charmaz (2009) refers to the use of simple and flexible guidelines, developing subcategories of a category, to demonstrate the connections between them.

In the research carried out, this phase was structured analyzing, separating and comparing the data of the researched ones related to the categories, to define the subcategories (Figure 8), remembering that each subcategory should be justified presenting data from the data collection, in the case of the text produced from the interviews. It is necessary to search for elements that characterize the subcategory, such as its properties, characteristics, attributes, characters and specificities, which help to compose the concept and properties of the category.

**Figure 8 – Synthesis of the Subcategories Structure**

Source: the author, based in Charmaz (2009).

Theoretical Coding

For Charmaz (2009), the last phase of coding corresponds to the theoretical coding, initially developed by Glaser (2011), who introduced the concept of families of theoretical coding to help conceptualize the way how substantial codes can be related to each other as hypotheses to be integrated into a theory. Theoretical codes are integrative, help to tell an analytical history in a coherent way, specifying the possible relationships between the categories developed in the focused coding.

Figure 9 – Synthesis of the Theoretical Coding
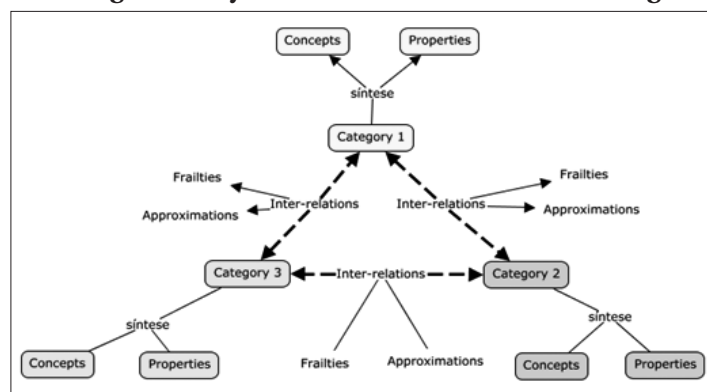
Source: the author, based in Charmaz (2009).

Classification instigates the comparison of categories in a more complex level, as "[...] provides the researcher with the logic to organize his analysis and a way to create and refine the theoretical connections that encourage him to draw comparisons between the categories" (Charmaz, 2009, p.160). This organization can be represented graphically (Figure 9), visually demonstrating the categories and their relationships. The researcher can use diagrams, conceptual maps or conditional matrices to show how the integration of ideas has been carried out.

This moment is directed to make the interlacing of the coding carried out, showing the existing texture between the fragments of the analyses. GT makes it possible, through its steps, to walk carefully to identify convergences, divergences and approximations, leading to a knowledge that, as a weaving, works each one of the parts of the narratives to understand the whole of the analysis undertaken; the result reveals that it is not the sum of the parts, nor less than it, but simply a single and singular whole, which, under new perception, may have a new conclusion, so it becomes provisional.

Final Considerations

The choice of the methodology to perform a scientific research requires from the researcher a rigorous process of analysis, to identify which path to follow. In this sense, this article brought the experience of GT advocated by Charmaz (2009).

During the investigation was identified that the use of the method requires the researcher to have theoretical knowledge of the principles and procedures of GT, since it is essential to work with the rigor and flexibility to construct the research steps, because the more the construction of the research is complex, more ambivalences and contradictions may occur.

With the domain of GT, it is possible to acquire a posture to interpret the objective, subjective and intersubjective aspects of the research, identifying what is implicit in the reports of each one researched, in the attempt to reach a less mutilating thought, respecting "[…] the demands of investigation and verification, proper to scientific knowledge, and the demands of reflection proposed to philosophical knowledge" (Morin, 2007, p. 102).

In order to maintain the rigor of the research, it is essential to focus on the problem and the objectives of the study to carry out the GT steps, since the ideas are a translation of the real and carry the risk of error, due to false perception, inconsistencies that may arise from interpretations, selection of meaningful data or rejection of non-significant analyzes, showing hidden principles that can lead to choices without being aware of it. The methodology has structured steps, but that allows the researcher to build his own path, a constant learning that occurs until the end of the research.

In the production of knowledge, it is necessary to consider the provisionality that is made between order and disorder, movements that occur during the research, since an action, response or reaction can alter what was constructed by the researcher, as he may be susceptible to the game of interactions, feedbacks and recursions that are far beyond their control.

Research using Charmaz's GT (2009) is to understand that reality is constituted of complex processes that allow to recognize the approximations, the complementarities to some antagonistic questions that arise during the course of the construction of knowledge within the research, such as certainty and uncertainty, stability and unstable, continuity and discontinuities, because reality is changeable and dynamic.

Each GT experience will be unique, allowing for a growing movement of interpretation and construction of methodology steps; thus, the importance of its use in education research is emphasized, so that the method can be expanded in a collaborative way, as knowledge is not ready and finished, but is in a continuous process of (re) construction.

Notes

1 Processo: constituído por sequências temporais reveladas que podem apresentar limites identificáveis, com inícios e fins claros e marcas de referência entre eles (Charmaz, 2009).

2 Vem da tradição filosófica do pragmatismo, que propõe o interacionismo simbólico, adotado por Strauss durante seu curso de doutorado na Universidade de Chicago (Charmaz, 2009).

3 De modo geral, pode-se dizer que o interacionismo simbólico constitui uma perspectiva teórica que possibilita a compreensão da forma como os indivíduos interpretam os objetos e as outras pessoas com as quais interagem e como tal

processo de interpretação conduz o comportamento individual em situações específicas (Carvalho; Borges; Rêgo, 2010).

References

CARVALHO, Virgínia Donizete de; BORGES, Livia de Oliveira; REGO, Denise Pereira do. Interacionismo Simbólico: origens, pressupostos e contribuições aos estudos em Psicologia Social. **Psicologia**: Ciência e Profissão, Brasília, v. 30, n. 1, p. 146-161, 2010. Disponível em: <http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414-98932010000100011&lng=en&nrm=iso>. Acesso em: 21 mar. 2018.

CHARMAZ, Kathy. **A Construção da Teoria Fundamentada**: guia prático para análise qualitativa. Tradução: Joice Elias Costa. Porto Alegre: Artmed, 2009.

CRESWELL, John. **Investigação Qualitativa e Projeto de Pesquisa**: escolhendo entre cinco abordagens. Tradução: Sandra Mallmann da Rosa. Revisão técnica: Dirceu Silva. Porto Alegre: Penso, 2014.

CLARKE, Adele. Situationalanalysis: grounded theory after the postmodern turn. Thousand Oaks, CA:Sage, 2005

GIL, Antônio Carlos. **Métodos e Técnicas de Pesquisa Social**. São Paulo: Atlas, 2008.

GLASER, Barney. **The Grounded Theory Perspective**: conceptualization contrasted with description. Mill Valley: Sociology Press, 2011.

GLASER, Barney. **Theoretical Sensivity**. Mill Valley: Sociology Press, 1978.

GLASER, Barney; STRAUSS, Anselm. **The Discovery of Grounded Theory**. Nova York: Aldene de Gruyter, 1967.

MORIN, Edgar. **Ciência Com Consciência**. Rio de Janeiro: Bertrand, 2000.

MORIN, Edgar. **O Método 01**: a natureza da Natureza. Porto Alegre: Sulinas, 2005.

MORIN, Edgar. **Introdução ao Pensamento Complexo**. Porto Alegre: Sulina, 2007.

STRAUSS, Anselm; CORBIN, Juliet. **Pesquisa Qualitativa**: técnicas e procedimentos para o desenvolvimento de teoria fundamentada. Porto Alegre (RS): Artmed, 2008.

STRAUSS, Anselm; CORBIN, Juliet. **Basics of Qualitative Research**. Berlin: Lage Publications, 1990.

Edna Liz Prigol is a doctor in Education at Pontifícia Universidade Católica of Paraná (PUCPR) and a post-doctorate scholarship student (CAPES) in Education at the same university.
ORCID: http://orcid.org/0000-0002-7449-6622
E-mail: prigoledna@gmail.com

Marilda Aparecida Behrens is a post-doctor at Psychology and Sciences of Education College at University of Porto and she is a full professor at Federal University of Paraná (UFPR).
ORCID: http://orcid.org/0000-0002-3446-2321
E-mail: marildaab@gmail.com