

THE CONCEPT MAP AS A LEARNING AND EVALUATION STRATEGY IN THE CONTINUING TRAINING OF PORTUGUESE LANGUAGE TEACHERS AND PEDAGOGICAL COORDINATORS

O MAPA CONCEITUAL COMO ESTRATÉGIA DE APRENDIZAGEM E AVALIAÇÃO NA FORMAÇÃO CONTINUADA DE PROFESSORES DE LÍNGUA PORTUGUESA E COORDENADORAS PEDAGÓGICAS

EL MAPA CONCEPTUAL COMO ESTRATEGIA DE APRENDIZAJE Y EVALUACIÓN EN LA FORMACIÓN CONTINUA DE PROFESORES Y COORDINADORES PEDAGÓGICOS DE LENGUA PORTUGUESA



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ABSTRACT: Thinking about a teaching possibility that takes into account student learning raises the need to search for innovative proposals for the continued training of teachers. In this sense, the use of the conceptual map as an innovative strategy is advocated. This study aims to analyze the perceptions of Portuguese language teachers in the 9th year of Elementary School and pedagogical coordinators, regarding the use of the concept map as a learning and evaluation strategy in the continuing education process. The methodology used was a qualitative intervention-action approach. The research was carried out in six private educational network schools, with 14 Portuguese language teachers and 12 pedagogical coordinators, in the southern region of Santa Catarina. The data collection instruments used were focus groups and field diaries. The results obtained revealed that continued training led to significant changes in the participants' practices through the use of the concept map.

KEYWORDS: Teacher training. Training of pedagogical coordinators. Learning strategy. Formative assessment. Conceptual map.

RESUMO: *Pensar em uma possibilidade de ensino que contemple a aprendizagem dos alunos, suscita a necessidade de busca por propostas inovadoras para a formação continuada de professores. Nesse sentido, defende-se a utilização do mapa conceitual como estratégia inovadora. Este estudo objetiva analisar as percepções de professores de língua portuguesa do 9º ano do Ensino Fundamental e de coordenadoras pedagógicas, quanto ao uso do mapa conceitual como estratégia de aprendizagem e de avaliação no processo de formação continuada. A metodologia empregada foi a abordagem qualitativa do tipo intervenção-ação. Realizou-se a pesquisa em seis colégios de uma rede educacional privada, com 14 docentes de língua portuguesa e 12 coordenadoras pedagógicas, na região do Sul do estado de Santa Catarina. Os instrumentos de coleta de dados utilizados foram grupo focal e diário de campo. Os resultados obtidos revelaram que a formação continuada propiciou mudanças significativas nas práticas dos participantes por meio do uso do mapa conceitual.*

PALAVRAS-CHAVE: *Formação de professores. Formação de coordenadores pedagógicos. Estratégia de aprendizagem. Avaliação formativa. Mapa conceitual.*

RESUMEN: *Pensar en una posibilidad de enseñanza que tenga en cuenta el aprendizaje de los estudiantes plantea la necesidad de buscar propuestas innovadoras para la formación continua de los docentes. En este sentido, se aboga por el uso del mapa conceptual como estrategia innovadora. Este estudio tiene como objetivo analizar las percepciones de profesores de lengua portuguesa del 9º año de la Educación Primaria y de coordinadores pedagógicos, sobre el uso del mapa conceptual como estrategia de aprendizaje y evaluación en el proceso de formación continua. La metodología utilizada fue un enfoque cualitativo de intervención-acción. La investigación se realizó en seis escuelas de una red educativa privada, con 14 profesores de lengua portuguesa y 12 coordinadores pedagógicos, en la región sur del estado de Santa Catarina. Los instrumentos de recolección de datos utilizados fueron grupos focales y diarios de campo. Los resultados obtenidos revelaron que la formación continua generó cambios significativos en las prácticas de los participantes a través del uso del mapa conceptual.*

PALABRAS CLAVE: *Formación de profesores. Formación de coordinadores pedagógicos. Estrategia de aprendizaje. Evaluación formativa. Mapa conceptual.*

Introduction

The current dynamics in the educational landscape demand a significant reconfiguration of the learning and assessment process due to social and technological changes impacting the school environment, "[...] generating a demand for the development of methodologies that encompass the new context provided by globalization [...]" (Sena; Silva, 2017, online, our translation).

From this perspective, it is recognized that contemporary pedagogical practice requires highly skilled teachers who master curricular content and make it meaningful for students. Moura, Portela, and Lima (2020) highlight mediation in the learning process and student assessment as elements intrinsically linked to the teacher's role. According to Tardif (2005), teacher education is essential and should not be limited to disciplinary knowledge but also encompass pedagogical and experiential knowledge, which are fundamental for professional performance.

Learning strategies based on the principles of active methodology should be part of the continuous professional development of teachers to ensure they can adequately function in the school environment. Among the various learning strategies and assessment tools, the value of the concept map emerges as an elucidative instrument of the student's learning trajectories. Santos (2016) emphasizes that its use contributes to overcoming the paradigm of knowledge reproduction, developing students' independence, autonomy, and creativity, aiding in the organization of their ideas, and enabling both students and teachers to manage potential errors in the process.

Within this context arises the primary question of this research: what are the perceptions of Portuguese language teachers and pedagogical coordinators regarding continuous professional development through the concept map as a learning strategy and formative assessment? To answer this question, the general objective of this study was established as analyzing the perceptions of Portuguese language teachers and pedagogical coordinators regarding continuous professional development on the concept map as a learning strategy and formative assessment.

To conduct this study, the contributions of various theorists who provide fundamental analyses in the field of learning strategies were considered, such as Pozo (1996), Anastasiou (2017), and Boruchovitch (2007); for approaches to the concept map, Novak (1998) and

Moreira (2010); and in the realm of formative assessment, authors like Perrenoud (1999), Hadji (2001), Lopes and Silva (2020), among others.

Teacher and Pedagogical Coordinator Training: Perspectives

In recent decades, the continuous professional development of teachers has gained prominence in the Brazilian education landscape through the publication of regulatory documents. Both the LDB, the legal framework governing education, and the more recent guidelines related to the National Common Base for Initial and Continuing Teacher Training for Basic Education (*BNCC-Formação*), emphasize the importance of continuous professional development for teachers, extending through various modalities throughout the teaching career.

In this understanding, continuous professional development has a significant impact on teaching practice, resulting in substantial improvements in teacher performance and the quality of education provided at different educational levels. It offers the opportunity to enhance teachers' pedagogical skills. Continuous professional development for teachers should be conceived as a process involving reflection, research, action, discovery, organization, foundation, review, and theoretical and critical construction of practice, as per Gadotti's vision (2011).

This study emphasizes the continuous professional development of Portuguese language teachers and pedagogical coordinators, enabling them to develop innovative teaching and assessment proposals. The goal is to ensure that students can communicate clearly, comprehend, and interpret different textual genres appropriately, contributing to their academic and social development.

As the coordinator of educational proposals within the school environment, the pedagogical coordinator is responsible for providing support to teachers. To do so, they require continuous updating in order to perform their role competently, acting as both a formative and transformative agent (Placco; Almeida, 2012). The role of this professional within the school environment should aim to train teachers and foster their self-formation (Placco; Almeida, 2021).

Perspectives on Concept Mapping: A Strategy for Learning and Formative Assessment

Active teaching methods are characterized by the active participation of students in the educational process, transforming them into central agents of their learning. From this perspective, the student ceases to be a mere spectator and instead interacts, questions, and applies concepts, making learning more meaningful and dynamic (Neto; Soster, 2017). According to Anastasiou (2017), active methodology is a pedagogical approach that seeks to transform the student into an active protagonist of their learning process. In this context, “[...] the importance of the teacher’s role is realized insofar as they organize strategies that systematize the relationships or the necessary connections for appropriation” (Anastasiou, 2017, p. 72, our translation). Thus, in the educational context, the use of strategies encompasses two actions: teaching and learning.

To choose a learning strategy, the teacher needs to be intentional and plan actions to apply and implement appropriate procedures with the students so that the strategy significantly contributes to the construction of the class's learning (Monereo, 2001). The author also emphasizes the importance of students identifying and using the appropriate procedures to carry out their study activities and understanding at what moments and to what extent this strategy will contribute to the construction of their learning process.

Anastasiou (2017) classifies learning strategies into three main categories: (a) strategies of prior knowledge and expansion of analysis, (b) comprehension strategies that help in organizing information, and (c) group work strategies.

According to the second group of strategies proposed by Anastasiou (2017), comprehension strategies aim to assist in the organization of information, focusing on promoting understanding through the organization of knowledge. These strategies enable the organized synthesis of expertise, allowing for reorganization and restructuring so that the student can appropriate the content. In this context, concept maps are part of this set of strategies.

Joseph Novak, an educational psychologist from the United States, developed a visual strategy called the concept map in the 1970s with the purpose of improving the representation and organization of knowledge. Santos (2016) explains that a concept map is a form of graphical representation that simplifies the organization of knowledge and allows visualization of the relationships between concepts and their interconnections. Ontoria (2005) and Moreira (2006)

complement the previous idea by stating that the concept map plays an essential role in supporting students' understanding of complex topics.

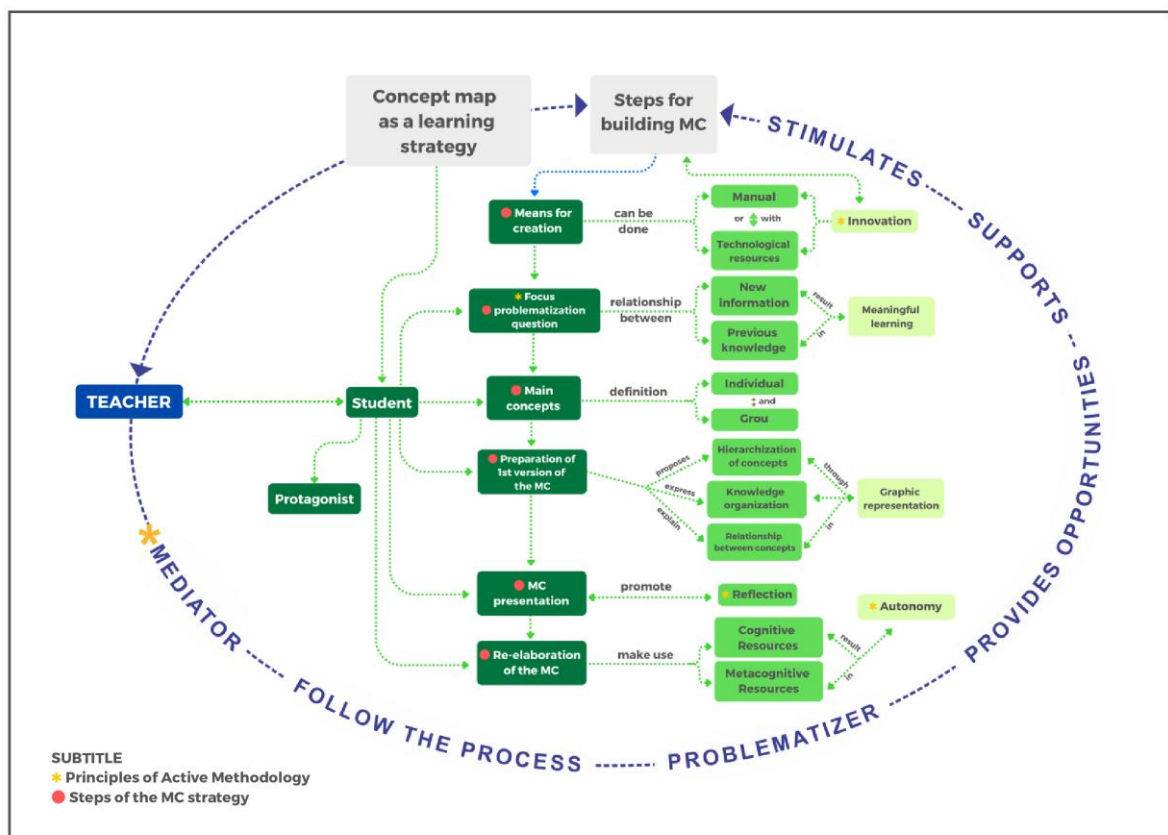
In this vein, the concept map, as a learning strategy, stands out for (a) the centrality of the student in the learning process, (b) the promotion of autonomy, (c) problematization of reality, (d) reflection, (e) teamwork, (f) innovation, and (g) the role of the teacher as a mediator, facilitator, and activator. In the interaction among student, teacher, and content, the elaboration of a concept map follows a set of six stages, namely: (a) means for construction, flexible choice for concept map development, using paper and pen or digital technologies, depending on the resources available in the classroom, preferably a joint decision between teacher and students; (b) focus question or problematization, serving as a bridge to identify the most suitable concepts for concept map construction. In the creation process, Novak and Cañas (2010) emphasize the importance of having a focus question, as asking the right questions is the first step in the learning process.

Berbel (2011, p. 29, our translation) clarifies that "[...] what drives learning is overcoming challenges, solving problems, and constructing new knowledge based on individuals' prior knowledge and experiences"; (c) identification of key concepts, aiming at the hierarchical or thematic ordering of critical concepts linked to the focus question. In this process, it is essential to review the main question and analyze the most relevant ideas for understanding and addressing them; (d) organization with shapes and lines, visually arranging the selected concepts in the previous stage, and organizing sequences and connections between them. First version of the concept map; (e) confrontation of concepts - presentation to peers of the first version of the concept map. At this stage, the connections and interactions between the identified concepts are examined, with the aim of making adjustments and refinements to the concept map.

During the classroom presentation, the teacher has the opportunity to assess students' understanding of the content covered in the discipline and, likewise, their understandings (Moreira, 2010); (f) reorganization of the concept map, and enhancement of the visual representation of concepts and their connections as new information is acquired and understanding of the subject evolves in students' cognitive structure. This process can occur when they realize that certain concepts are more relevant or central to the main problem. Furthermore, gaps in understanding can be identified, and concepts that need to be further explored can be revised.

The stages of building concept maps, as a learning strategy and formative assessment tool, are presented in Figure 1, "stages for building the concept map as a learning strategy and formative assessment tool." In this figure, the presence of a circle symbolizes the role of the teacher as a mediator throughout the process, accompanying the student through questioning and providing opportunities for active participation.

Figure 1 - Stages for building the concept map as a learning strategy and formative assessment tool



Source: Developed by the researchers from the literature review.

Concept maps contribute to students' knowledge acquisition process and enable formative assessment. They allow the teacher to understand the student's situation by identifying and analyzing errors, providing a more precise diagnosis of the cognitive functioning involved. Thus, Souza and Boruchovitch (2010) state that maps can offer more accurate indicators for restructuring didactic work and regulating teaching, aiming to promote more learning for the student.

Formative assessment involves the commitment to guide the student on trajectories that allow advances in understanding new concepts, improving previous conceptions, and

overcoming learning difficulties. According to Perrenoud (1999, p. 89, our translation), this strategy of learning and formative assessment is fundamental because its practice leads the teacher to "[...] observe students more methodically to understand their functioning better, in order to adjust their pedagogical interventions and the didactic situations they propose more systematically and individually, all in the expectation of optimizing learning".

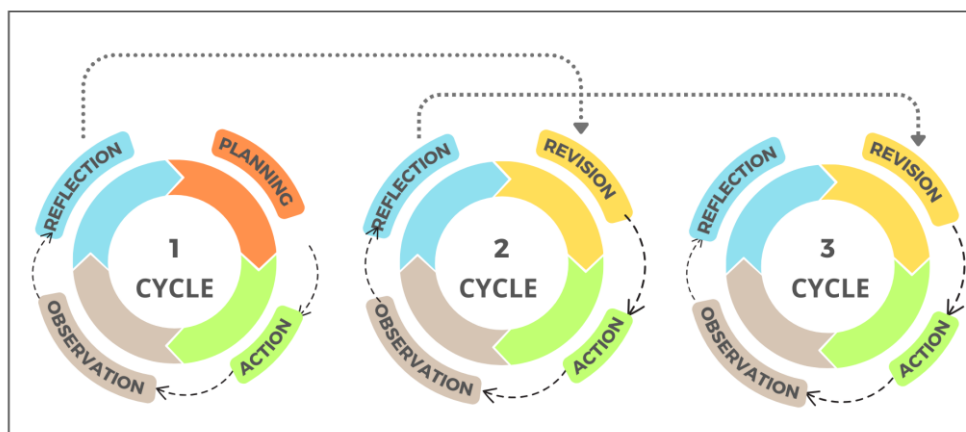
Method

To achieve the objective of this study, which is to analyze the perceptions of Portuguese language teachers in the final years of Elementary School and pedagogical coordinators regarding the use of concept mapping as a learning and formative assessment strategy in continuing education, a qualitative research approach was chosen, as this approach privileges the description, interpretation, and explanation of phenomena.

Bogdan and Biklen (2014) clarify that qualitative research needs to be conducted in the natural environment of the phenomenon in question. According to the authors, no data is irrelevant, and all material should prioritize the integrity of information and the richness of data. Thus, in each cycle of the study, the repercussions of the participants' experiences were analyzed, aiming to trigger changes in their pedagogical practices.

In this study, action research was employed, which, according to Mion and Saito (2001), is characterized by a reflective spiral process. Its objective is to analyze reality in the educational field, promoting decision-making to instigate changes and moments of reflection. According to Coutinho *et al.* (2009), action research consists of three cycles, each with four phases, namely: planning, action, observation (evaluation), and reflection (theorization). For a better understanding of the proposal of action research used in this study, an explanatory scheme represented in Figure 2 was elaborated.

Figure 2 - Representation of the stages of action research



Source: Developed by the researchers, based on Coutinho *et al.* (2009).

Figure 2 illustrates the reflective process of the formation of participants, Portuguese language teachers, and pedagogical coordinators, divided into three cycles. In Cycle 1, the stages of Planning, Action, Observation, and Reflection took place. In the planning stage, structures were defined for theoretical-practical workshops and planning, aiming at elaborating and applying concept mapping as a learning and formative assessment tool. In the action stage, workshops were conducted with Portuguese language teachers and pedagogical coordinators, and in the observation stage, the trainers accompanied the activities and made interventions when necessary, considering that these two stages occurred simultaneously. The reflection stage allowed for considerations about the proposals and the implementation of activities in elaborating concept mapping as a learning and formative assessment strategy, aiming at regulating the process for implementation in Cycles 2 and, sequentially, in Cycle 3. All cycles followed the same sequence.

The research was conducted in a private education network with national coverage. For this study, a specific administrative region was delimited from the two existing ones in the state of Santa Catarina, named the South Administrative Region of Santa Catarina. The network, in this region, operates in Basic Education across six small and medium-sized cities, with 5,683 students in Basic Education, including 672 in Early Childhood Education, 2,454 in the early years of Elementary Education, 1,821 in the later years of Elementary Education, and 736 in High School. The institution has 220 teachers, including 21 Portuguese language teachers, 12 pedagogical coordinators, 20 educational counselors, and 07 managers to serve these students.

The project was submitted to the Ethics Committee of the *Centro Universitário Adventista de São Paulo* (UNASP) and received approval with Opinion No. 5,584,284. Twelve pedagogical coordinators and the 14 Portuguese language teachers who worked with 9th-grade classes in the South Administrative Region of the surveyed network were invited to participate in this study. All participants agreed to sign the Informed Consent Form, confirming their voluntary participation and the right to withdraw consent at any time.

Regarding the selection of teachers from 9th-grade classes, the decision to include them in this study was motivated by the fact that this year/grade is the last of Elementary Education, and students are being prepared for the transition to the New High School, which presents an innovative proposal. As for the pedagogical coordinators of the respective education network, the choice was made so that they could appropriate the new proposals presented and work on them in the continuous training course for Portuguese language teachers, thus expanding their repertoire in this area.

As this is qualitative research, the Focus Group strategy was chosen for data collection. Gatti (2005) states that the focus group should be conducted with a selected group of people gathered to discuss and comment on a specific theme, the focus of the study, in order to capture their perceptions, feelings, and ideas, thus emerging a multiplicity of viewpoints and emotional processes arising from the interaction among participants. For this purpose, three focus groups were conducted, each lasting an average of two hours, at the end of each training cycle.

In the first focus group, Portuguese language teachers and pedagogical coordinators were asked to choose a color through which they would be identified, contributing to the participants' free expression. This same color was used in subsequent focus groups. In order to motivate them to participate in the discussion, the facilitators (researchers) provided 12 questions printed on cards of different colors. Each participant picked the card corresponding to their color, and the sequence of participation was randomly determined. Among the topics developed, the use and importance of the conceptual map as a learning strategy and formative assessment tool were highlighted.

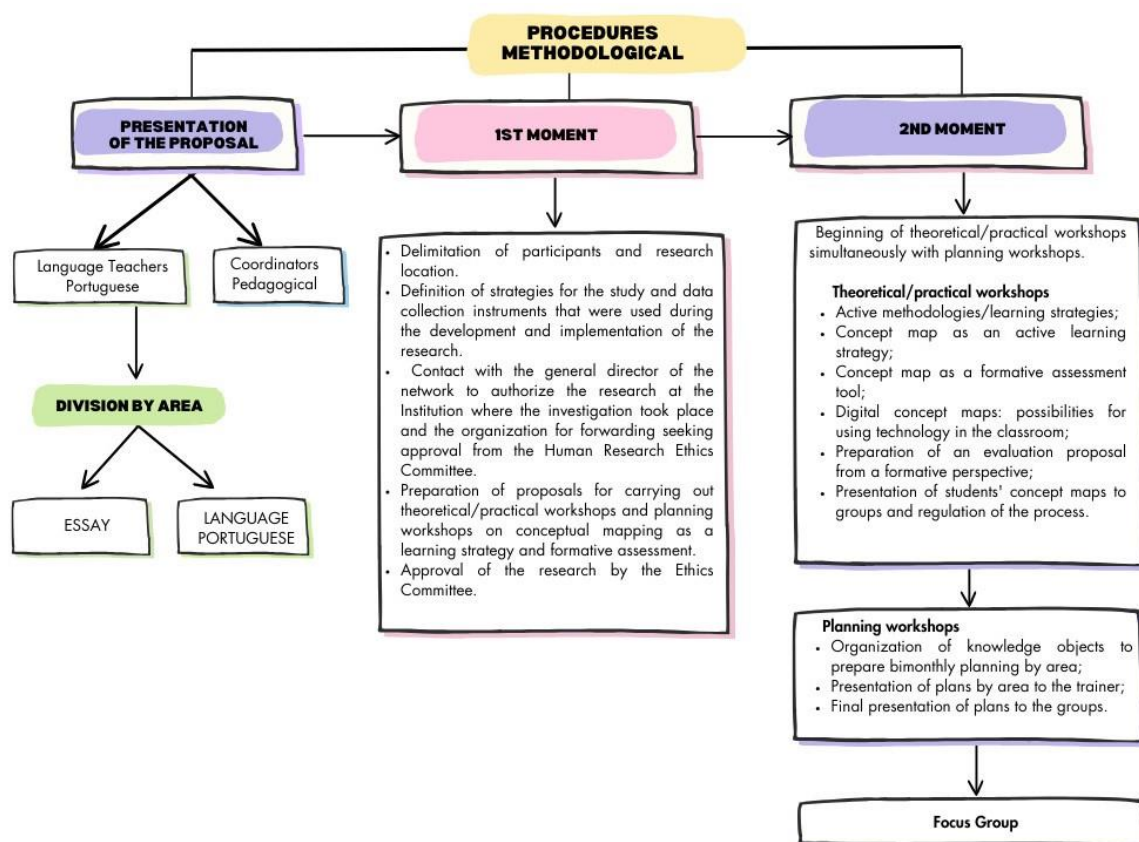
In addition to the focus group, an adapted Field Diary from Lopes (2007) was used, which consists of: (a) a header with the date, names of the people present, and teaching session; (b) a table to describe the observed scene; (c) a smaller adjacent table to record clarifications provided to the participants; (d) another table to write personal thoughts on the scene; and (e) right below these tables, a space for theoretical considerations about the observed scene.

The operationalization of the training program for Portuguese language teachers and pedagogical coordinators on the use of conceptual maps consisted of two moments, namely: 1st moment, organization for study, and 2nd moment, experiences through theoretical-practical workshops and planning workshops, as presented in Table 1.

The analysis of collected data was based on data from the focus group, field diary, and conceptual map elaborated by participants of the continuous training, which was carried out through the proposal of content analysis by Bardin (2016), as it is grounded in the qualitative approach and action research, thus favoring a more in-depth look at the conceptual map as a learning and formative assessment strategy.

Content analysis, according to Bardin (2016), involves three distinct phases, namely: pre-analysis, with the selection of documents and floating reading; exploration of the material, creation of thematic axes, category, and subcategories; and, treatment and interpretation of results.

Table 1 - Organization of the Research



Source: Developed by the researchers.

Results

Upon analyzing the perceptions of Portuguese language teachers and pedagogical coordinators regarding the importance of conceptual maps in the ongoing in-service training process, two categories were highlighted, as presented in Table 2: (a) conceptual map as a learning strategy with 64% of the statements and (b) conceptual map as a formative assessment tool, with 36% of the participants' declarations.

The mentioned categories are listed in the first column of Table 2. From each of these categories, subcategories emerged, presented in the second column of the same table, accompanied by the number of statements made by the participants regarding each subcategory. In the fourth column, the results represent the percentage of responses for each quantity of aspects mentioned, considering the total number of general statements from the participants.

Table 2 - Perceptions of Teachers and Pedagogical Coordinators on the Importance of Conceptual Maps in the Ongoing In-Service Training Process

THEMATIC AXIS: PERCEPTIONS ABOUT THE CONCEPT MAP			
Categories	Subcategories	Number of declarations	Percentage of responses for each number of aspects listed (total)
Concept map as a learning strategy	Protagonist student	20	29%
	Problematization and reflection	13	19%
	Mediator teacher	6	9%
	Teamwork	5	7%
	Subtotal	44	64%
Concept map as a formative assessment tool	Continuous and subsequent	11	16%
	Error management	9	13%
	Informative	5	7%
	Subtotal	25	36%
TOTAL		69	100%

Source: Developed by the researchers based on data collected in focus groups with 26 participants.

First Category: Conceptual map as a learning strategy

The first category, with 64% of the statements, presents the importance of using the conceptual map as a learning strategy, as it goes beyond the transmission of information as in traditional teaching and promotes a more personalized learning experience. This idea was confirmed by P03 after participating in the pedagogical workshops, stating that "[...] *in the theoretical-practical workshops, when they presented us with the theory about the use of the conceptual map associated with experiences, it was possible to expand and make our teaching activities more meaningful*". This statement was complemented by P01, affirming that "[...] *the*

conceptual map is a pleasurable and efficient activity for teaching/learning, as through it, one can explore the various skills of our students".

In the students' learning process, student protagonism was emphasized, as expressed in 29% of the statements by the participants. The National Common Curricular Base (BNCC) highlights the importance of student protagonism for the learning process, encouraging actions that make them active participants rather than passive recipients of information. In this regard, the conceptual map can be a tool for promoting student protagonism as they organize and present the hierarchies and relationships between the studied concepts.

Professor P24 stated that "[...] *the use of the conceptual map as a learning strategy enables student protagonism, offering them the opportunity for organization and construction of their knowledge*". Thus, "[...] *the construction of the conceptual map allows the student to be an active part in the process of their learning by reflecting on the topic studied and discussing, selecting, and hierarchizing the main concepts in a group*" (P05, our translation).

The construction of the conceptual map as a learning strategy begins with a problem proposed by the teacher and/or developed with the students, and this is the guiding thread throughout the constructive process, with reflection always present. In this regard, 19% of the participants recognized the conceptual map as a relevant tool for acquiring knowledge through problematization and reflection. According to Freire (2014), individuals engage in action and reflection as fundamental elements for the transformation of the world.

Through problematization, the student can visualize and analyze the concepts presented in a source of knowledge, thus establishing connections between ideas in the construction of the conceptual map and reflecting on how they can become a reality in everyday life, which makes the teaching/learning process more satisfactory (P01, our translation).

I consider the strategy of the conceptual map to be perfect, (...) especially when the teacher provides through mediation the reflection in the presentation of the conceptual maps, allowing students to compare and confront the ideas proposed by different groups, aiming, if necessary, at their reorganization (P18, our translation).

Learning must be applicable for there to be a transformation of reality. However, according to Souza and Boruchovitch (2010), this context has been challenging in many classrooms, since, in this process, the interaction between students and the teacher is indispensable, considering that action and reflection in the construction of the conceptual map

cannot occur in isolation but rather in a context of interconnection and dialogue among participants in the classroom.

In this direction, 9% of the participants recognized the importance of the teacher's presence as a mediator in all stages of constructing the conceptual map, understanding that this implies a dynamic and continuous approach, in which the teacher and students are constantly adapting in pursuit of better quality in the teaching process, as stated by Professor P01, "*the conceptual map, [...] allows the teacher to monitor the student's learning process more effectively*". In an innovative approach to the teaching process, Libâneo (2013) emphasizes the importance of the teacher assuming the role of mediator of the student's learning, stimulating the development of the student's knowledge, with the purpose of promoting intellectual freedom, emancipation, and the realization of human potential.

Throughout the entire process of the theoretical-practical workshops, the establishment of trust bonds in the workshops became evident, and 7% of the participants spoke about the relevance of teamwork, as highlighted by P18: "*[...] the exchange between colleagues assisted us in building new learning and resolving our doubts*". P03 reported feeling more confident after working in groups, stating: "*[...] I feel more confident because the project became complete once the group thought and made suggestions together*".

In the ongoing professional development through theoretical-practical workshops, the participants assumed an active role, and in this process, they were mediated by the trainers who proposed actions based on innovative pedagogical practice.

Second Category: Conceptual map as a formative assessment instrument

In Table 2, 36% of the participants' perceptions regarding the category "conceptual map as formative assessment" identified three subcategories, namely, conceptual map as an instrument: for continuous and subsequent assessment, which promotes error management through the information contained in the instrument.

In this direction, 16% of the participants emphasized the importance of the conceptual map as a continuous and subsequent assessment instrument, where the teacher can monitor the student's development in their learning process. This perception was evidenced in the statement of P08, who declared that "*the implementation of the conceptual map was challenging because*

it requires the teacher to make constant records so that the process can be evaluated and not just a single moment of production".

The conceptual map as a learning strategy enables the teacher to "*identify the stage at which the student is*" (Moreira; Buchweitz, 1993), thus allowing for a deeper understanding of the student's progress toward learning (Hadji, 2001).

When analyzing the conceptual map as an instrument that enables a continuous view of the student's learning process, the study participants perceived the importance of this element in promoting error management, as stated by 13% of the participants. They stated that "*the exchange of ideas among participants was of utmost importance for correcting errors after group presentations*" (P03); "It was a reflective exercise to find and understand our errors during the process of re-elaborating the conceptual map" (P09); and, "*I can say that I grew a lot by identifying and reflecting on my mistakes, and being able to redo them was a feeling of a second chance to show that I could do better*" (P11). Espires and Cousin (2014) emphasize the importance of viewing mistakes as normal and part of the learning process for students and teachers, as well as an opportunity to organize teaching.

Thus, the conceptual map presents itself as an "informative" instrument with 7% of the participants. This element is aligned with Perrenoud's (1999) statement, which highlights the conceptual map as "[...] *a means offered to make assessment more informative and to better imagine the didactic and/or pedagogical conditions suitable for overcoming the obstacle revealed by the error*" (Perrenoud, 1999, p. 101). This benefit is perceived in the statement of teacher P04 when he affirms that "*from the moment I saw the map as an informative tool, it was possible to use it as an assessment instrument*".

Hadji (2001) emphasizes that formative assessment is inherently informative, and it is essential that assessment instruments enable the teacher to monitor the student's learning process and obtain information about knowledge acquisition. The conceptual map can be understood as an evaluative instrument that provides information about the student's performance level in the teaching/learning process, identifying what they have already learned and which areas still present challenges to be overcome.

Final considerations

When analyzing the perceptions of Portuguese language teachers and pedagogical coordinators regarding the use of conceptual maps as a learning strategy and assessment tool in the continuous training process, the importance of conceptual maps for organizing and assimilating the contents addressed in theoretical-practical workshops became evident, both in their experiences and in their discourses. Furthermore, the role of conceptual maps in the assessment process was highlighted, enabling error management, as pointed out by Moreira (2006).

As a learning strategy, conceptual maps transcend mere information transmission, which, according to Souza and Boruchovitch (2010), promotes a more personalized and enjoyable teaching, where the student is the protagonist in their learning process, thus favoring the development of autonomy. This process allows for the acquisition of new concepts and the solidification of those already existing in their cognitive structure, with the purpose of organizing and reorganizing them based on a focal question (Lopes; Silva, 2020).

In working with teachers and pedagogical coordinators on the use of conceptual maps, it was observed that the focal question, according to their perceptions, promoted active learning. This allowed for greater protagonism among participants as they constructed and reconstructed conceptual maps, revitalizing the teaching/learning process. Thus, they became agents of knowledge construction, rather than mere recipients of content previously prepared by trainers.

In providing their assessment of conceptual mapping as a learning strategy, participants stated that the association between theory and the experiences of the selected strategy for training expanded and made teaching activities more significant, as well as enjoyable. Four categories emerged from their statements: autonomy, problematization and reflection, teacher as a mediator, and teamwork. However, protagonism was the keynote in the statements, as its development promotes engagement with content and pedagogical practice, contributing to decision-making capacity.

Participants' diversity in the elaboration of conceptual maps reflected each team's unique understanding of the topic, demonstrating protagonism and active contribution to the learning process. In this context, trainers acted as mediators who provided educational experiences and promoted participants' reflection in the search for concepts under construction, respecting the different modes and rhythms of participant learning (Moreira, 2010).

As a formative assessment tool, participants stated that through conceptual maps, they were able to identify and appropriate relevant concepts in an informational context. Three subcategories were identified: continuous and subsequent assessment tool, error management-promoting tool, and informative tool, elements cited by Lopes (2007) as essential characteristics in the formative assessment process. They emphasized the importance of the conceptual map as a continuous and subsequent evaluative tool, allowing the teacher to monitor the student's development towards success in their learning.

The conceptual map as a learning strategy enables the teacher to "identify the stage at which the student is" (Moreira; Buchweitz, 1993), thus enabling a deeper understanding of the student's developmental progress toward learning (Hadji, 2001).

In participants' structuring, presentation, and restructuring of maps, discrepancies between presented concepts, difficulties, errors, and advancements were identified, surpassing traditional assessment approaches. In this process, error was viewed as an opportunity for growth and improvement, both for participants and trainers.

The participants faced challenges in creating the first conceptual map, such as choosing linking words between two or more concepts and difficulty in developing the map based on the focal question, leading them to use superficial and incomplete concepts. These challenges prompted teachers to rethink their approaches in the classroom, contributing to breaking away from the traditional educational approach.

Two limitations were identified in conducting this study: the first relates to the number of workshops conducted. Due to the distance between schools, the workshops took place less frequently than initially planned, necessitating an extension of time at each meeting; the second relates to the scarcity of studies on the use of conceptual maps for the continuous training of Portuguese language teachers and pedagogical coordinators, thus limiting the possibility of comparison with other studies conducted.

In light of the foregoing, it is evident that the conceptual map stands out as an effective learning strategy and a dynamic and efficient tool for formative assessment, promoting significant learning in the training process of Portuguese language teachers and pedagogical coordinators. The continuity and deepening of this innovative approach will undoubtedly contribute to enriching the educational landscape, aligning with the needs of a more participatory, reflective, and student-centered education.

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