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Qualitative Virtual Team Research as Training Method in a Postgraduate Program in Administration

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Abstract

This study is a retrospective review of methodological strategies employed during a virtual team-based training qualitative study about the emergent process of adapting to remote education among students and professors from a Master Management Program. The aim of this study was to test the technique of collaborative research as an educational and training strategy for Ph.D. students of management who are inexperienced in qualitative inductive research carried out in a virtual environment. A professor and eight Ph.D. students formed the research team and applied a qualitative inductive approach. As a result, 18 methodological steps emerged, which required just over one hundred hours of work. We describe advantages and challenges faced during the process, including greater credibility and validity for the results, technical and interactional difficulties of the virtual research environment, and difficulty reaching consensus in the data analysis stage. The findings also highlight the importance of coordination, active participation, and continuous assessment as Ph.D. educational and teaching strategies. Qualitative Virtual Team Research has proved to be a potential training tool for beginning researchers. We also contribute to the body of research on Ph.D. education and teaching by detailing the procedures used to coordinate the project and clarifying details regarding the strategies used to reach consensus in data analysis development.

Keywords

team-based research, collaborative research, qualitative virtual team research, qualitative research, Ph.D. education, training, virtual environment

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This study is a retrospective review of methodological strategies employed during a virtual team-based training qualitative study about the emergent process of adapting to remote education among students and professors from a Master Management Program. The aim of this study was to test the technique of collaborative research as an educational and training strategy for Ph.D. students of management who are inexperienced in qualitative inductive research carried out in a virtual environment. A professor and eight Ph.D. students formed the research team and applied a qualitative inductive approach. As a result, 18 methodological steps emerged, which required just over one hundred hours of work. We describe advantages and challenges faced during the process, including greater credibility and validity for the results, technical and interactional difficulties of the virtual research environment, and difficulty reaching consensus in the data analysis stage. The findings also highlight the importance of coordination, active participation, and continuous assessment as Ph.D. educational and teaching strategies. Qualitative Virtual Team Research has proved to be a potential training tool for beginning researchers. We also contribute to the body of research on Ph.D. education and teaching by detailing the procedures used to coordinate the project and clarifying details regarding the strategies used to reach consensus in data analysis development.

Keywords: team-based research, collaborative research, qualitative virtual team research, qualitative research, Ph.D. education, training, virtual environment

Introduction

According to McCulloch (2018), Ph.D. education constitutes a new academic discipline that has expanded significantly over the last three decades. The themes discussed within the domain include teaching, a Ph.D. program design, writing and research, employment and careers, student-supervisor relationships, and the Ph.D. student experience. Among works published in the last decade, some have stressed the importance of training competent Ph.D. in teaching and research, who can return public investments to society (De Meyer, 2013). Others have followed this critical line of thought and defended the need to promote a Ph.D. apprentice as a more empowering and reflexive social inquiry (Raineri, 2015) or as a more relevant profession to practice and the changing context and content of knowledge in the new economy (Banerjee & Morley, 2013).

However, "despite the wide range of Ph.D. management programs, debates on teaching in Ph.D. education are still incipient" (Bispo, 2017, p. 160) and, the context of Ph.D. education is commonly composed of a group of students, (i.e., the teaching-learning process does not happen individually, but through the interaction between professor and students). In this sense,

when students are inserted in the context of the same class, it opens the possibility of carrying out collaborative team-based research. Moreover, the individual interpretation is affected by the collective shared meanings (Bispo, 2017).

Team-based research has become increasingly recognized as a strategy to increase scientific production's depth and impact (Adams, 2013). The study of the effectiveness and challenges related to this type of research has given rise to recent work on topics such as cross-disciplinary team-based research (Hall et al., 2017), interdisciplinary team-based mixed-methods inquiry designs (Hesse-Biber, 2016; Quartiroli et al., 2017), challenges and benefits of using undergraduate researchers on team-based qualitative research (Marks et al., 2019), team-based approaches to open coding (Cascio et al., 2019), and team-based approaches to analysis (Holdsworth et al., 2020). Notably, studies regarding collaborative qualitative research or team-based research originate in the field of health studies.

Part of the research on team-based research focuses on the virtual environment for conducting investigations. Recent works include the use of Skype in the context of interdisciplinary team research (Quartiroli et al., 2017), Multi-Site Bilingual Team-Based Grounded Theory Research (Sansfaçon et al., 2018), or challenges and benefits of a team-based multi-sited research focused ethnography in primary care (Bikker et al., 2017).

Bispo and Gherardi (2019) highlight that in qualitative research there is a strong focus on the researcher's interpretations of a phenomenon under investigation. Accordingly, it can be understood that when qualitative research is done in a team-based research, this work is even more challenging because, with different people, it can exist different interpretations and different ways of conducting research. When this scenario is associated with inductive qualitative research, the effectiveness of collaborative research requires the use of systematic methods and the formation of teams of qualified researchers capable of understanding the methodological and analytical paths that lead to the expected results (Fernald & Duclos, 2005). Although collaborative research is considered an exciting and stimulating practice, it also constitutes complicated and exhausting work. The cooperation process can be fragile and vulnerable to the contingencies of the investigation and the researchers themselves. Their results often fall short of previously established expectations (Kosmützky, 2018) due to collaborative research's methodological challenges (Bozeman & Youtie, 2018).

Above all, in the context of Ph.D. education studies, there are two distinct but not properly matched research orientations: on the one hand, the focus on team-based research, and, on the other hand, research through inductive methods. There are few academic discussions concerning methodological approaches regarding the association between an inductive approach with team-based research, albeit some works could be found to solve more practical problems (e.g., Bosque-Pérez et al., 2016; Chang et al., 2020). Considering research training as an essential part of the Ph.D. education and teaching, we conducted a retrospective review of methodological strategies employed during a virtual team-based training on a qualitative study developed in the context of a discipline of qualitative methods in a Ph.D. management program. Given this, the present study aims to test the technique of collaborative research as an educational and training strategy for Ph.D. students of management who were inexperienced in qualitative inductive research carried out in a virtual environment.

Thus, a qualitative inductive approach was developed by a research group composed by a professor and eight Ph.D. students. In the process of developing the research that, besides involving the development of the study by a diverse group, included the use of different forms of data collection as a way of applying the learnings encompassed in qualitative research, 18 methodological steps were obtained, which required over one hundred hours of work during the beginning of the COVID-19 pandemic.

As a result, the advantages and challenges faced during the process were described, including greater credibility and validity for the results, technical and interactional difficulties

of the virtual research environment, and the difficulty reaching consensus in the data analysis stage. The main contributions highlight the importance of coordination, collaboration, active participation, and continuous assessment as Ph.D. educational and teaching strategies and suggest qualitative virtual team research can be a potential training tool for beginning researcher and during crisis situations, as the one regarding the pandemic.

In the following section, we first discuss the advantages and challenges of team-based qualitative research. Next, the context and the methodological path are described, highlighting the investigation process's emerging stages. Subsequently, the discussion turns to results and considerations in future applications of the teaching method. Finally, we conclude by relating the results with Ph.D. education's future challenges.

Theoretical Background

Advantages of Team-Based Qualitative Research

Considering the wide variety of qualitative research used in management studies, for the present study, a qualitative inductive research is privileged, focused on exploring unique or singular empirical phenomena as a basis for the emergence of new concepts and theories (Yin, 2015).

Whitin the scope of qualitative research, the existence of inductive qualitative research carried out by individual researchers or researchers' pairs should be highlighted. Studies with an inductive nature and/or made by a team of researchers are part of a recent trend of expanding research teams to improve research results. For example, it is expected to promote the conclusions' reliability as several researchers analyze the same data (Bernard & Ryan, 2009; Creswell, 2013). Researchers' triangulation is considered a way of making specificities and subjectivities characteristic of qualitative research more tangible (Rubel & Okech, 2017).

Despite the difficulties faced by researchers when opting for collaborative research, teamwork also has advantages. This type of project benefits from the work done collectively, from the thoughts, skills, and energies contributed by each team member. Another benefit is the possibility of collecting and analyzing large amounts of qualitative data. Finally, there is the team members' research skills improvement as they relate and exchange experiences with each other during the process (Fernald & Duclos, 2005). As highlighted by Kosmützky (2018), collaborative group research allows integrating different cultural, disciplinary, methodological, and personal perspectives to facilitate and enrich the research process.

Herschlag (2020) points out that, like the famous cliché, a good team is nothing more than the sum of its parts. In science, it is necessary to look for opportunities that allow teamwork, celebrating the integration of diverse scientists with perspectives and directions towards a common goal. Thus, Herschlag (2020) also mentions researchers with different values, views, and passions, when acting together, answer in a collaborative way to questions that alone would not always think to reflect about. Furthermore, Cheruvelil et al. (2014) highlight successful teams have positive interdependence of members, effective communication, and individual and group responsibility. These teams offer positive experiences for all participants, are highly productive, and maximize individual and collective benefits.

Highly effective teams have a clear and shared purpose among members, besides relevant roles and skills (Bannister et al., 2014). They also have a shared commitment, collective sensitivity, teamwork ability, ability to integrate knowledge, and members with diversified characteristics (Cheruvelil et al., 2014; Gardner et al., 2012). Such distinct attributes of the members allow a more profound reflection and greater cooperation in teamwork (Bedwell et al., 2012).

When referring specifically to data analysis, a team-based strategy can increase analytical efficiency and facilitate collaborative research. Challenges can arise concerning consistency when using inductive methods that start with open coding of transcripts and go to a codebook instead of the other way (Cascio et al., 2019). Considering what was exposed, other challenges of team-based qualitative research are highlighted below.

Challenges of Team-Based Qualitative Research

Challenges have been present since the beginning of a study and extend throughout conducting and developing team-based qualitative research (Carter et al., 2019). For example, projects usually start with regular meetings, which can become irregular over time, disrupting conversations, ideas, and workflow. Without continuity in communication, the team members may be surprised as new information, expectations, or changes in direction emerge (Fernald & Duclos, 2005).

Establishing a common and useful schedule is another challenge. The members involved usually do not have the availability to dedicate themselves exclusively to a project. Thus, it is necessary to organize plans that avoid inactivity periods (Berente & Howison, 2019). Furthermore, in addition to aligning schedules between members, team-based qualitative research requires participation and agreement from researchers concerning the study's objectives and understandings of the main concepts worked on. Although researchers may not initially share similar ideas, in co-production it is up to the group to outline a joint work plan to achieve the objectives. Discussions about the meanings of relevant terms regarding some concepts used in the research, as well as the expectations of the researchers involved, should also be discussed in advance (Berente & Howison, 2019; Pohl & Wuelser, 2019).

To operationalize the discussion of the different ideas and perspectives of researchers involved in a study, Pohl and Wuelser (2019) present the concept of storywall. This qualitative research process involves a few steps: the first consists of discussions about the main points to be addressed in the research; in a second step, each researcher develops explanations of their perceptions on the topic; later, all ideas are presented to the group, which together build a common way of understanding the subject. When different forms of understanding are placed face-to-face, researchers tend to learn from each other. The entire storywall process, even when carried out at the beginning of the research, is considered a way of contributing to interpersonal and trusting relationships between members and enabling the development of more reflective group work.

As for data analysis, although many projects have successfully employed a team-based coding approach, little is known about the details of how to reach consensus and maximize coding consistency among team members (Campbell et al., 2013). Cascio et al. (2019) describe some of the strategies that researchers can use to reach this consensus: methods for calculating agreement between evaluators in a research dyad in which a researcher will complete most of the coding, detailed consensus-building team meetings, identification of sources of disagreement between coders, and debates on the merits of reliability statistics, such as the agreement index.

Regarding research limitations, researchers' time and skills are essential variants when working in groups (Gooding et al., 2018). These variants can be complex and influence the research results. For this reason, the inexperienced research team members must be associated with the research leader knowledgeable about balancing diversities for the positive result throughout the work (Gooding et al., 2018).

Conducting Team-Based Qualitative Research in Ph.D. Training

A group research study has several positive aspects, mainly concerning the efficiency that will be achieved with the study as well as the development of the researchers themselves. Even with the positive aspects being highlighted, group research also brings with it several challenges concerning the consistency of the methods used, and, when in addition to having group research being conducted, there is also research with an inductive nature, the challenges become even greater due to the incipency of research with such nature (Cascio et al., 2019; Fernald & Duclos, 2005).

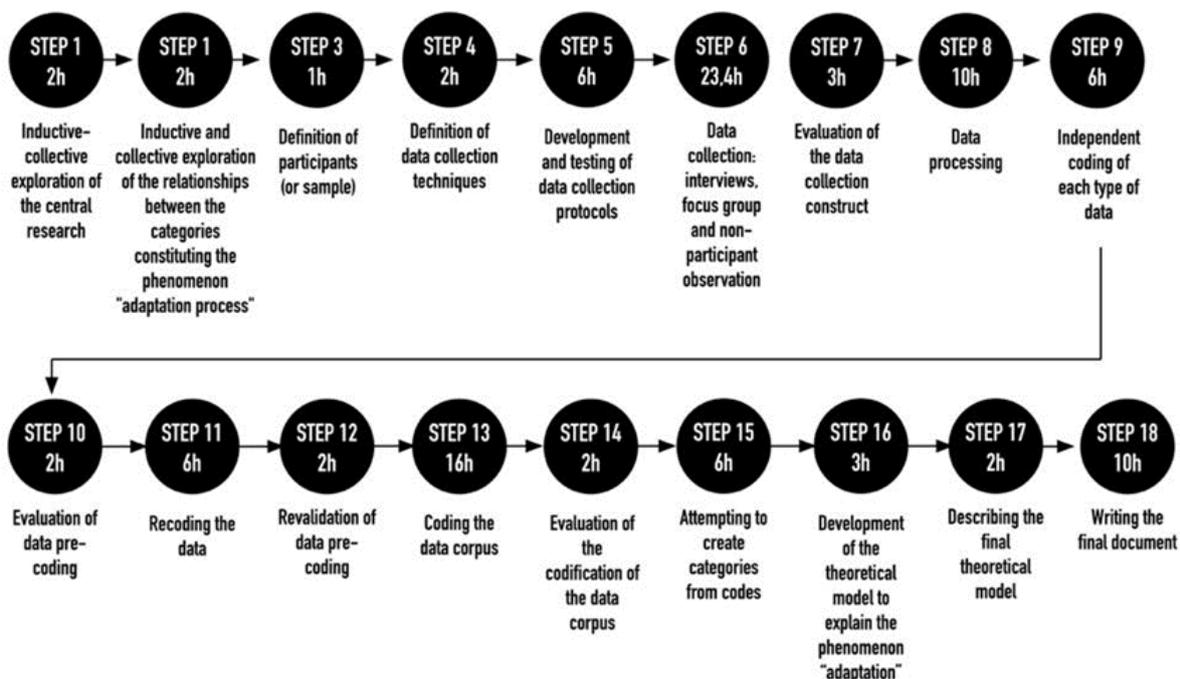
However, considering the need and relevance of research training as an essential part of the Ph.D. education and teaching, and the need for new ways of collecting data in periods when social isolation is necessary, such as the context unfolded by the COVID-19 crisis, it was also applied in this study a retrospective review of methodological strategies employed during a virtual team-based training on a qualitative study developed in the context of a discipline of qualitative methods in a Ph.D. management program.

As highlighted before, the present study aims to test the technique of collaborative research as an educational and training strategy for Ph.D. students of management who were inexperienced in qualitative inductive research carried out in a virtual environment and, in the next section the methodological procedures that made the realization of this study possible, are presented.

Context and Methods

Figure 1

Investigation Process's Emerging Stages



Note. Matitz et al. (2020).

The context of Qualitative Research Based on Virtual Teams described in this article is a postgraduation program in management at a Brazilian federal university. The classes were authorized to operate in the Emergency Distance Education (EDE) modality a few weeks

before the beginning of the research. The group of researchers was formed by a professor and eight Ph.D. students, here called leader (researcher R1, professor) and junior researchers (R2, R3, R4, R5, R6, R7, R8, and R9, students). As described below, the research process emerged from a qualitative inductive approach to the study phenomenon and gave rise to 18 steps. Figure 1 summarizes the investigation process's emerging stages.

The study's initial objective was to verify the adaptation process of professors and students of the master's course in administration to the EDE. The phenomenon studied itself developed simultaneously with the research.

Step 1: Inductive-Collective Exploration of the Central Research Construct

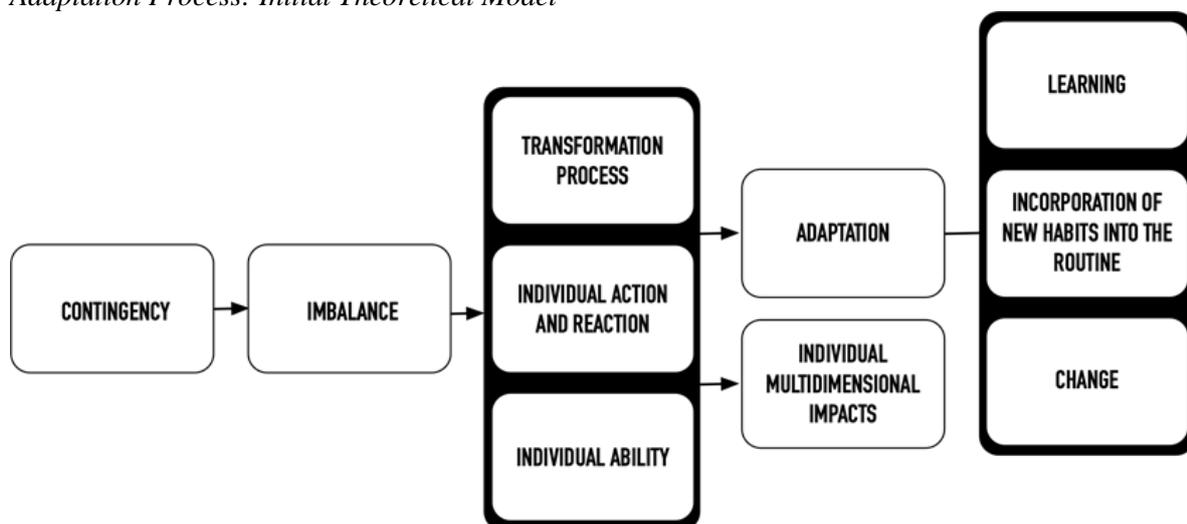
Under the researcher's professor leadership, each of the junior researchers proposed a personal definition for the concept of adaptation, considering the initial research objective and the context for conducting the research. It was the first approach to the concept of "adaptation" without the prior reading of specialized literature.

After the initial individual stage of proposing adaptation concepts, the researchers compared the proposed definitions' central elements. Each set of similar meanings was grouped and given a label. This stage of comparison and grouping resulted in ten categories or tags that were directly or indirectly related to the "adaptation" phenomenon: (i) contingency, (ii) imbalance, (iii) transformation process, (iv) individual action and reaction, (v) individual ability, (vi) adaptation, (vii) individual multidimensional impacts, (viii) learning, (ix) incorporation of new habits into the routine, and (x) change.

Step 2: Inductive and Collective Exploration of the Relationships Between the Categories Constituting the Phenomenon "Adaptation Process"

Based on the categories identified in the previous step, researchers explored potential relationships between these elements through collective analysis. Based on the suggestion of researcher R1, the ten tags were classified into: (i) influential factors or causes of the adaptation process, (ii) constitutive factors or attributes of the adaptation process, and (iii) consequent factors or effects of the adaptation process.

Figure 2
Adaptation Process: Initial Theoretical Model



Note. Matitz et al. (2020).

Figure 2 summarizes the result of this initial collective attempt to identify a theoretical model representative of the adaptation process. In the face of external contingencies, a state of imbalance arises. This imbalance generates a change process characterized by individual actions and reactions based on the individual's ability to deal with the situation. Adaptation emerges as one of the responses or effects of this process and is characterized by the emergence of learning, incorporation of new habits, and change. In addition to adaptation, the imbalance situation can generate positive and negative multidimensional individual impacts.

The main result of steps 1 and 2 was the awareness of the group of researchers about the phenomenon of study, enabling the development of data collection instruments.

Step 3: Definition of Participants (or Sample)

To select the research participants, the researchers first contacted the professors of the subjects offered in the master's program, as well as the students. The latter enrolled in the program by the first semester of 2020 and was targeted since they had only had one week of in-person classes. In Brazil, there are no distance learning postgraduate programs. However, due to the expansion of the COVID-19 pandemic, the Ministry of Education allowed the activities to be continued remotely during this time of crisis.

The contact with the professors was made via e-mail, in which the researchers explained the proposed goals for the present study and asked about the possibility of conducting interviews and/or observations in the virtual classrooms. The communication with the students was made via an instant messaging app (WhatsApp) in which there was a virtual room grouping all the students of the postgraduate program. The message for the students also explained the objectives of the study and which techniques of data collection would be used (interviews and focus group). The voluntary students' selection of who would be interviewed and who would be in the focus group was made randomly. In all cases — regarding students and professors — participation was voluntary, and the researchers assured, in the very first contact, that participants' identities would not be revealed to guarantee their security about their personal information and to follow ethics concerns. Thus, from 24 professors and 40 students, five professors and 16 students accepted to participate in the research.

Step 4: Definition of Data Collection Techniques

Considering the investigation's objectives, the need to expand the rigor and validity of the results, and the Ph.D. educational-training purpose, researcher R1 suggested adopting multiple data collection techniques. After discussion and collective agreement, the use of three different collection techniques was defined: non-participant observation, interview, and focus group. Through discussions and collaborative decisions coordinated by researcher R1, three teams were assigned to each data collection technique. The data were collected in the virtual environment between June and August of 2020 due to restrictions imposed by the social isolation caused by the new coronavirus's advance.

The choice of the semi-structured interview technique allowed greater flexibility to the researchers regarding the introduction and elimination of questions according to the interview's development (Brinkmann, 2017). It can result in a deeper understanding of the phenomenon from the interviewee's perspective. In turn, the focus group technique, by enabling the researcher to act by mediating the group's interaction on the topic of interest (Morgan, 1996), was chosen to assist in the development of convergent, divergent, and complementary explanations - a condition considered enriching for the understanding of the phenomenon from

different perspectives. Finally, non-participant observation is regarded as a useful complementary instrument in data collection.

Step 5: Development and Testing of Data Collection Protocols

After the first conceptual approximation effort (Steps 1 and 2), sample definition, and definition of data collection strategies, data collection protocols were developed and tested. Each team of researchers developed a data collection protocol appropriate to the technique and conducted a pilot test. This moment allowed the validation and improvement in the pre-established protocols. The design and validation of the data collection protocols also involved rounds of discussions between the groups of researchers to align and homogenize the instruments, despite each technique's specificity. After this stage, researchers carried out data collections.

Step 6: Data Collection: Interviews, Focus Group, and Non-Participant Observation

To guarantee ethical standards in research, the research team held strategies to protect participants' personal information. In the interviews, besides the verbal declarations, the participants signed a document entitled "Free and Informed Consent Form," through which they were acquainted about the purposes of the research as well as the privacy in the treatment of their personal information.

In the same way, in the focus group and the observations, the participants were presented with verbal instructions about the research objectives and how their personal information would be treated before data collection. In all cases, the recordings only started after the participants' authorization (Yin, 2015).

In addition, to guarantee the participants' mischaracterization, their names were replaced by codes prior to data analysis (i.e., S01, S02, EXT2, EXT3). Moreover, only the codes were used to refer to the participants when researchers were discussing during the meetings.

Thirteen semi-structured interviews were carried out on the platforms preferred by each of the interviewees — eight students and five professors — all of them with the presence of a team of three junior researchers. The interviews ranged from eight to 40 minutes and resulted in 280 minutes of recorded interviews, which generated 88 pages of transcript. The interviews were recorded on video and audio, with the participants' prior consent. This interview-centered data collection technique allowed a wide range of responses regarding students' and professors' adaptation process.

The interviews were based on semi-structured scripts previously developed based on what had been discussed with all participants concerning the following categories: context, changes, tools, socialization, and emotional impact. Two scripts were thus prepared: one for professors, which covered questions about: how long they had been teaching; their teaching experience; whether they had taught remotely before; and about their impressions regarding the adaptation process in general, focusing on the tools made available by the university and also the free ones; on the responses given by the university regarding the suspension and remote return of classes; on their perceptions about the students' performance; the adaptation to the new way of working; the personal and professional impacts arising from this new context.

On the other hand, the script for interviewing students focused on questions regarding their perceptions about the responses of the university on the classes' suspension and continuity, how the adaptation process was going from their point of view, what had changed in their study routines, how the process was going considering the context of COVID-19 and its possible influence on personal issues, how they felt studying a master's course remotely; whom they

lived with and what the relationship was like at home, the adequacy of their room to study in their homes, and if they had returned to their hometowns since many students are from cities others than that of the university one.

Despite the existence of this script, the researchers also gave space for other types of questions regarding emerging issues in each interview, opening the possibility for respondents to freely discuss the phenomenon of adaptation to the EDE. It also made it possible to observe expressions and other visual aspects indicative of the interviewees' perceptions and feelings about the phenomenon.

The main objective of the focus group was to analyze, from the participants' interactions, similarities, and divergences between opinions and emotions about the phenomenon under study. Three junior researchers led the two groups. Four participants were assigned to each group to allow for greater intensity of interaction. The two focus groups generated 180 minutes of video recording and 22 pages of transcription, with the participants' prior consent. The focus group discussions were conducted based on a research protocol developed by the researchers. Two main topics were addressed: the academic and the personal context. In the former, participants had the opportunity to analyze conditions such as the tools used in online classes, the student participation, the teaching and learning aspects, and the socialization between students and teachers. For the latter topic, personal matters were discussed, such as the activities routine, the emotional impact of the pandemic, changes related to the study, work, and family environments.

Finally, through non-participant observation, the objective was to understand the dynamics of classes held in the EDE modality and the actions and reactions of its participants. Two researchers made the observations during four classes, selected from the professors' willingness to participate. The first class observed had a professor, three students of the master's degree and an external student; the second observation consisted of a class with a professor and eight masters students; the third class observed had a professor and 18 students of the master's degree; the fourth and last observation made consisted of a class with a professor, 12 students of the master's degree and seven external students. The four classes observed generated 13 hours of video recording and 13 pages of reports on the main events. The professors of the disciplines were previously contacted and consented to the participation of researchers as observers. Two researchers were assigned to participate directly in this stage and performed the observations in a synchronous and asynchronous manner. This means a researcher followed the lesson synchronously and made his notes. Another researcher only watched the recordings and made her notes in the same way. Although the synchronous mode allows the observer to know some contextual information, such as comments prior to the recording, the researchers found no significant divergences between the adoption of the two forms of observation when comparing their notes. Even though it had a report, the recording also allowed access to the raw data to other group of researchers in charge of analyzing this data. During the observations, the researchers proposed to identify evidence of the adaptation process by following a semi-structured form with topics such as the type of platform used, the number of students, connection oscillations, the statuses of the cameras (on or off), interruptions, external interferences, scheduled and actual time, and class dynamics. Additionally, the report presented other details not covered in the form, such as image framing, weather effects that impacted a student, and dialogs in the chat about the absence of sound from the professor's microphone.

In total, data collection generated 1,408.63 minutes or 23.4 hours of recording, adding data from interviews (280 minutes), focus groups (180 minutes), and observation (948 minutes). The data also generated a total of 123 transcribed pages.

Step 7: Evaluation of the Data Collection

After two weeks of work development, while Step 6 was being implemented, the research team held a self-assessment and mutual assessment meeting, led by researcher R1. Junior researchers were proactive in elaborating activities, contributing to the diversity of personal knowledge in theoretical and methodological development. Also, Ph.D. students' self-knowledge about their skills and weaknesses was perceived as a positive influence on teamwork. An additional positive factor was the standardization and management of collective activities mediated by technological tools such as WhatsApp and Google Drive. All researchers followed the other team members' activities, facilitating the scheduling of data collection and the preparation of written works. The main difficulty was the team's size, which made it challenging to reconcile agendas and work rhythms.

Another relevant aspect identified in this stage was related to technological mediation in data collection since the interaction between researcher-participant and participants may have suffered unmeasurable interference compared with the traditional face-to-face format.

Step 8: Data Processing

As the first step in data processing, the researchers transcribed all interviews and focus groups. To facilitate the standardization of analysis and communication among the team, they used the computer-aided qualitative data analysis software (CAQDAS) ATLAS.ti version 8.4.24. The software allowed researchers to control the process, facilitating the coding process itself. As a way of leveling the knowledge regarding the tool's use, an external expert in CAQDAS trained the research team in using the program. Thus, the team reached consensus to adopt standardized documents and emergent codes names to be created into CAQDAS.

Step 9: Independent Coding of Each Type of Data

Due to the diversity of data collection techniques and the need to aggregate the results, a pilot analysis stage was carried out to prepare an initial coding of the data. Researcher R1 suggested junior researchers should vary their roles with respect to the different types of data. Those responsible for conducting the interviews analyzed the observation data, while those responsible for collecting the data from observations analyzed the data collected from the focus group, and those responsible for conducting focus groups data analyzed the interviews. Each group had the autonomy to establish their own procedures in the pilot analysis of the data. Ultimately, the interview analysis team generated 20 codes, the observation analysis team developed nine codes, and the focus group analysis team generated 46 codes. In total, the process resulted in 75 different codes.

Step 10: Evaluation of Data Pre-Coding

Based on the 75 codes created by the junior researchers' team, a meeting led by the senior researcher (researcher R1) helped to align the code proposals. At this point, it was evident that each of the three groups had diverging views on coding procedures. For instance, the group responsible for interview analysis prepared a set of 20 first-order codes aggregated into nine second-order codes, while the other two groups analyzed using just first-order codes. Furthermore, there were some inconsistencies regarding the details and accurate meaning of the codes. For example, code "Lack of interaction" was suggested to be labeled as "Lack of interaction between students during class."

Given the impossibility of aggregating the codes, as they were created on different bases, researcher R1 demonstrated how to create codes derived from the raw data. The objective was to standardize the analysis procedures between the groups. It was agreed that all codes for each group should have the following characteristics: a comprehensive, self-explanatory, and non-synthetic nomenclature, and specificity. Each group oversaw adjusting their code proposals for this new way of standardizing data analysis. This new stage resulted in 20 interview codes, 20 for observation, and 37 for focus groups, totaling 77 codes.

Step 11: Recoding the Data

Based on this new categorization, the eight junior researchers decided to hold another meeting, which lasted three hours, to develop a unique set of codes, resulting in 75 codes. The process of grouping and attempting to unify the three groups occurred from the discussion of each code. It consisted of the researchers' exposure to the meanings attributed by each group to the emerging codes. All junior researchers participated actively in the meeting and presented their reflections on similar and divergent perceptions revealed during the pilot analyzes.

The process of aggregation turned to be a challenging step to reach team consensus, since not only team-members but also the type of data diverges. For instance, codes from the interviews have a more individual acting nature, such as "Students' loss of interaction with their classmates" and "Professors' private planning changes due to pandemic." In contrast, codes from the focus groups have centered on perceptions, such as "Distant classes features considered better than in-person classes" and "Students' culpable feelings," while codes created from observations have focused on more indirect hallmarks, such as "Platforms diversity," "Students' that do not interact during the class," and "Third party's interference during the class." All codes could refer to the same event, for example, a specific class, but occur in different types of data, (i.e., interview, focus group, and observation), while informing different aspects of the phenomenon.

Although the 75 codes obtained represent a value not significantly lower than the previous attempt, they vary in their meaning since the codes were created together. In this way, from the former 77 codes, 36 codes were kept in their original format, 13 codes were edited for better understanding, 28 were dismissed due redundancy, and 26 codes were generated.

Despite not present in the pilot analysis, the 26 added codes were included to express an opposite nature of an original code. For instance, "Positive perception about the changes in personal context caused by the pandemic" was accompanied by its opposite "Negative perception about the changes in the personal context caused by the pandemic," initially not present. By the same token, a code to express students' issues has been generated when a code with professors' issues was created before, and vice-versa.

Step 12: Revalidation of Data Pre-Coding

The new set of 75 codes was presented in a meeting with researcher R1 for the last validation before starting the final coding phase. The unification did not reduce the number of codes as expected. However, it did allow the continuity of the data analysis process on homogeneous premises. At this meeting, all researchers agreed this list had a provisional character and new codes could emerge from the analysis.

Researcher R1 predicted that a large number of codes would make it challenging to analyze the data corpus since it represents just the initial codes derived from pilot analysis, and possibly many emergent codes would be generated. However, she considered that proposing a solution that did not involve everyone's agreement would be an obstacle to the learning process and chose to wait for the results of the next stage of analysis.

Step 13: Coding the Data Corpus

The 75 codes were organized into a spreadsheet and imported to the CAQDAS software to serve as an initial codebook. From this moment, the new codes would be signaled in the CAQDAS with a precedent “E –” mark to denote their emergent statuses. After all the data was coded, the result was 141 emerging codes in addition to the 75 originally conceived, 80 of which were from interviews, 34 from focus groups, and 27 from observation. At this moment, the research team developed a set of 216 codes.

The emergent codes revealed characteristics not captured before, expressing varied themes such as effects of cultural or personal aspects, planning issues, available time, routines, and interaction need. After all, even the new codes continued having the divergent nature obstacles faced when pre-coding. Accordingly, the emergent codes from the interviews expressed a tone more related to individual actions, while codes created from the focus groups comprised perceptions and impressions, and codes from observations have reported more indirect forms of representation.

Step 14: Evaluation of the Codification of the Data Corpus

A new meeting was held with researcher R1 to present and discuss the results achieved in the previous stage. It was evident that, due to the persistence of many codes, a new synthesis process would be necessary to aggregate them into mutually exclusive and comprehensive categories.

Step 15: Attempting to Create Categories from Codes

The junior researchers tried to aggregate the codes into categories during two meetings for a total of six hours. The codes were discussed again, one by one, based on those with the lowest citation rate. As a result of this process, they reached 131 codes. Although they reduced the number of codes compared to the previous proposal, the team did not get a viable consensus on the aggregation of codes in categories that would allow the construction of a theoretical model to explain the phenomenon.

Since there was no limitation to code creation, there were developed many of them, with a different range of details. Examples of divergent codes between teams were: "E – Positive aspect about the methodology used by the professor" and "E – Professor stayed with the camera on throughout the class." Although written differently, both codes were developed to report the methodology used by professors in distant education. Thus, in discussion with all team members, the codes were aggregated into a single code, named “E – Teaching methodology.”

Another example of divergent codes between the researchers was “E – Difficulty of the student in establishing discipline in remote learning” and “E – Cultural characteristics that hinder interaction.” In order to cover the meaning of these codes, the researchers opted to aggregate as “E – Personal/Cultural characteristics that negatively affect the way the individual deals with the context of the pandemic.”

As noticeable, the code divergence occurred primarily due to the emphasis or not in detailing the situation. Therefore, the solution was to use broader codes to capture the central elements referenced in each code. It is worth mentioning that both the elaboration of the group of codes and the definition of which code could be added to it were carried out in a joint meeting and with the active participation and agreement of all research team, despite divergent perspectives of how the codes would be like. Thus, the team had to deal with the tricky situation

that there was more agreement than consensus. In other words, they were willing to collaborate and acquiesce to some points of view in order to move on more than be persuaded.

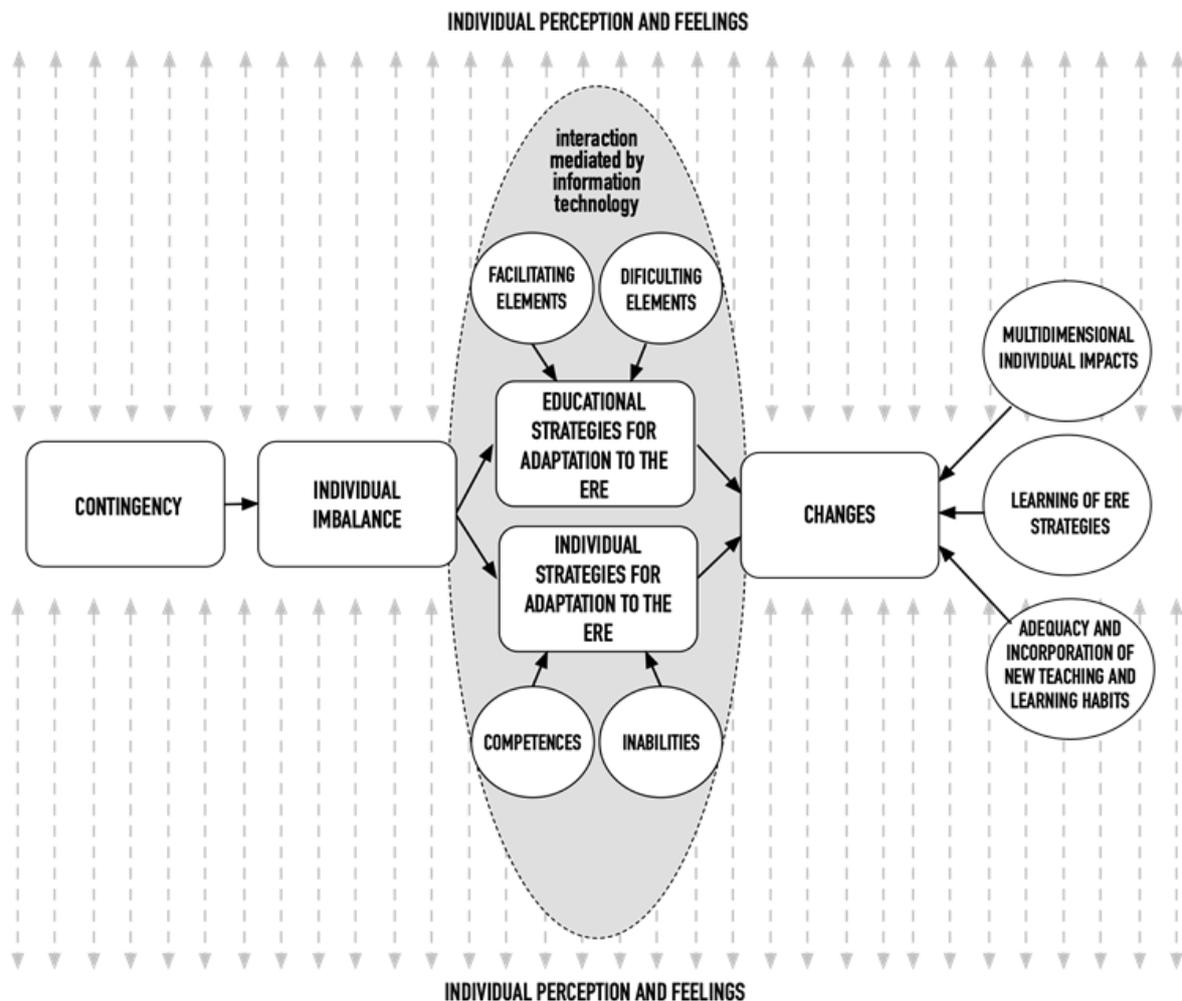
Again, researcher R1 considered that proposing a solution that did not involve everyone's agreement on the analysis categories would be an obstacle to the learning process. Therefore, she chose to wait for the next stage of analytical model development.

Step 16: Development of the Theoretical Model to Explain the Phenomenon “Adaptation”

The lack of consensus on the aggregation of 131 codes into categories had become an impediment to constructing a theoretical model to explain the phenomenon of adaptation. Therefore, with the researcher R1 agreement, the team decided to decline the team-based analysis through the 131 codes and started a new approach in which every researcher would develop a model proposal. Researcher R1 suggested that the initial model developed collectively in Step 2 could be used as inspiration if the researcher considered it relevant.

Figure 3

Adaptation Process to EDE: Theoretical Model



Note. Matitz et al. (2020).

Each of the individual models was presented and discussed collectively in an online meeting that lasted about five hours. The researchers found new insights and similarities that directly supported the joint construction of the theoretical model.

The new model was presented for validation to researcher R1, who recommended the elements of the university's institutional adaptation process be separated from aspects of the individual adaptation process of students and professors in the master's program. Based on this recommendation, a new meeting lasting about one hour was held in which the junior researchers excluded elements of the model related to the institutional level of analysis. They decided that the phenomenon should be analyzed exclusively at the individual level. In other words, the new focus was to understand how professors and students experienced the process of adapting from face-to-face to remote education in the context of the pandemic.

The final model had some similarities with the initial model, mainly related to the causative elements and the effects of adaptation process. However, the empirical analysis of the adaptation process as it emerged over the study period showed some differences related to the phenomenon as it had been initially designed. Some examples of these differences, presented in more details in the next step, are the emphasis on the role of technology in the core of the adaptation process presented in the second model; the scope of individual perceptions and feelings throughout the process, which previously were more related to specific steps, such as individual action and reaction processes, individual skills, or multidimensional impacts.

Figure 3 summarizes the result of this final collective attempt to identify a theoretical model representative of the adaptation process. In the face of external contingencies, a state of individual imbalance arises. The professors and students surveyed were forced to review plans and expectations concerning the academic semester and personal and professional activities.

Step 17: Describing the Final Theoretical Model

Some strategies for adapting to the EDE were developed by professors and students in two perspectives: at the educational level and the individual level. Regarding the educational strategy, we found that there was a need to adapt to changes from classroom to remote education, especially for professors. In a short period, there was a change in the way classes were conducted and in the assessment methods. Facilitating elements included the communication platforms and technologies available for remote education. As hindering elements, the low quality of the internet connection and technological mediation's interference with personal relationships stand out. In terms of the individual perspective, adaptation strategies involved both the use and development of skills and coping with disabilities. In this case, the competencies were associated, mainly, with some individuals' previous experience with the Distance Learning modality (EAD) and the development of resilience resulting from the pandemic context. Regarding disabilities, resistance to the remote teaching model is pointed out as a hindering element in elaborating strategies to go through this period.

Adaptation strategies generated changes in three main result sets: individual multidimensional impacts, learning, and adaptation/incorporation of new habits. Multidimensional individual impacts are associated with the positive and negative effects caused by the context faced on individuals' living and health conditions. For example, family, physical and mental health, and financial problems, among others, were observed. From a positive point of view, individuals showed greater self-knowledge, resilience, and empathy, among others. Learning refers both to professors and students and is related to the news related to remote education that emerged from the contingencies and imbalances and the adopted adaptation strategies. The adequacy and incorporation of new teaching and learning habits concern the adjustment or creation of routines necessary to maintain the conditions for conducting the master's degree under the pandemic's adverse conditions.

In comparison to the model initially proposed, shown in Figure 2, the inclusion of technology as a mediating element that facilitates and hinders the process of adapting to

emergency remote education is also significant. Besides, the importance of professors' and students' subjectivity was observed, which manifested itself throughout the process in feelings and perceptions. It can be considered that the adaptation process was also a process of rational-cognitive interpretation and emotional reaction to the contingencies presented by the pandemic situation. The final model, represented in Figure 3, describes the result of the data analysis.

Step 18: Writing the Final Document

Writing the final document was carried out collectively through a shared file, with the contribution of all researchers. Researcher R3 aligned the writing in terms of language and descriptive coherence of the stages of the research process. Researcher R1 was also responsible for the final revision, description, and analysis of the research process from the Ph.D. educational perspective, considering the work's general objective.

Main Reflections Regarding the Strengths and Challenges of the Method

The proposal for training in collective qualitative and inductive virtual research arose due to the conditions imposed by the COVID-19 pandemic. It was also motivated by the need to comply with the teaching plan for a discipline of Advanced Qualitative Procedures in Research in a Ph.D. in Management program.

We have proven in practice some of the advantages and challenges pointed out in the literature. For example, working in groups from the first steps to writing the final document increases the results' reliability. The same data was collected and provided by multiple people from different areas of the management study. Specifically, there is research in strategic management, organizational analysis, marketing, innovation, and technology. Researchers have different origins in ontological, epistemological, and methodological terms. According to researcher R2:

... with this large team, it was possible to carry out several revisions, whether in theoretical construction, data collection and general work development, thus promoting greater credibility and validity for the research. Certainly, this whole process provided a richer job and allowed for greater learning for all participants.

Teamwork also made it possible to collect a large amount of data, which likely could not be collected by a single researcher in the same investigation period. According to the testimony of researcher R5, "... with more people working concurrently on different tasks, the work ended up being developed in a much faster period than would be done individually."

Other aspects reported in the literature also contributed to the success of the undertaking: effective communication between members, collective and individual responsibility, ability to work in groups, and synergy focused on obtaining the expected results. According to researcher R4:

The union of people who are from the same area of knowledge, but which research different subjects, made the reflections generate not only concordances, and that made us see points that we would not see alone. The plurality of opinions, combined with the respect that we have always had with each other, brought us to common points, and certainly favored the enrichment of research.

According to researcher R7, the advantages of team research work also include the possibility of dividing tasks, the wealth of content brought by the diversity of insights generated throughout the study period, the result of the moments of feedback, the dynamics provided by the moments of interactivity, rigor, and reliability of interpretations developed collectively. For researcher R2:

The greatest difficulty was working with a great team. They are very different personalities, work rhythms, available times, methodologies, positions, and thoughts. Reaching consensus was a complex task. Also, coordinating an online meeting clearly and objectively generated stress, but it has become possible over time. The team itself regulated itself and created techniques to better spend the time.

According to the Ph.D. students' written testimonies at the end of the discipline, the research's conduct in the virtual environment was positive and negative. Regarding the productivity of virtual meetings, researcher R3 stated, "virtual meetings for discussion of research, both in class and outside class, were always moments focused on getting work done." According to researcher R7, "In our case, within the virtual environment, we had greater flexibility on the conduct of interviews and focus groups." As for the disadvantages, junior researchers highlighted:

- Some researchers and participants' difficulty connecting to the internet required a return to the previous topic after reconnection (researchers R2, R5, R7, and R9).
- Lack of face-to-face interaction, which makes interaction more mechanical and less fluid (researcher R7).
- More important contact and observation of nuances are only possible in face-to-face contact (researcher R9).

Other reported difficulties refer to the synchronization of time, in addition to the physical distance favored by the pandemic (researcher R4), difficulty in synchronizing the tasks performed by each researcher, and avoiding delays (researcher R7) or the problem of communication mediated by technology (researcher R2).

As for the challenges, aspects highlighted in the literature were also verified in practice, mainly the difficulty of reaching a consensus in the data analysis stage of qualitative inductive research. Both the professor and the junior researchers noted these difficulties. For researcher R3, "... there was disagreement in some points of the analysis, there was a great effort to align a common understanding." Researcher R9 explains, "... the biggest differences were found in the formulation of the categories. Each researcher has an ontological and epistemological vision. Therefore, each team member has a distinct understanding of how the work must be done." According to researcher R7, "Although the heterogeneity is positive, in our case it was a little challenging to reach a common understanding that would please all members involved."

In general, the Ph.D. students (the junior researchers) have great ease with the application of data collection and treatment techniques. However, they find it challenging to make the analytical leap of empirical data to develop new concepts and theories.

They also highlighted how writing was a challenging and enriching element: "... in addition to the technical/theoretical deepening, the development of the article also provided the experience of writing with a large group of authors" (researcher R4).

Insights Related to the Teaching and Learning Potential of the Method Adopted

According to researcher R7, "...team members characteristics and the specificities of the research field specificities made the process so particular and emergent that it is almost impossible to define a methodological recipe for this type of research."

However, the retrospective analysis of the process and the results obtained reveals essential insights regarding the method's training potential. Here, the study highlights three aspects to be considered in case of future use of similar teaching strategies: coordination, active participation, and continuous assessment.

As it is a team of researchers with little experience in qualitative research, coordination was essential in pointing out strategies and research elements to be considered. According to testimony from researcher R8:

The experience of working in a group, and especially, a large group was excellent, I honestly did not believe it could work so well, in that sense, I believe that the leadership of the senior teacher was fundamental for this process to be accurate.

For example, it was up to the coordinator to indicate a first way of approaching the empirical phenomenon, different from the bibliographic review so familiar to masters and Ph.D. students. It was also up to the coordinator to demonstrate the importance of validity in qualitative research by using different types of triangulations, as proposed by Zappellini and Feuerschütte (2015). In this specific case, the triangulation of data sources, the triangulation of data collection techniques, and researchers' triangulation in the stages of data collection and analysis were applied. The professor also, for didactic-pedagogical reasons, purposely highlighted qualitative research aspects during the collective research work. Finally, it was up to the coordinator to establish a work rhythm to complete the research within the specified deadline.

As for junior researchers' role, we highlight the importance of active participation as a fundamental element of the learning process. In contrast to the expository teaching model, in which the student assumes an almost always passive posture, the proposed training required constant action and reflection from the researchers involved.

Finally, the study highlights the importance of continuous assessment, carried out throughout the process. On the one hand, the evaluation in terms of the progress of the learning process was carried out by the coordinator at each meeting and after each virtual meeting with Ph.D. students. Through questions and debates about the field research in progress, it was sought to verify the students' level of understanding regarding the contents of the discipline. When realizing the need to reinforce specific contents, the coordinator presented applied examples or requested complementary activities. Simultaneously, self-assessment and mutual collective assessment took place explicitly and collectively at the end of certain stages, as previously described. For example, when collecting data collectively, junior researchers were able to self-assess and receive feedback from other team members on their performance.

Conclusion

Building knowledge about emerging complex phenomena requires adopting research methodologies that are both robust, reliable, and flexible. As pointed at the beginning, collaborative research is considered an exciting practice, but it also constitutes complex and intensive work. According to the testimony of one of the junior researchers involved in the

dynamics described in this work: "Undertaking qualitative research in groups is more challenging than it may seem" (researcher R7).

Our group research experience has proved to be a potential training tool for beginning researchers. According to the Ph.D. students' testimonies, concepts learned in the discipline were experienced, in addition to the deepening of concepts previously studied in the master's course.

As for the virtual teaching-learning-research environment, according to the testimony of researcher R8:

This teaching-learning method worked well, and in my opinion, the professor could continue it with the next classes. I am a person who defended the face-to-face method with all my strengths. I didn't see virtual classes as positive. However, today I have to admit that it works very well when students are committed and interested in learning, as I believe to be our case in the discipline of qualitative procedures.

Or, according to researcher R2:

Although difficult, this work methodology brings benefits. There was the possibility of knowledge of several data collection tools through the application, debate, and coding. The tasks were rotated so that everyone on the team could have the possibility to analyze, understand, and examine the research findings. There was also collective learning through the exchange of information, experiences, and theoretical and practical knowledge. (Researcher R2)

This study contributes to the domain of Ph.D. education and teaching studies by detailing the procedures used to coordinate the project and, especially, by clarifying details regarding the strategies used to reach consensus in the development of data analysis.

This study supports Bispo (2017) in his thought that Ph.D. education and training should not be a self-learning, non-systematic process. Effective qualitative research education in Ph.D. programs must also overcome the development of technical skills in the application of pre-defined research designs. The training of new researchers must focus on making decisions and solving complex problems based on ontological and epistemological clarity. It also involves developing skills related to all phases of research, from the approach to the empirical phenomenon of study to the development of robust concepts and theories capable of contributing to the knowledge and practice of management.

Finally, we concluded that the development of the methodological proposal presented in this work required all researchers - the coordinator and students - knowledge, sensitivity, and creativity to face the challenges and overcome the obstacles throughout the collective investigation process. Furthermore, mainly because it is an inductive qualitative design, it demonstrated in practice the advantages and challenges identified in the literature.

In conclusion, a quote borrowed from Quinn Trank and Brink (2020) regarding the tensions and promises of learning engaged in doctoral education and training:

Doctoral instruction will need to rise to the challenge by creating approaches that engage these new learners while we capitalize on new platforms and environments. The possibilities for research in doctoral education have never been more promising, and the use of new approaches for engagement never more critical. (...) Perhaps not surprisingly, each [articles about the theme]

recognizes doctoral education as an often emotionally charged, and even difficult, experience. These reactions are likely intrinsic to the process of learning and the work of “becoming.” (p. 470)

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