

**MULTI-AREA TEACHER TRAINING IN THE CONTEXT OF COMMUNITY
OF PRACTICE AND ITS LEARNING CONDITIONS**

*FORMAÇÃO DE PROFESSORES MULTIÁREA EM CONTEXTO DE
COMUNIDADE DE PRÁTICA E SEUS CONDICIONANTES DE APRENDIZAGEM*

*LA FORMACIÓN DOCENTE MULTISECTORIAL EN EL CONTEXTO DE
LA COMUNIDAD DE PRÁCTICA Y SUS LIMITACIONES DE APRENDIZAJE*

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ABSTRACT

This study aimed to describe the learning conditions of teachers in the final years of Elementary School based on the development of multi-area communities of practice. The study included 19 teachers from the final years of elementary school working in a municipal school on the western border of Rio Grande do Sul. A questionnaire and observations of pedagogical meetings were used to respond to the proposed objective. The results obtained demonstrate the potential of cultivating a multi-area community of practice, despite the challenges faced by teachers, such as the demand created by the maintainer, which often makes reflection and moments of exchange between teachers unfeasible. The importance of creating a harmonious environment and collaborative knowledge construction is emphasized so that teachers feel like the agents of their professional training.

Keywords: Professional training; Elementary Education; Social learning.

RESUMO

Este estudo teve por objetivo descrever os condicionantes de aprendizagem de professores dos anos finais do Ensino Fundamental com base no desenvolvimento de Comunidades de Prática multiárea. Fizeram parte do estudo 19 professores dos anos finais do Ensino Fundamental lotados em uma escola municipal da fronteira oeste do Rio Grande do Sul. Utilizou-se de questionário e observações de reuniões pedagógicas para responder ao objetivo proposto. Os resultados obtidos demonstram o potencial do cultivo de uma comunidade de prática multiárea, apesar dos desafios enfrentados pelos professores, como a própria demanda criada pela mantenedora, o que por muitas vezes inviabiliza a reflexão e momentos de troca entre os professores. Salienta-se a importância de criar um ambiente harmônico e de construção de conhecimento colaborativo para que os professores se sintam os próprios agentes de sua formação profissional.

Palavras-chave: Formação Profissional; Ensino Fundamental; Aprendizagem Social.

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RESUMEN

Este estudio tuvo como objetivo describir las limitaciones de aprendizaje de los docentes en los últimos años de la Educación Primaria a partir del desarrollo de Comunidades de Práctica multiárea. El estudio incluyó a 19 profesores de los últimos años de la enseñanza básica que trabajaban en una escuela municipal en la frontera occidental de Rio Grande do Sul. Se utilizó un cuestionario y observaciones de reuniones pedagógicas para responder al objetivo propuesto. Los resultados obtenidos demuestran el potencial de cultivar una comunidad de práctica multiárea, a pesar de los desafíos que enfrentan los docentes, como la demanda creada por el mantenedor, que muchas veces hace inviable la reflexión y los momentos de intercambio entre docentes. Se enfatiza la importancia de crear un ambiente armónico y colaborativo de construcción de conocimiento para que los docentes se sientan agentes de su formación profesional.

Palabras-clave: Formación profesional; Escuela primaria; Aprendizaje social.

INTRODUCTION

Teacher training is an important aspect in the contemporary educational context of Brazil, being essential to face the challenges present in classrooms and meet new social demands. In this challenging scenario, the quality of teacher training is fundamental for the country's socio-educational development. Nóvoa and Vieira (2017) highlight a significant problem in teacher training, which is the separation between the academic worlds, especially in universities, and the school environment. This lack of integration makes effective transformation in the field of teacher training difficult.

According to Azeredo, Pizzollo, and Bitencourt (2018), no matter how good initial training may be, there will always be new challenges posed by teaching situations throughout one's professional life. According to the authors, these situations will require the teacher to take the lead, so that continuing education can represent a space to support this role. This issue is important, as a teacher with adequate training not only acts as a facilitator of knowledge construction, but also inspires and motivates their students, contributing to the formation of critical, creative citizens committed to the social and cultural development of the country.

These premises reinforce the importance of flexible and adaptable training programs, allowing teachers to develop skills and competencies relevant to their pedagogical practice. Furthermore, teacher training must be aligned with educational policies and the needs of the school community, thus ensuring quality and inclusive education for all students (Soares, 2021). Ximenes and Melo (2022) consider that the debate on the impacts of educational reforms on public educational policies and, more specifically, on teacher training and professionalization in Brazil can point to (mis)paths for necessary transformations.

Teacher training plays an important role in defending public schools and the teaching profession, as noted by Nóvoa (2019), and is vital to strengthening the integrity of the profession, with the active participation of educators being fundamental. However, it is imperative to avoid devaluing and limiting training to just pedagogical subjects and techniques, as this compromises the construction of a robust profession. The balance between valuing training and strengthening the profession is essential to ensure the quality of education and the consistent development of teachers.

In this sense, Communities of Practice (CoPs) are cited as a fundamental element for teacher training, as they provide a collaborative learning environment where teachers can share experiences, reflect on their practices and build knowledge collectively (Estevam & Cyrino, 2019). CoPs are groups of people who share an interest, passion or commitment to a topic and who learn through ongoing

interaction (Wenger, 1998). In the context of teacher training, CoPs provide a collaborative learning environment where teachers can exchange knowledge, experiences and pedagogical practices, contributing to professional development.

Learning constraints refer to the various factors that influence teachers' learning process, including the school context, educational policies, the individual characteristics of teachers and students, among others. They are also configured as elements that enable learning in a community of practice, referring to issues/situations in the social context which offers conditions for learning to exist (Estevam & Cyrino, 2019).

The integration between theory and practice, between academia and school, is essential for teacher training (Santos & Silva, 2023). This integration, for the authors (2023, p. 562), is not just a matter of applying theoretical knowledge in practical contexts, but of fostering a dynamic symbiosis where theory and practice inform and strengthen each other. The school-centered approach, which values collaboration between teachers and the collective construction of knowledge, has proven to be an important tool for facing the challenges of teacher training.

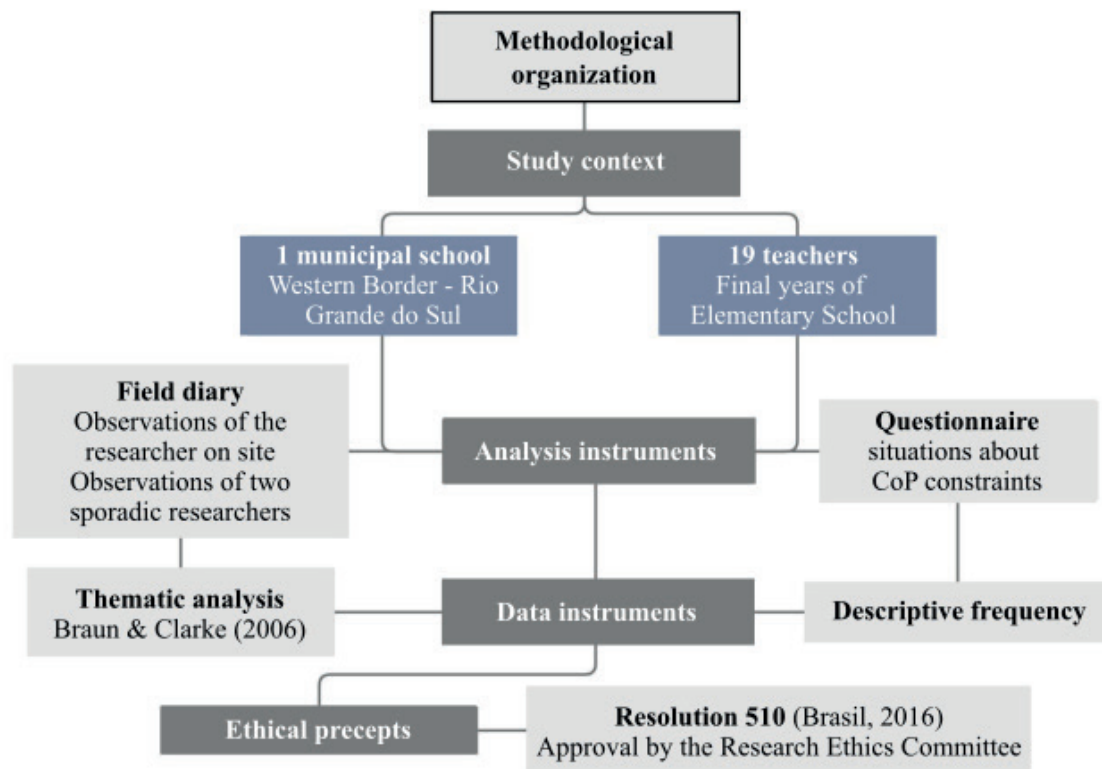
Thus, according to Fogaça and Halu (2017), Communities of Practice have proven to be an innovative model for the professional development of teachers, offering a collaborative environment and exchange of experiences that contributes to the improvement of pedagogical practices. However, for Communities of Practice to be effective, Wenger (1998) indicates that it is necessary to understand the conditioning factors of teachers' learning, that is, the factors that influence the learning process of these professionals.

However, despite advances in school-centered teacher training, there are still gaps to be addressed, especially regarding multi-area teacher training. The term "multi-area" refers to the various areas of knowledge that involve teachers in the final years of elementary school. It is clear that there is a need for further investigation into how CoPs and learning constraints can influence teachers' professional development, particularly regarding the following question: how can CoPs and learning constraints influence teachers' professional development in the context of the final years of elementary school? This work is within this context, seeking to describe the learning constraints of final years of elementary school teachers based on the development of multi-area CoPs. It also aims to provide important insights for promoting more targeted teacher training aligned with the demands of contemporary education.

METHODOLOGY

The study is exploratory and descriptive in nature. According to Gil (2002, p.41-42) exploratory research seeks "greater familiarity with the problem, with a view to making it more explicit or constituting hypotheses", in addition to improving ideas or discovering intuitions. Descriptive research seeks "the characteristics of a given population or phenomenon or the establishment of relationships between variables", using "standardized data collection techniques, such as questionnaires and systematic observation". Figure 1 presents the methodological design of the study.

Figure 1 - Scheme of the methodological organization of the study.



Source: by the authors.

Nineteen teachers from different areas in the final years of Elementary School participated in the research. The context of the study was a municipal school on the western border of Rio Grande do Sul, which is participating in a larger project, linked to a Doctoral research, whose results discussed here will serve as a basis for future research perspectives in teacher training.

The corpus of analysis for this study was based on a frequency-based description of responses obtained through a questionnaire administered to teachers, with a count of pre- or post-coded text units, which allows for the interpretation of qualitative data with reasonable precision. The collection instrument, a questionnaire that related daily professional situations and the frequency with which these situations occurred in the context of teachers, required participants to mark “Always” (everyday situations), “Almost Always” (frequent situations), “Sometimes” (occasional situations), and “Never” (situations that did not occur). These situations were implicitly related to the constraints of teacher learning in CoPs proposed by Estevam and Cyrino (2019). According to the authors, the constraints of learning in CoPs are analytical units that, when interrelated, support teacher learning from a social perspective, as proposed by Wenger (1998). Below (Table 1) are described the conditions organized by the authors and the situations of professional practice generated based on the authors and the context experienced by the teachers, prepared by the authors of this paper.

Table 1 - Learning Determinants in CoPs and Designed Situations.

Learning Determinants (Estevam; Cyrino, 2019)	Designed Situations
Engagement itinerancy: in a work group, the forms of engagement undergo changes during the process of its constitution and cultivation and refer to different types of participation and social interactions, negotiated within it, which may or may not characterize a CoP. The types of participation may or may not favor learning, depending on the legitimacy of such participation.	I perceive my participation in the school group in such a way that, sometimes I am more active in the process of building knowledge and sometimes I am more of a listener, as I have something to learn from my other colleagues.
Repertoire sharing: shared repertoire as one of the dimensions of practice, the itinerant forms of participation in a CoP reveal that, even as a condition, a large part of this repertoire is constituted in the course of the community's practices, as elements that give meaning, coherence and knowability to the negotiated ventures. Examples of these ventures basically involve joint work by community participants, whose interaction gives rise to multiple influences from conversations and exchanges of information, opinions and experiences.	I can share my experiences with colleagues, exchange information and knowledge, as well as express my opinions and suggestions on different topics.
Solidarity commitment: studies reveal the emergence of mutual dependence in the learning processes that occur in CoPs, since the knowledge of each member, at different times, functions as a principle of solidarity, taking the other from the condition of object to the condition of subject, under the assumption of knowledge-emancipation. In addition to a commitment to their own learning, there is a concern to value and encourage the participation of all, which expresses signs that the participants assume responsibility for the learning of others as well, taking care of the opinions and arguments used to support them.	I am committed to my learning and I also seek to assist the learning of other group members, based on arguments, experiences and opinions constructed.
Community dynamics: studies suggest characteristics and approaches of CoPs that instigate learning of diverse natures: the first distinctive characteristic of CoPs from other training programs, and in our understanding, fundamental, refers to an open, flexible and minimalist work plan. This must respect and favor the openness to expose problems and dilemmas related to the teachers' practice and the negotiation of undertakings and dynamics, "since more important than foreseeing all the stages, defining tasks, organizing groups, creating rules, is promoting the engagement of members in the community's practices". Thus, the CoP domain is not constituted by a fixed set of problems.	In the organization of school activities, I realize that there is an open work plan, which considers the reality of the school environment and the engagement of teachers in problem-solving, allowing for reflection on pedagogical practice and also significant professional training.
Shared and sustained reflections: coordinated projects enhance reflection for, in and about practice and strengthen teachers' confidence in facing the challenges of the teaching profession. Such projects involve presenting, analyzing and discussing task resolutions; discussing and justifying choices and strategies for solving tasks; observing colleagues' classes, carrying out co-teaching and co-learning; discussing situations that occur in their classrooms or in those of teacher training courses; participating in discussion groups or forums; and thinking about continuing education processes.	In pedagogical meetings, it is possible to present, discuss and express ideas for solving tasks. Discussions of theory are held and directly related to pedagogical practice.
Relationship of trust and respect: since the CoP is an environment for engagement in practice, interpersonal relationships and the opportunity to raise new problems, it constitutes a space for exposing errors and limitations, which must be worked on without constraints and with confidence. This trust is developed during interactions in the community, with respect and the development of confidence in oneself and in others. Thus, "trust is constituted both as a product of learning and as a process of this learning".	I feel comfortable and safe to expose my mistakes, weaknesses or limitations in my knowledge of a certain topic, as the group of teachers dialogues and respects different opinions.
Space of vulnerability and mediated agency: Although considered in other conditions, there must be an openness that favors the emergence of vulnerabilities, it is not one that weakens, weakens and paralyzes, but rather one that allows the teacher to recognize limitations and errors, deal with conflicts and dilemmas of practice and accept (or accept, identify,...) the error as an opportunity for mutual learning.	In the group I can develop knowledge that helps me overcome my difficulties and limitations, as well as overcome conflicts of ideas. I see mistakes (mine or my colleagues') as an opportunity to learn.

Expert dynamism and trainer role: Recognizing learning as a process of affiliation to a social group demands that the coordinator of a CoP (or trainer) assume other roles, distinct from that based on holding all the knowledge assumed as the focal point of the discussions.

On the other hand, the trainer, despite needing the legitimacy of his/her membership status by the community, cannot be seen as merely a participant observer or just another member of the CoP, since, at times, his/her involvement contributes to changes in the comments and identity of the other participants. His/her theoretical and practical knowledge inevitably grants him/her a position of mentor - but not as the full holder of knowledge. Therefore, we characterize the role of the trainer in a CoP as a boundary agent, one who brings to the community reflections, tools and resources that become part of the group's practice.

Dynamism: I perceive an itinerancy in relation to the group's knowledge as there is flexibility for different participants to lead the approach to specific knowledge.

Trainer: When there was interaction with the researcher in the meetings, it was to exchange experiences, assist with demands and bring pedagogical tools or resources that contributed to pedagogical practice.

Source: by the authors, based on Estevam and Cyrino (2019).

The situations presented to the teachers (2nd column of Table 1 named Designed situations) contained objective options, namely Always (everyday situations), Almost Always (frequent situations), Sometimes (occasional situations), Never (situations that did not happen). It is worth highlighting that the condition "Expert dynamism and trainer role" was separated into two distinct questions to specifically understand the expert dynamism and the trainer role. Keeping them as they were would result in a prolonged situation, with teachers responding to one characteristic of the conditioning factor and disregarding another. Furthermore, we would like to effectively understand the degree of relevance of the trainer's role throughout a CoP.

In the same instrument, each question had space for teachers to justify or comment on a specific subject or situation experienced. As previously mentioned, we sought to relate the learning conditions to situations experienced by the group of teachers, asking them to perceive how often these occur in the school's daily routine.

In addition to the questionnaire, observations conducted by the researcher on-site throughout 2023 (eight pedagogical meetings) were used, supplemented by observations by two other members of the project team who participated in some of these meetings with the teachers. This observation identified situations that could be characterized as conditioning factors. The first column of Table 1 was used to observe occurrences and make notes mentioning the related conditioning factors. The situations were described in separate files: one individual document for the on-site researcher (field diary) and another file for the observations of the two external researchers. These observations were guided by the conditioning factors presented in Table 1, and conducting three separate observations sought to mitigate the risk of intentional bias. The same care was taken when analyzing the observations and questionnaire questions, drawing on the expertise of two researchers external to the study.

The teachers' responses were analyzed using descriptive frequency, while the field diaries were examined using Thematic Analysis, which, according to Braun and Clarke (2006), is a method that analyzes and reports patterns (themes and actions) from the analyzed data, in addition to describing a data set in greater depth. The adoption of frequency analysis is due to its efficient analysis due to its ease of quantitatively understanding data that are a priori qualitative (Carnut et al., 2021). To triangulate the qualitative and quantitative data, thematic analysis revealed the determinants, adding to them the frequency of their occurrence throughout the teachers' responses and observations. The research followed the ethical precepts established by resolution 510/16 (Brazil, 2016) of the National Health Council and was approved by the Research Ethics Committee.

RESULTS AND DISCUSSION

It is important to understand the learning conditions of a community of practice, understanding those that are most interrelated, as well as those that are most evident, whether according to the participants themselves, as well as for researchers who are on site. The researcher in the CoP is often perceived as a Border Agent, being responsible for fostering discussions, reflections and proposing new tools for the context in which he/she is inserted (Gellert, 2013). Such an agent is legitimized by the participants and his participation is not only through observation, but also by collaborating to change the posture and identity of the other members of the CoP (Estevam & Cyrino, 2019).

In this sense, the results arising from the analyses are presented separately in two topics, the first topic referring to the teachers' responses on the reflection of the professional practice situations presented (Table 1). The second topic concerns the researcher's observations on the pedagogical meetings between teachers and the pedagogical coordination, which took place weekly throughout 2023, in addition to the observations of two external researchers at sporadic times.

CHARACTERIZATION OF THE PROFILE OF TEACHERS IN RELATION TO LEARNING CONDITIONS

Initially, we present an overview of the learning determinants and the frequency with which, according to teachers, they are present in the school context (Figure 2). To achieve these results, we performed a count of coded units, which allowed us to identify the frequency and interpret the qualitative data. It is clear that the role of the trainer, which is also part of the expert's dynamism, but in this study, it was decided to separate it to better identify the characteristics, is the conditioning factor that stands out the most. According to the majority of teachers (n=14), "When there was interaction with the researcher in the meetings, it was to exchange experiences, assist with demands and bring pedagogical tools or resources that contributed to pedagogical practice".

Figure 2 - Teachers' responses considering each of the conditions.



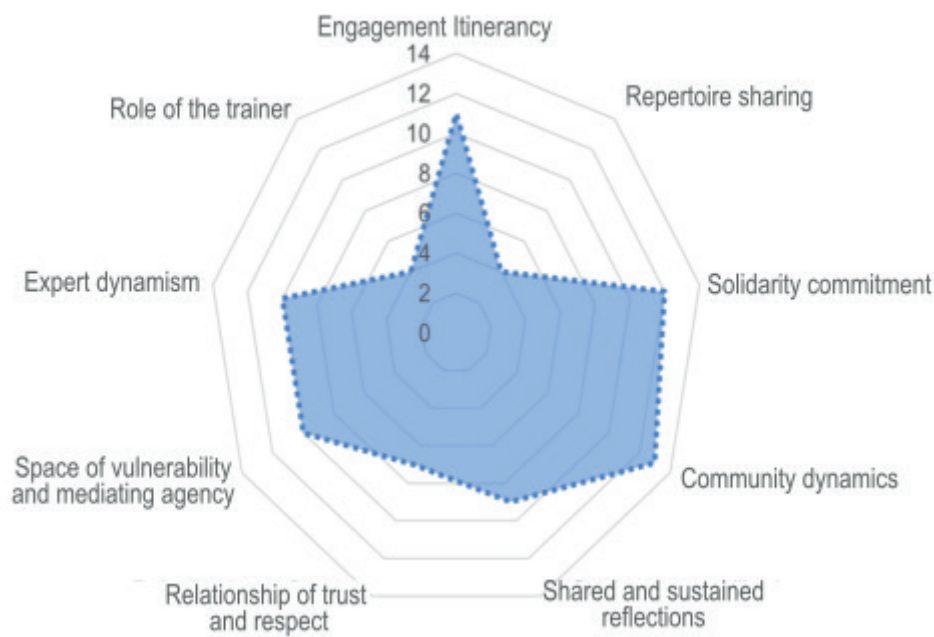
Source: by the authors.

The teachers considered the role of the trainer as a situation that is always in evidence, as described by P17: “Always. He always collaborated and encouraged our work and the search for new knowledge and training”. Estevam and Cyrino (2019) place the trainer as someone who is legitimized by the community participants, and whose main function is to be a border agent, who manages, brings knowledge from their professional experience and is closely connected to the community.

Silva, Quintaneiro and Giraldo (2020) believe that the activities of the university study group, being present in Basic Education, need to be considered beyond a geographical demarcation, a work for the group, but rather, to understand the school context as a field of production of professional teaching knowledge, this being a learning experience for the teacher and also for the researcher/trainer. This statement reinforces the need, as researchers, to look at the school as a field of research, but also to enable the improvement of the conditions established there.

The absolute frequency with which the constraints are perceived by teachers was verified. Figure 3 highlights that when we eliminate the role of the trainer, the other conditioning factors appear as “almost always” that is, recurring in the school context, specifically in pedagogical meetings, which are the moments where teachers can have closer contact with each other and with the pedagogical coordination.

Figure 3 - Absolute frequency of recurring conditions in the school context cited by teachers.



Source: by the authors.

As can be seen in figure 3, teachers consider that Community dynamics, Solidarity commitment and Engagement itinerancy are the most frequent conditions when considering that these “almost always” happen in group meetings. What justifies this frequency are the statements of some teachers

regarding the maintainer, which is concerned with data, evaluation parameters and training that often disregard or are out of context with the reality experienced by teachers.

P11: Almost always, **we are often at the mercy of SEMED (Municipal Department of Education, in the Portuguese acronym).**

P17: Sometimes. This year in particular, **there was a lack of moments of listening, reflection and collective construction.**

P19: Almost always. **Reflection on pedagogical practice needs to be more qualified.**

It is increasingly clear how effective knowledge, when shared among peers, becomes for teachers to diversify or even modify their pedagogical practice. According to Nóvoa, “each teacher’s knowledge depends on the knowledge of his colleagues, on the infinite possibilities contained in their interactions and dialogues” (Nóvoa, 2023, p.11). It is up to the maintainer to provide moments of reflection, as well as moments in which it is possible to listen to teachers and their work contexts in order to provide training that is truly meaningful in the school context.

Regarding the Solidarity Commitment, a teacher justified her answer: P19: Sometimes. **With my learning I am always searching, reading, taking courses, but helping others learn, I DON’T!** The teacher’s speech shows a certain selfishness, tiredness or even that it is difficult to help her colleagues learn, due to the high level of demands imposed by the maintainer.

Nóvoa (2023) explains the collective nature of teaching, one of the characteristics of professional teaching knowledge. This form is developed in a professional collective that does not seek to diminish each person’s relationship with knowledge, but rather, to project knowledge into a collective production. For the author, there is tacit and implicit knowledge, which is part of his profession and transmitted naturally from generation to generation. “It is crucial that this implicit knowledge becomes “understood”, conscious and shared by everyone. [...] it is necessary to conduct an explicit work in a collective, collaborative and collegial framework” (Nóvoa, 2023, p.10).

When considering the “ideal” in relation to the conditioning factors, the same graph described previously was created, however, reflecting the frequency with which teachers consider that “Always” is possible to perceive, as conditioning factors for learning, in pedagogical meetings and in professional practice (Figure 4).

Figure 4 - Absolute frequency of conditions that always occur in context according to teachers.



Source: by the authors.

The trainer is legitimized as a border agent in a community of practice, not inherently holding the role of community expert, since the expert is legitimized according to the topic under discussion. The trainer is responsible for observing content or themes not previously seen by the group, which causes a constant rethinking of the training process that is proposed to teachers (Silva, 2010; Baldini, 2014). According to Garcia (2014), it is necessary to assist teachers in developing their pedagogical practices, valuing them and making considerations and additions when necessary, asking questions and provoking reflective dialogues whenever possible, so that it is possible to establish connections between the group's interpretations and the trainer's observations.

The higher frequency of responses for all conditions in "almost always" is justified, as teachers often have to resolve issues with the maintainer, having to leave aside collective learning that is essential for improving their pedagogical practice and also for a better teacher-teacher and teacher-student relationship. This is a recurring issue, as can be seen from the justification given by teacher P11: *"Sometimes, because we don't have much time for that. Even though we have meetings."* Pedagogical meetings, which would be moments for teachers to discuss issues of pedagogical practice, are often taken over by bureaucratic issues that come from the top down on the part of the maintainer (Municipal Department of Education).

Teacher P18 reinforces the need for spaces aimed at sharing learning from pedagogical practice: *"[...] We need more space for knowledge exchange."* Professor P19 justifies the same: *"[...] We need spaces, territories that do this, with more quality (+ study)."* It is a fundamental issue for teachers to be offered opportunities to improve their practice, not only in terms of expository or theoretical moments, but also in ways that enable the transposition of theory into the practical reality experienced by each teacher in their school context.

A final point of questioning in this topic is about the answer “Never” being indicated in three conditions by only one teacher (P2). This finding shows that, as the literature itself demonstrates, there are different levels of belonging and participation in a Community of Practice. It is very likely that the teacher in question is further away from the group as a whole, either due to a lack of rapport or due to a workload divided between other institutions, a fact that is common in Basic Education. Data released by the Ministry of Education (Brazil, 2018) show that 66% of teachers in Basic Education work 40 hours or more, and 40% of these teach in two or more schools (IPEA, 2017).

OBSERVATION OF LEARNING CONDITIONS IN PRACTICAL PEDAGOGICAL SITUATIONS

As already mentioned in the data processing of this article, the second topic deals with observations carried out directly (researcher on site, actively participating in the community) and indirectly carried out by two researchers who punctually participated in the activities of the group of teachers. Table 2 describes the learning conditions and situations perceived by the researchers. The situations are described in the form of themes that were addressed by the group of teachers and discussed by them.

Table 2 - Learning constraints and situations observed by researchers in pedagogical meetings.

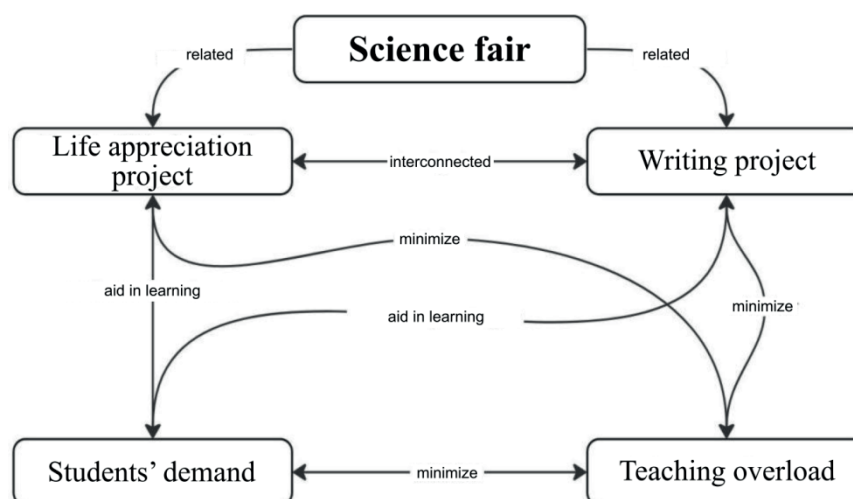
Learning constraints	Perceived situations
Engagement itinerancy	<p>Writing project (project requested by the maintainer) Coordinator's Speech: <i>I brought suggestions for topics, but I would like to discuss them in collaboration with the group.</i> Professor usually quiet, brought ideas to be thought about: “We can talk about love, different forms of love and self-love.”</p> <p>Life appreciation project Science teacher: create a project (creation of visual identity and activities throughout the semester). The math teacher would like to use the identity for activities that she will develop.</p>
Repertoire sharing	<p>Student demand The group in agreement discussed the situations that influence the quality of the content provided, given the demand of students in the classroom. Professor C. on the delay in students returning to the classroom, which is detrimental to the teacher in the classroom, a discussion in which several teachers agreed. The curriculum takes a long time to arrive after recess and interferes with the organization of classes in the area. Comment from the science teacher on the use of the internet, which students could use, but it is barely useful for teachers to enter absences and records in the online system.</p> <p>Life appreciation project Portuguese teacher collaborating with the project explained and designed by the science teacher, possibility of including the writing project. Portuguese teacher proposing to make parodies; Arts teacher shared about the possibility of working with artistic expressions.</p>
Solidarity commitment	<p>Writing project Coordinator: <i>I brought suggestions for topics, but I would like to discuss them in collaboration with the group (collaboration of the engagement itinerary with the solidarity commitment).</i></p>
Community dynamics	<p>Student demand Organization of meetings so that they serve to share, diagnose and organize strategies for improving teaching processes, as well as coexistence at school. Diagnostic council, identifying the characteristics of students and classes, discussing similarities and disparities in behavior and learning.</p>

Shared and sustained reflections	<p>Teaching overload The director commented on the need to “clean” spaces and focus on the problems that occur in the school’s day-to-day life.</p> <p>Student demand Diagnostic advice, exchange of experiences and views on the diagnosed classes.</p> <p>Writing project During the meeting: ideas on how to relate the axes to the experienced reality.</p> <p>Science fair Writing project following the axes of sustainability, to minimize teaching demand.</p>
Relationship of trust and respect	<p>Fraternization Teachers and teaching staff celebrating life, highlighting the importance and strengthening of the group.</p> <p>Teaching overload Math teacher talking about all the extracurricular activities he has to do, which ends up causing overload and he can’t handle everything, leaving these extra tasks to be done later and he can forget what happened and lose the record (an issue that mobilized most teachers).</p>
Space of vulnerability and mediated agency	<p>Teaching overload Math teachers discussing the need to reduce the number of students in classes, as this is affecting the quality of education offered. Math teacher, I did not finish the survey period because I was unable to evaluate as I should have, as there was little time. The other teachers agreed on the teacher’s vulnerability.</p> <p>Student demand Math teacher: You’ll hear them talk badly about me, because I’m strict with them, because if I let them, they get very agitated. Coordination: We need parents at school, the family at school.</p>

Source: by the authors, based on Estevam and Cyrino (2019).

Although the Science Fair was not a prominent theme among the discussions of the group of teachers, the following figure demonstrates, according to the experiences of the researcher involved in the pedagogical meetings, that the science fair was the largest project that only highlighted the other points (Figure 5). This happened because teachers sought to maximize the demands of the maintainer, trying as much as possible to fit themes within larger proposals so that they could propose activities related to the context in which they are inserted throughout the school year.

Figure 5 - Relationships established between the themes according to the on-site immersion.



Source: by the authors.

An important observation to be highlighted is that when there are more practical pedagogical meetings (when activities to be developed arise, or issues that are more directly related to pedagogical practice) a greater appropriation of the conditions on the part of the researcher is perceived, while in more bureaucratic meetings (filling out the system, demands coming from the maintainer and out of context) the conditions are presented less frequently.

It is worth highlighting the pedagogical meetings as moments of interaction between the group participating in the research and the school community as a whole, in which real situations and problems of the school are discussed. In these moments, it is possible to verify the learning conditions and characteristics of the CoP in action. Figure 5 shows that, although the theme in evidence is the school's Science Fair, other aspects permeate the theme, such as the overload of teachers and demands inherent to student behavior and learning.

It is an already established negotiation, therefore, a practice that has been reified (transformed) between teachers, coordination and management, the construction of projects that can encompass various social issues present in the teachers' classroom practice. The analysis of practices, assertive or not, allows us to perceive how complex their implementation is, as well as to put into words the references for action, representing the action strategically, so that a teacher knows where to go to help students learn. This analysis "[...] allows us to construct the professional discourse and reasoning, in order to establish their actions coherently" (Altet, 2016, p. 61).

It is worth noting that the frequencies identified in the responses regarding learning determinants (Topic 1) were obtained from a detailed and thorough scrutiny of the data, which allowed for correlation with the observations made in the action research and identification of determinants that complemented each other at the end of the analysis. This correlation highlights, based on the findings and their practical implications, the importance of a closer relationship between universities and schools, not in a hierarchical system of power and meaning, but rather in different positions of knowledge that give teachers a voice.

It is important to emphasize that classroom teachers have much to teach, consider, and learn from researchers who are part of the school's daily routine. Studies like this highlight the importance of valuing and strengthening the researcher's presence in the school environment, as agents who can also collaborate in the deconstruction, reconstruction, and development of innovative ideas for teachers' professional practice.

FINAL CONSIDERATIONS

Returning to the objective of the study, which described the learning conditions of teachers in the final years of Elementary School based on the development of multi-area Communities of Practice, and also sought to provide insights into promoting more effective teacher training aligned with the demands of current education, it became evident that one of the challenges in training is the bureaucratic and decontextualized demand in which teachers end up being immersed.

Based on the findings, it can be stated that the group of teachers is active, seeking solutions to the demands of their context, and the majority are committed to finding ways to improve their professional practice and, consequently, enhance their professional development. The results related to the learning determinants reinforce that the role of the educator, the community dynamics, and the spaces of vulnerability and mediated agency became the pillars that guided the organization of the CoP at the school under study. The researcher's continued role as a boundary agent proved decisive

for the teachers' engagement in seeking closer ties with the university, envisioning opportunities to improve or build new knowledge, through joining a research group linked to the researcher and later pursuing postgraduate studies.

The need for training or self-training that seeks to investigate, find support and resolve issues related to teachers' pedagogical and professional practices becomes evident when teachers explain how valuable such moments would be and how unfeasible they are, given the numerous demands coming from outside the school (the school's sponsor). Cultivating a CoP can be a path to developing skills and exchanging experiences that are more assertive in and for the school environment in which the group of teachers is inserted.

The results of this research can be used in other contexts of Basic Education, larger and different from the one investigated, for the cultivation of CoPs as the learning conditions of the CoPs that are being constituted are perceived. Based on the diagnosis that is perceived as the social learning of the group, it is possible to expand the CoP so that its identity is transformed. The process of continuity of this must be a commitment of the subjects involved, because it is not enough to be there, but to want to learn and create ways to improve or solve issues in the teaching profession.

It is of utmost importance to conduct further studies relating Communities of Practice and the educational reality of Basic Education, in order to identify the difficulties and potential of CoP in professional teaching practice. It is also necessary to always think about training that encompasses the challenges, demands and reality experienced by teachers, so that the knowledge to be constructed serves to assist in resolving these ones.

REFERENCES

ALTET, M. Profissionalização do ofício de professor e da formação em questão: explorar as contribuições da pesquisa para fortalecer e refundar a profissão. In: SPAZZINI, M. L. **Profissão de Professor: cenários, tensões e perspectivas**. São Paulo: Editora Unesp, 2016.

AZEREDO, J. L.; PIZZOLLO, M. C. C.; BITENCOURT, R. L. A formação continuada de professores: um espaço para autoria? **Revista Internacional de Formação de Professores**, v. 3, n. 3, p. 148-166, 2018.

BALDINI, L. A. F. Elementos de uma Comunidade de Prática que permitem o desenvolvimento profissional de professores e futuros professores de Matemática na utilização do Software GeoGebra. 2014. 219 f. Tese (Doutorado em Ensino de Ciências e Educação Matemática) - Universidade Estadual de Londrina, Londrina, 2014.

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

BRASIL. Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (INEP). **Censo escolar da educação básica 2018**. Brasília: INEP, 2019.

BRASIL. Resolução nº 510, de 07 de abril de 2016. Dispõe sobre as normas aplicáveis a pesquisas em Ciências Humanas e Sociais. **Diário Oficial da União**, Brasília, DF, 2016.

BRAUN, V.; CLARKE, V. Using thematic analysis in psychology. **Qualitative Research in Psychology**, v. 3, n. 2, p. 77-101, 2006.

CARNUT, L. et al. Lexical Frequency Content Analysis: The Quantitative Delimiting the Qualitative in the Comparison of the Discourses on the Pathway for Oral Cancer. **New Trends in Qualitative Research**, v. 8, p. 715-726, 2021. DOI: 10.36367/ntqr.8.2021.715-726.

ESTEVAM, E. J. G.; CYRINO, M. C. D. C. T. Condicionantes de aprendizagens de professores que ensinam matemática em contextos de Comunidades de Prática. **Alexandria: Revista de Educação em Ciência e Tecnologia**, v. 12, n. 1, p. 227-253, 2019.

FLORENCIO, L. R. S.; FIALHO, L. M. F.; DE ALMEIDA, N. R. O. Política de Formação de Professores: a ingerência dos Organismos Internacionais no Brasil a partir da década de 1990. **Revista Holos**, v. 5, p. 303-312, 2017.

FOGAÇA, F. C.; HALU, R. C. Comunidades de Prática e construção identitária de formadores de professores em um programa de formação continuada. **Revista Brasileira de Linguística Aplicada**, v. 17, n. 3, p. 427-454, 2017. DOI: 10.1590/1984-6398201711522.

GARCIA, T. M. R. Identidade Profissional de Professores de Matemática em uma Comunidade de Prática. 164 f. Tese (Doutorado em Ensino de Ciências e Educação Matemática) - Universidade Estadual de Londrina, Londrina, 2014.

GELLERT, L. M. Elementary School Teachers and Mathematics: Communities of Practice and an opportunity for change. **Journal of Education and Learning**, v. 2, n. 4, p. 113-122, 2013.

GIL, A. C. **Como elaborar projetos de pesquisa**. São Paulo: Atlas, 2002.

IPEA - Instituto de Pesquisa Econômica Aplicada. **Professores da educação básica no Brasil: condições de vida, inserção no mercado de trabalho e remuneração**. Brasília, n. 2304, 2017. (Textos para Discussão).

MORAIS, J. K. C.; HENRIQUE, A. L. S. Formação docente e PNE (2014-2024): uma abordagem inicial. **Revista Holos**, v. 8, p. 264-274, 2017.

NÓVOA, A. Conhecimento profissional docente e formação de professores. **Revista Brasileira de Educação**, v. 27, 2023, e270129.

NÓVOA, A.; VIEIRA, P. Um alfabeto da formação de professores (A teacher education alphabet). **Crítica Educativa**, v. 3, n. 2, p. 21-49, 2017.

SANTOS, D. M. A. D. A. P. D.; SILVA, R. A. Integração da teoria e prática na educação contemporânea: explorando as potencialidades da práxis pedagógica através da teoria da atividade. **Convergências: Estudos em Humanidades Digitais**, v. 1, n. 3, p. 561-573, 2023. DOI: 10.59616/cehd.v1i03.303.

SILVA, F. M.; GIRALDO, V.; QUINTANEIRO, W. Comunidade de Prática de Professoras que Ensinam Matemática: um coletivo de desenvolvimento profissional docente. **Revista Sergipana de Matemática e Educação Matemática**, v. 5, n. 2, p. 266-285, 2020.

SILVA, H. Uma Caracterização do Centro de Educação Matemática - CEM (1984-1997) como uma Comunidade de Prática de Formação Continuada de Professores de Matemática. **Bolema**, v. 23, n. 35, p. 185-218, 2010.

SOARES, R. G. Formação profissional docente e metodologias ativas: uma pesquisa-ação com base na problematização. 2021. 116 f. Dissertação (Mestrado em Educação em Ciências) - Universidade Federal do Pampa, 2021.

WENGER, E. **Communities of practice: learning, meaning and identity**. New York: Cambridge University Press, 1998.

XIMENES, P. A. S.; MELO, G. F. BNC-Formação de Professores: da completa subordinação das políticas educacionais à BNCC ao caminho da resistência propositiva. **Revista Brasileira de Estudos Pedagógicos**, v. 103, n. 265, p. 739-763, 2022.