

ARTIGO

TEACHERS' ACTIONS AND THE CHANGES MOVEMENT IN CONTINUING EDUCATION ACTIVITY

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The subject of this article is the continuous education of the elementary school Mathematics teachers. It shows the result of a Ph.D. research conducted to investigate how changes in content and form can be produced in teaching activity in the context of a continuous education seeking process. For this purpose, a formative movement was promoted to teachers and coordinators from the 1st to the 5th grade of a full-time municipal school from the Brazilian education system. In this movement, discussions related to mathematical knowledge, analysis of teaching practices, and experience sharing were conducted. The formative and research actions were supported by the theoretical-methodological principles of historical-cultural theory, focusing on the theory of activity and based on the method coined by Vygotsky. Results suggested that when the content of the teaching activity is based on scientific knowledge and collective work actions are prioritized, new meanings regarding the organization of mathematics teaching and its teaching objects are developed. Driven by the development of theoretical thinking, changes in content and, consequently, in the course of teaching activity, are manifested. These changes are not produced in a linear and/or isolated way, because they are impacted by the forms of school organization in capitalist relations in which the concrete working conditions of the teacher materialize, which are opposed to the movement of change in the content and form of the teaching activity.

Keywords: Historical-Cultural theory, Activity theory, Continuing education, Mathematics teachers, Early years of Elementary School.

AÇÕES DE PROFESSORES E O MOVIMENTO DE MUDANÇAS EM ATIVIDADE DE FORMAÇÃO CONTÍNUA

RESUMO: A formação contínua de professores que ensinam Matemática nos primeiros anos do ensino fundamental é tema deste artigo, que apresenta resultados de uma pesquisa de doutorado cujo objetivo foi investigar a atividade docente no processo de formação contínua buscando, a partir de seu modo de organização, compreender como as mudanças no conteúdo e na forma podem ser produzidas. Para tal, foi desenvolvido um movimento formativo com professores e coordenadores do 1º ao 5º ano de uma escola municipal de tempo integral de um sistema escolar brasileiro. Discussões relacionadas ao

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conhecimento matemático, análises das práticas docentes e socialização de experiências foram desenvolvidas neste processo. As ações formativas e de pesquisa, cujo processo estruturou-se sobre a base do método cunhado por Vigotski, foram respaldadas pelos princípios teórico-metodológicos da teoria histórico-cultural, com foco na teoria da atividade. Resultados da pesquisa apontam que quando o conteúdo da atividade de formação docente toma como base o conhecimento científico e as ações coletivas de trabalho são priorizadas, novos significados quanto à organização do ensino da Matemática e de seus objetos de ensino são desenvolvidos. Impulsionadas pelo desenvolvimento do pensamento teórico, mudanças no conteúdo e, conseqüentemente, no caminhar da atividade docente, se manifestam. Essas mudanças não se produzem de modo linear e/ou isolado, pois sofrem impacto das formas de organização escolar gestadas nas relações capitalistas em que se materializam as condições concretas de trabalho do professor, as quais se contrapõem ao movimento de mudança do conteúdo e forma da atividade docente.

Palavras-chave: Teoria histórico-cultural, Teoria da atividade, Formação contínua, Professores de Matemática, Anos iniciais do Ensino Fundamental.

ACCIONES DOCENTES Y EL MOVIMIENTO DE CAMBIOS EN LA ACTIVIDAD DE FORMACIÓN CONTINUA

RESÚMEN: La formación continua de los profesores de Matemáticas en los primeros años de primaria es la asignatura de este artículo, que presenta los resultados de una investigación doctoral cuyo objetivo era investigar la actividad docente en el proceso de formación continua buscando entender cómo se pueden producir los cambios en el contenido y la forma. Con este fin, se desarrolló un movimiento de capacitación con maestros y coordinadores del 1o al 5o año de una escuela municipal de un sistema escolar brasileño. En este proceso se desarrollaron debates relacionados con el conocimiento matemático, socialización de las experiencias y análisis de las prácticas docentes. Las acciones formativas y de investigación fueron apoyadas por los principios teórico-metodológicos de la teoría histórico-cultural, centrándose en la teoría de la actividad y la base del método acuñado por Vigotski. Los resultados indican que cuando se prioriza el contenido de la actividad docente en el conocimiento científico y las acciones colectivas de trabajo, se desarrollan nuevos significados con respecto a la organización de la enseñanza de las matemáticas y sus objetos. Impulsados por el desarrollo del pensamiento teórico, se manifiestan cambios en los contenidos y en el curso de la actividad docente. Estos cambios no se producen de forma lineal y/o aislada, ya que se ven afectados por las formas de organización escolar en las relaciones capitalistas en las que se materializan las condiciones concretas de trabajo del profesor, que se oponen al movimiento de cambio en el contenido y la forma de la actividad docente.

Palabras clave: Teoría histórico-cultural, Teoría de la actividad, Educación continua, Profesores de Matemáticas, Primeros años de la escuela primaria.

INTRODUCTION

This article aims at continuous training of teachers who teach Mathematics in the first years of elementary teaching. We reported results obtained by original data from doctoral research focused on the content-form relationship present in the actions of the organization of teachers' education in training activities, not within the scope of a training movement.

To go beyond the verification and understanding that the changes of two subjects do not occur in activity, we developed, as an empirical field of research, a continuous training movement with teachers and coordinators in a full-time municipal school from the Brazilian education system.

The participation of teachers and coordinators of the 1st or 5th grade in the continuous training movement includes moments of discussion of questions related to their mathematical knowledge, analysis of their teaching practices, and spontaneous moments of socialization of their experiences. By formative and research actions, we sought to investigate and understand how changes in content and form can be produced through the modes of organization of teachers' continuing education and their teaching organization.

The theoretical-methodological principles of the historical-cultural theory, with specificities in the Vygotsky method and the theory of activity, according to the contributions of Leontiev, will base the formative actions, the structure, development, and analysis of the research.

The research results show that when scientific knowledge is taken as the content of the activity in the teacher education, contributing to the development of theoretical thinking, in search of the appropriation of new meanings about the organization of Mathematics teaching and also its objects of teaching, the actions taken from the collective work in the school evidence changes that occur in the content of the teaching activity and its pedagogical action.

We observed that these changes do not occur in a linear and/or isolated way, but are related to the forms of school organization. In this case, changes both in the content and in the form of teaching activity depend on breaking with the ties of a context that has capitalist relations as a source that generates the concrete working conditions of the teacher.

TEACHING ACTIVITY, TEACHER'S PLACE, AND THE EDUCATION OF THEORETICAL THINKING

The principles of cultural-historical theory and assumptions of activity theory make important contributions to rethinking the role of education in human development, with special attention to school education and teacher training. When looking at the teaching work from these assumptions, we identified the teaching activity as the main activity of the teacher, since, in it, the teacher seeks to respond to his need to intentionally organize teaching.

As the teaching activity is the essence of teaching work, the performance of its function demands ways of organizing this teaching. Their actions depend on such an organization so that student learning can be systematically and intentionally established (MOURA et al., 2010).

According to Eidt (2009, p.106, author's emphasis),

[...] the end of each teacher's action (preparing classes, teaching classes, answering questions, preparing tests and exercises, correcting them, etc.) is also indirectly related to the object of the educational activity, to the socialization of knowledge objective in its highest forms, all other motives being subordinate to it. **The teaching activity must therefore be composed of a series of intentionally planned actions**, such as studying the content to be taught, developing teaching strategies or actions through which this content will be taught, teaching the content, analyzing the actions and operations employed by students during the process of appropriation of that content, etc. Although each of these actions is partial, they are related to a totality that has the action of teaching as its final objective.

In this way, the teacher's actions are carried out intentionally to organize teaching, when they aim at student learning, make up their teaching activity. As explained by Moretti (2007, p.100), “[...] the

teaching activity is a process, not a product. The teacher, moved by his need, is in teaching activity before, during and after his/her meeting with the students in the classroom". In the school classroom, through his/her intentional work, the teacher can enable students to appropriate elaborated knowledge.

Reflecting on the role of the school in his studies on the relationship between school education and development, Davidov (1988) states that the task of the contemporary school consists in teaching students to think from teaching that drives or develops, based on scientific knowledge.

Still in this sense, Martins (2011, p. 55-56, emphasis by the author) reinforces that it is up to the school "[...] *to teach* what a large part of the population will not learn outside it: knowledge historically systematized by humanity."

Thus, we highlight one of the founding assumptions in Vygotsky's studies (2010), in which learning promotes development. Consequently, it is up to the school, as an institution, to provide conditions for developmental education.

As pointed out by Bernardes (2012), in the current school context, it is usual for neither teachers nor students to carry out actions that promote the movement of humanization through the appropriation of historically elaborated knowledge, that is, the way of organizing current teaching is has not enabled the development of maximum human potential. The concern that permeates the school, most of the time, is just the preparation of students to meet the demands of the job market, an objective defended by neoliberal ideas present in public policies of current Brazilian education.

The ideas of developmental teaching (DAVIDOV, 1988), in general, are still distant from the current Brazilian educational proposals. According to Duarte (2010) and Mello (2010), from Vygotsky's studies disseminated in the Brazilian educational field, in a broad sense, few known ideas have become a fad, lacking in-depth knowledge of his work.

Some concepts of Vygotsky's theory, despite being part of the vocabulary of teachers, such as "mediation" and "zone of close development", do not interfere in the way of organizing current teaching, nor do they contribute to rethinking the ideas of innatist and environmentalist theories that still support the teaching and learning conceptions of most teachers since they were appropriated in a fragmented way, without knowledge of the totality of their work.

Therefore, it is important to consider proposals for teacher training that understand school education as a driver of human development, in which the teacher's work acquires another meaning, gaining centrality in the educational process, since "[...] educational work is an act of producing, directly and intentionally, in every single individual, the humanity that is historically and collectively produced by all men." (SAVIANI, 2008, p.13).

By valuing the knowledge developed and defining ways of organizing teaching that allows their students to take ownership of it, the teacher enables the maximum development of their abilities, without this depending solely on innate abilities or favorable external conditions.

Along with the active role of students and teachers, school contents acquire great relevance. However, it is not about teaching any content, but specifically teaching scientific concepts, which contribute to the development of theoretical thinking, as defended by Davidov (1982, 1988).

There is a dialectical relationship between the processes of the creation of spontaneous and scientific concepts. Spontaneous concepts are the basis for scientific concepts; however, when appropriate, they allow the creation of other spontaneous concepts. According to Vygotsky (1983), spontaneous concepts are formed in everyday life through concrete experience, in direct communication with people. On the other hand, scientific concepts are formed intentionally through school education, due to a guided, organized, and systematic process, involving the performance of mental actions of abstraction and generalization.

It is also important to consider that the appropriation of scientific concepts does not only mean the acquisition of new information, it is, in fact, the possibility of forming an organized thought system, which directs thought to the mental activity (SFORNI, 2004).

In this sense, Davidov (1982, 1988) analyzes the development of two types of thinking: empirical and theoretical. Empirical thinking "[...] is a transformed and verbally expressed form of the activity of the sense organs, linked to real-life; is derived directly from the object-sensory activity of people." (DAVIDOV, 1988, p. 123).

Theoretical thought has, like its content, the mediated, reflected, essential existence and consists of “[...] a process of idealization of one of the aspects of object-practical activity, reproduction, which represents the universal forms of objects.” (DAVIDOV, 1988, p. 125).

In the analysis of the traditional teaching methods of Russian schools, Davidov (1982, 1988) identifies that this type of teaching only provides the development of empirical thinking. This is because is based on formal logic and points out the need to “reorient the entire school system to form in children not discursive-empirical thinking, but to develop in them contemporary scientific-theoretical thinking.” (DAVIDOV, 1982, p. 442, author's emphasis, free translation).

Thus, for school education to contribute to the development of maximum human potential, it is essential that both the teaching activity and the study activity – developed by the student – provide the appropriation of theoretical thinking. The teacher's education activity must generate and promote student activity.

DIALECTIC CONTENT/FORM IN THE EDUCATION ACTIVITIES OF THE TEACHER IN THE FORMATIVE ACTIVITIES

The discussions presented in this topic about the dialectic between content and form in the teacher's activity guided the empirical investigation presented here and also the process of analyzing the data obtained during the formative movement carried out. We need to highlight the determining role of content for the form and the complexity of this relationship.

Marking the theoretical basis that structures the speeches about the understanding of the content-form relationship explained here is essential for the understanding that there is no commonplace when looking at Brazilian research in the area of Education. Questions that may seem simple such as what content and form mean or what relationships can be established between content, form, and the teacher's activity, demand treatment appropriate to the level of complexity that they encompass, when viewed through the lens of content-form dialectics.

The categories and the scientific knowledge are products of certain conditions that arise from the historical development of man's practical and cognitive activity. Thus, they are products of consciousness that were formed in the process of knowledge development, having their content borrowed from objective reality. According to Kopnin (1978), objective reality and human practice are the basis for the emergence and development of all categories.

Kopnin (1978, p.34) states that the categories of dialectical materialism are based on the generalization of the entire experience of knowledge and the practical reconstruction of the world, because “[...] in them, the synthesis (and not a simple sum) of the knowledge derived from the most diverse fields of science is carried out. This synthesis generates new ideas, in which a new approach to the phenomena of reality emerges”. In the case of our research, the content-form category is used as a support point for the knowledge and apprehension of the researched reality, aiming at the perception of changes in the teaching activity in the process of continuing education.

Researching the content and form of the teacher's activity means investigating how this relationship is established in the movement of the teacher's action in activity. Dialectically engendered both in the teaching activity, the essence of teaching work and in the training activity, which aims to subsidize teachers' access to the knowledge of the educational space, content, and form are composed in unity, in the teaching activity, and the formative activity, in line with the knowledge that guides the organization of teaching and the implementation of an educational project proposed by the school collective (MOURA, 1996).

But what do the content and form categories reflect? Rosental and Straks (1960) explain that content and form occur in all things and processes of reality, with the content being its internal aspect and form its expression.

Cheptulin (1982, p.263) states that

content is not the simple set of elements or aspects that make up the thing, it is a process in which all these elements and aspects are constantly in interaction, in movement, change in one another, and sometimes manifest one, and sometimes another of its properties.

The form is the organization, the structuring of the content. According to Fischer (1976, p.143), “the form is the manifestation of a state of equilibrium reached a given moment”. Movement and transformation are characteristics of the content while the form presents more stably.

According to Rosental and Straks (1960), the content of objects and phenomena is constantly developing. The form also develops but more slowly than the content because it has greater stability than it. “Although this is undoubtedly a simplification, we can define the form as conservative and the content as revolutionary.” (FISCHER, 1976, p. 143).

Also according to Rosental and Straks (1960, p. 199, free translation) “there is no content whose development does not cause certain changes in its form, as there is no form that does not influence the development of the content”. The content is in constant movement and transformation, but the form offers resistance, which generates a sharp conflict between the new content and the old form. This conflict will culminate in the destruction of the old form, giving rise to a new form for the new content.

In this way, form and content act in the development process as dialectical opposites, which mutually condition each other, as follows:

Initially, the new form corresponds to its content, it gives it every possibility to expand, so the content begins to develop impetuously. But, during its development, it reaches a stage that the form begins again to compress it, to restrain its development, when the appearance of discordance between form and content which, as a result of development, leads to the rejection of the old form, inserting into this new form which, as a result of development, knows the same fate. And so on until infinity. (CHEPTULIN, 1982, p. 269)

In the relationship between content and form, the role of content is decisive. The content, unlike what idealist doctrines defend, operates as a guiding principle, as it represents a set of elements and processes that constitute the foundation of the existence and development of objects and phenomena (ROSENTAL, STRAKS, 1960).

Based on studies by Davidov (1988), Davidov and Márkova (1987), and Bernardes (2006), the content of the teaching activity is the theoretical knowledge about the theoretical-methodological foundations of the teaching organization. Its form is how the teaching is organized by the teacher.

In the existing unity between the teacher's activity and the students' activity, the content of the teaching activity is also theoretical knowledge. However, it is not considered only the theoretical knowledge about the teaching object (in this case, the mathematical knowledge), but the theoretical-methodological foundation of the teaching organization, which involves knowledge related to child development, pedagogical practices, and social and philosophical relationships that mediate the teacher's performance in the school context, as defended by Bernardes (2006).

Also according to this researcher, when thinking about the content of the teaching activity, we need to consider “[...] the need for the appropriation of specific knowledge by the educator that relates teaching, learning and human development in a historical dimension” (BERRNARDES, 2006, p. 305), since a teaching activity is aimed at the education of theoretical thinking.

When thinking about the content-form relationship in the teacher's activity, we need to consider that changes in the form of teaching organization will be conditionally caused by continuous changes in the content of the teaching activity, since “as a result of the accumulation of quantitative changes in the content, there will, sooner or later, be a change of form, which is accompanied by the passage from material education to a new qualitative state.” (CHEPTULIN, 1982, p. 348).

The field of Brazilian teacher education, since the beginning of the 1990s, has gone through periods of transition that, in their marks, bring the role of the teacher to the center of discussions, in which it is not uncommon for them to end up deprived of the teaching activity when the essential content, represented by access to theoretical knowledge, is supplanted by empirical knowledge about the organization of teaching. In general, it is a type of training that contributes little to the process of

humanization of the teacher, as it does not allow advances beyond common sense, that is, it does not allow the development of his/her theoretical thinking.

Even with the appearance of so-called revolutionary proposals for teacher education, many of the current processes of teacher education hide their real content. Instead of enabling the “[...] construction of the meaning of being a teacher by expanding the meanings attributed to teaching work [...]” (MARTINS, 2012, p. 465, author's emphasis), these proposals have been an adaptation of teachers to ongoing educational reforms, increasingly focused on market requirements, identifying education as a commodity and the school as a company (MAUÉS, 2003).

Therefore, despite the discourse of valuing education, we observe the emptying, fragmentation, and lightening of the teacher training process, a consequence of the introduction of neoliberal policies in the educational field, which meet the interests of a certain social group.

The form hides its content. As Fischer (1976, p.148) defends, regarding the organization of society, “[...] every ruling class that feels threatened seeks to hide the class content of its domination and seeks to present its struggle as destined to maintain not a determined social, historical form, but something 'eternal', concerning all human values.”

Therefore, changing this framework will require changes in the content of the teacher's activity, especially in the teacher training processes, since only “[...] the new content breaks the limits established by the old forms, creating new forms.” (FISCHER, 1976, p. 144). However, this is a process that takes time, as the form offers resistance to the new, that is, this movement of change is quite complex.

Another aspect to be considered in this context is the current way of school organization, a product of a capitalist society, which aims at the education of adaptable individuals to the job market. This educational model privileges individual competence, hindering question and reflections that lead to political projects and non-alienating pedagogical practices (MORETTI, MOURA, 2010). Thus, the school form needs to be understood as an obstacle that offers resistance to changing the content and form of the teacher's education activity.

It is not possible to deal with the relationships between content and form in the teacher's activity, disregarding their specific working conditions because that would be quite naive. The dialectical movement between content and form depends on the historical and social conditions. It is not something that happens naturally and without interference.

In this way, when investigating the relationship between content and form in the teaching activity in a process of continuous education, it is necessary to consider the concrete working conditions of the teacher, that is, the school organization, the duration of work, their remuneration, the possibility or not of collective work within the school, among other aspects.

An effectively transforming action in school education depends on education processes that configure as an activity for the teacher and on changing the current concrete working conditions, an aspect that is related to appropriate changes in the current form of school organization for this to occur. Expressed in other terms, the contradictions that involve the current school form and the teacher's activity must be overcome.

THEORETICAL-METHODOLOGICAL PRINCIPLES OF HISTORICAL-CULTURAL THEORY, ACTIVITY THEORY, AND THE METHOD IN VYGOTSKY

Considering the assumptions of the historical-cultural theory, in the method of apprehending the phenomenon of education, the principles of historical-dialectical materialism are established from the actions developed in the formative movement to the apprehension and analysis of the data collected in the process of research since the method is linked to the phenomenon in the same way that the phenomenon is revealed by the method.

As shown by Vygotsky (1995), the method is configured as a prerequisite and product, instrument, and result of the study. Thus, the need to study the phenomenon in motion is a requirement of the dialectical method, that is,

When an investigation encompasses the process of development of some phenomenon in all its phases and changes, from the moment it appears until it disappears, this implies manifesting its nature, knowing its essence, since only in movement, it demonstrates the body that exists. (VYGOTSKY, 1995, p. 67-68)

It is also understood that the phenomenon is not given and that it must be sought through procedures to be adopted. In the actions of the teacher in education activities, evidenced in this article, the focus on the content-form dialectic implies “[...] apprehending the movement that takes the professional teacher from one quality to another”, through the effort of “[...] to identify qualities that may be indicative of the training phenomenon and that allow us to understand the way to train a teacher” (MOURA, 2000, p. 48).

Therefore, from the studies carried out on the cultural-historical theory, more specifically the activity theory, the properties of the formative movement stand out as a possibility, and throughout the process, attention is directed to the actions developed by the teachers to apprehend possible changes in the form and content of their teaching activity along the path established by the group information.

The option for the formative experiment for such a path was based on principles, whose roots are found “in the investigation processes originating from the psychology of the 20th century, [and] has its genesis in the genetic-experimental method developed by LS Vygotsky (1896- 1934) for the study of psychic development.” (LONGAREZI, 2019, p.162).

The bases of the generic-causal method explained in the works of Vygotsky are, according to Davidov and Márkova, “multilaterally expanded in the works of A. Leontiev, A. Luria, P. Galperin, A. Zaporózhets, D. Elkonin and their collaborators” (LONGAREZI, 2019, p.176) and endorse the constitution of investigative systems in unity with educational systems, so that

[...] in the context of the *formative experiment*, the educational activity constitutes the “heart” of the investigative activity, in the same way, that the research activity is configured at the heart of the Study Activity. According to VV Davidov and VI Slobódchikov (1991, p.122, author's translation), “[...] the experimental investigations, the design (construction) of new didactic-pedagogical systems and the elaboration of means of performance and verification of their effectiveness are organically united.” (LONGAREZI, 2019, p.200, author's emphasis)

The adoption of such principles as a basis for the continuing education of teachers enabled the researchers involved to be identified as allies in the search for possible solutions to problems faced by teachers in their school work. The actions were forwarded to contribute, via mediation instruments, to the researcher-knowledge-teachers dialectic relationship, towards the development of the teacher's theoretical thinking and in search of school education modes that promote human development.

For the apprehension of empirical data, attention was directed to the actions developed by the teachers throughout the formative movement carried out. Empirical data were obtained through recordings of all meetings held with the teachers, the records produced by them throughout the training process, and the organization of a researcher's field diary to record the actions developed in each meeting and also the observations made, to enable the reconstitution of the investigated phenomenon.

In this way, the dialogues produced during the meetings, the observations recorded in the researcher's field diary, and the written records produced by the teachers made up the data set to apprehend the movement of the training process, to analyze the relationship between content and form in the teaching actions of the teacher in formative activities.

This set of data was organized by episodes, divided into scenes. According to Nascimento (2010, p.133), “[...] they allow the data to act as triggers or illustrators of theoretical reflections”, constituting as “a way of organizing the research exhibition process, that is, of directing the reader to the movement of our analyses”, without losing sight of the totality of the investigated phenomenon.

The *episodes* can be written or spoken phrases, gestures, and actions that constitute *scenes* that can reveal interdependence between the elements of a formative action. Thus, episodes are not defined from a set of linear actions. It may be that a statement made by a participant in an activity does not have an immediate impact on the other individuals of the collectivity. This impact may be revealed at another time when the individual is asked to use some knowledge to participate

in an action in the collective. The researcher, like the film producer, is the one who reads these various actions, which seem isolated, looking for the revealing interdependencies of the way of training. (MOURA, 2004, p. 276, author's emphasis)

Excerpts from the episode 'Development and evaluation of collective teaching actions', which expose representative moments of the formative movement carried out, will be presented below, highlighting the results of the research.

THE DEVELOPMENT AND EVALUATION OF COLLECTIVE TEACHING ACTIONS THROUGHOUT THE FORMATIVE MOVEMENT

By understanding teaching as the main object of the teacher's activity, we recognize, as defended by Moura (1996), that the teaching activity can enable both the education of the student and the education of the teacher.

Some scenes extracted from the formative movement carried out show how the movement of planning, developing, and evaluating collective teaching actions can trigger changes in the content and form of the teaching activity, when conditions are provided for teachers to appropriate new meanings about the teaching object and the modes of teaching organization, since:

The collective elaboration of teaching activities is what will allow the use of theory appropriately, as it is at the service of a collective project to seek improvement of learning conditions. Actions and operations are part of this movement of seeking to implement the activity. It is the definition of instruments that will enable to enhance the educational action carried out consciously. The choice of teaching strategy is the operation of the activity and the material is the tool that will allow the optimization of actions. Hence the need for intentionality: to choose instruments in a way that is adequate for the necessary action. (MOURA, 2000, p. 42)

Through this collective elaboration of teaching activities, according to Moura (2000), the process of continuing education can be configured as a training activity. The search for the activity, which involves the choice of teaching strategies and the definition of instruments, generates, in the teacher, the need to appropriate theoretical knowledge, which can cause changes in the content and form of their teaching activity.

The work with the decimal numbering system in the 5th grade: the actions carried out in focus

In this scene, moments of the education meetings held with the teachers and coordinator of the 5th grade are presented, in which, collectively, teaching situations on the decimal numbering system were planned, developed, and evaluated.

The teachers expressed the desire to develop a work with their classes about the numbering system, as it was content that their students still had doubts about. The group's initial idea was to work with a game that had already been explored in previous years. Students' difficulties in the decimal numbering system were discussed and the game proposed by the teachers was analyzed, observing whether it would be a tool for learning the questions that they had previously scored.

Analyzing whether the selected game met the objectives of the teaching activity was an action that allowed the teachers to reflect on the choice of instruments in the teaching activity. As pointed out by Moretti (2007), the choice of the instrument cannot be made in a way that is disconnected from the objective and actions of the activity, since the instrument cannot occupy the place of the object in the activity. Thus, the choice of the game could not be made a priori but would depend on the objective of the activity which, in the case in question, was related to the teaching of the concepts of base and positionality in the decimal numbering system.

It is worth noting that the disarticulation between the choice of instrument and the objective of the teaching activities, initially observed in the actions of these teachers, cannot be considered a singular situation. In general terms, in today's society, the fragmentation of teachers' work, the

intensification of their working hours, and the attribution of the development of teaching instruments (textbooks, teaching methods, didactic sequences, etc.), delegated to external experts to the teacher's work, they structure a school form in which the teachers' actions end up reduced to the simple reproduction of what was thought and produced by other people (CATINI, 2013).

Therefore, the discussion about the articulation between the choice of instruments, the objective of the teaching activity, and the actions to be developed started to be carried out together with the teachers, so that they could attribute new meanings to their actions. In this context, the researcher's mediation was fundamental.

Through the reflections proposed by the researcher, the group concluded that the game previously chosen enabled more evaluation of what the students had already learned than the discussion of the concepts of base and positionality. They needed to redefine the actions initially thought of, and focusing on the teaching object to be worked with the students, another game was jointly selected.

For this teaching situation, the teachers also chose to reorganize the classes according to their knowledge and doubts, so that the interventions carried out by the teachers could be more punctual. With this reorganization, they also needed to adapt the chosen game.

The joint elaboration of this teaching activity, its development in the classroom, and the subsequent evaluation of the actions provided, as already mentioned in the studies by Moura (2000) and Moretti (2007), the exchange of meanings between the teachers in the mathematical content, the use of instruments and the teaching organization.

The reorganization of students into different groups also interfered in the planning and development of the teaching activity. By integrating students from the three classes into the same group, the teachers explored other forms of collective work in the school, committed to the students' learning, regardless of whether they were in their class or not.

Another aspect to be highlighted in this teaching situation was that the performance of the game in the classroom had the participation of the researcher, establishing a partnership also in the actions of development of the planned teaching activity. This partnership, established from the invitation of the teachers enabled the researcher's actions in the classroom, together with them and the students, to trigger reflections on the intentionality of the teachers' actions, reinforcing the need for knowledge about the object of teaching, and the importance of the interaction between teacher-knowledge-student, which was configured, for the teachers, as a possibility of learning with a more experienced partner.

In this way, sharing the idea that the school is a social space for learning, it is also possible to establish relationships, from the perspective of mediation, between researcher-teacher, researcher-student, teacher-student, researcher-knowledge-teacher, teacher-knowledge-student, researcher-knowledge-student, which contribute to the learning process of all involved.

In this context, according to Sforzi (2004, p.185), it is also important to consider that

[...] there are relevant indicators that guide decision-making in teaching, but there are no models. When organizing the educational activity, it is essential to be clear about the intention and the appropriate instruments to achieve the objectives, but ensure sufficient flexibility to allow changes in directions according to the needs in the interaction between students and teachers and the new learning object.

The researcher's participation in the classroom was not configured as a model to be followed, but brought indicators that could help the teachers and contribute to the awareness of their actions, as shown in the following manifestations:

Formative meeting held with the 5th-grade group – Discussion about the teaching activities planned and then developed in the classroom.

Teacher5B

If you want to come on the day, I'll let you join my class if you want. At the time of discussion, I think you have this..., give some ideas, which help. (*laughter*) [...]

Teacher5A

We learn a lot from your presence in the classroom. It's what we talked about from the beginning, I remember the first day we talked [...]. And one of the things that we feel [...] the issue of

knowledge, which Teacher5B also raises, of our lack of expertise in this particular subject, because there is a lot that we learned just that. So, for example, when you open the array, you see that, suddenly, you could go deeper [...].

Teacher5B

Take advantage of the student's response.

Teacher5A

And sometimes, for lack of our knowledge, we don't do that.

Coordinator3

We stop there.

Teacher5B

Yes! We stop there.

Teacher5A

And the student could grow more if he had that. So, that's missing a lot.

The teachers, when recalling the researcher's participation in the classroom in the development of the teaching activity planned together, pointed out that this was an action that contributed to their learning: *"We learn a lot with their presence in the classroom. [...]. So, for example, when you open the array, you see that you could suddenly go deeper..."*

Thus, the actions of the researcher in the classroom together with the teachers made it possible for them to rethink their actions, realizing the importance of listening to the students and also, as stated by Teacher5B, *"taking advantage of the student's response"*. In addition, as appears in the above dialogue, the need to appropriate mathematical knowledge to organize teaching was also the focus of discussion.

The implementation of the teaching situations planned and developed in partnership between the teachers and the researcher triggered a process of awareness of the actions carried out both by the teachers and by the researcher.

In the last meeting held with the group of 5th-grade teachers, the teaching situations developed for working with the decimal numbering system were resumed and the formative movement developed was also evaluated.

Formative meeting held with the 5th-grade group, to discuss the work developed with the groups and also to evaluate the formative movement.

Coordinator3

So, we conclude that we need more moments for these discussions. Propose activities that allow them (*referring to the students*) to discuss.

Teacher5A

This week, as we are working on those little problems that Teacher5B created, very cool! Because, like, we have a habit of teaching and that's it, then we'll just correct it. Not now. A problem, let's read, let's see. Because she elaborated on some little problems with more information and some unnecessary information. So they had to analyze what information is needed.

Coordinator3

Time for this discussion.

Teacher5A

Yes, with time for discussion. That makes a difference. [...]

Teacher4A

I think, therefore, that I learned a lot from you [...]. Not to bring how I work. I learned a lot [...] from having the theoretical part of the thing and from there we plan, I take it to my room, apply it, then come back and discuss. [...] Because, sometimes, our knowledge about that subject is so little. [...]

Coordinator3

This part of the intervention (*referring to the researcher's participation in the classroom together with the teachers*) is where we learn the most. At the moment when you are intervening there, that's when we noticed. [...]

Researcher

One thing that I think was really cool with the 4th and 5th grade group is that we established a partnership without squeamishness. [...] I also learned a lot from this experience. I was delighted in Teacher5C's room at how involved the children were in the clue discussion activity. [...] In Teacher5B's room, too. I think that's what we have to watch out for. It starts with the idea of competition. I think that's what initially involved them, the competition. But I don't know if you noticed what I noticed after the competition stopped being [...].

Teacher5B

[...] so important, to be the discussion.

The conversation continues around the situations experienced in the classroom.

Coordinator3

We had already worked on the 1st and 2nd bimesters and we didn't have the evolution that we had from the game and the discussion.

Group

True!!

Teacher5B

But it was all about playing the discs game first, because it made this order *thing* possible, of understanding each digit according to its position.

Teacher5A

Because even though we had already worked on this with some activities, it is not the same thing as the game.

Teacher5B

And this one (speaking of the game of clues) combined perfectly for the closing, for the systematization. Because, in the game of clues, they had to use the knowledge of the game of discs.

The teachers' statements, exposed in the previous dialogue, reveal some changes in the way of organizing teaching. From the situations developed for the teaching of the decimal numbering system, they realized that they needed to guarantee more time in the classroom to discuss the problems proposed to the students, enabling greater interaction between students-students, teacher-students, teacher-knowledge-students.

These changes in the form of the teaching activity result from the appropriation of new knowledge and the attribution of new meanings by the teachers to the teaching actions already developed. Therefore, the result of the alteration of the content of the teaching activity.

Also in the evaluation of the teaching situations developed, the teachers pointed out, at the end of the exposed dialogue, that the way they organized the teaching of the decimal numbering system, according to the selected games and the discussion situations, contributed to the learning of the students. This was a fact that stimulated them to use this same mode of action in other teaching situations.

However, despite some changes in the form of teaching organization being identified, the actions carried out by the teachers, in general, are still based on the processes of abstraction and generalization of formal logic, which contributes little to the development of students' theoretical thinking, as investigated by Davídov (1982, 1988).

According to Sforzi (2015, p.389),

[...] the transition from the singular situation, presented as triggering the teaching of concepts, to the abstraction of what is essential, which could be characterized as a general mode of action, is not something simple. [...] it is not enough for the content to be contained in the activity, nor is it enough for the student's action: the student must become aware of the relationship of his/her action with the content of the activity. In this sense, the teacher must be also aware of the central content of the activity so that, in this way, he/she can foresee actions that direct students' attention to the object of learning.

Changes in how teaching is organized for the development of theoretical thinking demand from the teacher, in addition to defining the triggering situation of teaching and encouraging verbal interactions between students-students, teacher-students, knowledge of the logical-historical aspects of

the concept to be taught, so that, as stated in the previous quote, it can predict actions that direct students' attention to the object of learning.

Thus, the movement of change carried out by the 5th-grade teachers is the beginning of a long way to go, which involves the need to continue the training process with the deepening of the assumptions of the historical-cultural theory, basis of developmental teaching, and appropriation of the conceptual nexuses of teaching objects from the understanding of their logical-historical aspects.

Working collectively: a necessity and also a challenge

This scene is composed of several moments that occurred during the formative movement in which the teachers and coordinators reflected on the need and also the challenges of working collectively in the school.

Despite that, in the organization of this school, there is already time for group work, in general, at these moments, the meeting between teachers who worked in the same grade prevailed for discussion and organization of the weekly teaching plan, as we can see in the following dialogue, which took place at the formative meeting held with the 1st-grade teachers. When evaluating the formative movement developed, the teachers also discussed the need for collective work at school, in addition to meetings in small groups.

Training meeting held with the 1st-grade group, to evaluate the formative movement.

Teacher1B

In this question that you asked about the groups (*talking to the researcher*), we realize that we would need to have greater contact, but there is no way yet. [...]

Teacher1D

We should also know their goals.

Teacher1B

We should know and be clear, not just the Coordinator1. She manages to have this vision because she is there coordinating and seeing everyone. [...]

Researcher

Yes, Teacher1B, as you said. This year, we were not able to make this happen, despite the initial proposal. [...] We even started the discussion, but there was no date to schedule other collective meetings, there were already other appointments scheduled in the collective meetings. [...] So, there are also the conditions that are given. You have a full group meeting on Friday, just one hour, and you already had other issues to deal with. So it is also a school organization. The school has already guaranteed something that most other REME schools do not have, which is that the work takes place in the group that works in the same grade, collectively. You all work together, which I think is a big step forward.

Teacher1D

Yes! We know what each one is doing, we plan together.

Researcher

But that's how it is, the more stuff we get, the more stuff we want, right? (*laughs*) So now, you also want to think about this in the larger group, because the 5th grader is not the 5th-grade teachers' student, he's the school's student, everybody's. So what do we want? How are we going to organize this?

Teacher1B

Even more so when he's a son from here... Isn't it a much bigger responsibility, for him to get there in the 5th grade and not have learned?

Researcher

Yes, if he's been here since kindergarten... (*laughs*) then, look at it that way. It's not looking to find blame. Speaking: "It's the 3rd grade's fault or it's the preschool's fault". It's not finding blame, it's understanding that it's everyone's job. And that's an exercise.

Teacher1D

But do you know what I see? Working in a group is already a big step forward. Because in no school you can make this exchange.

Teacher1B

Exchanges by affinity. Sometimes you even change, but you change because, for example, I am so intimate with you that I look for you to ask about what you are doing in the classroom.

Coordinator1

But there is no set time for that.

Teacher1D

Yes. But sitting in a group to plan, the 1st group, the 2nd group, the 3rd group, in a private school there is no such thing. You switch like this: 10 minutes at the cafe, 5 minutes when we finish. So, we already have it here. Now the group has to go for the whole.

Coordenadora1

This is the challenge!

As explained in Teacher1D's speech, the fact that there are moments at school for group work - even if these moments involve only teachers who work in the same year - is an advance, as this is not the reality in most schools. Normally, as stated by Teacher1B, we have moments of exchange, established by the affinity between the teachers, without a specific moment for this to happen.

However, throughout the formative movement, the organization of joint actions, involving teachers from 1st to 5th grade in the discussion of the annual Mathematics teaching plan, generated in the group the need to expand group work with other school teachers, as revealed by the speeches of Teacher1B, Teacher1D and Coordinator1. For them, meetings only with teachers who work in the same grade, although necessary, were no longer sufficient; "*now, the group has to go as a whole*", as Teacher1D said.

In this context, it is worth considering that

It is the collective search for the construction of meanings for what is taught that defines the teacher's object. Sharing meaning in the teaching profession is to acquire knowledge about the teaching processes that can favor the apprehension of knowledge that makes human development possible. By sharing meanings, people are building a common language, which can contribute to the organization of school practices, based on how actions are interdependent in the construction of knowledge about human motives that move actions in the construction of more humane humanity. (MOURA, 2000, p. 118-119)

Thus, by showing their desire to know the work of other teachers, the 1st-grade group reinforces the need to share meanings about the teaching processes of Mathematics, which, as explained in the previous quote, can contribute to the organization of new school practices.

The contributions of collective work at school are also evidenced in one of the formative meetings, held with the 4th-grade group. The group highlighted the experience as fruitful when evaluating the collective formative meeting, in which the 1st, 4th and 5th-grade teachers socialized teaching situations planned for working with the decimal numbering system.

Formative meeting held with the 4th-grade group – Review of the teaching situations planned based on the suggestions given by the group.

Teacher4B

I also liked the exchange, the ideas, I think the group managed it, having there, 1st, 2nd, and 3rd grades... I think we managed to discuss a lot.

Coordinator3

I think it was complemented because the girls gave ideas: "Look if you did it like this..."

Teacher4B

I found it very valid!

Coordinator3

I thought it was cool, but I thought the time was insufficient for the discussion. Our group, for example, was unable to close all activities. But I thought the exchange issue was very rich.

Researcher

So, it's something we can keep, right?

Coordinator3

Do this more often. (*Teachers agree with this proposal*)

Teacher4C

An experience that was quite rich, everyone got involved and also added to the activity we had done. That's what was most interesting.

Researcher

I followed a group [...], if I'm not wrong, it was Teacher1A, with the 5th-grade girls. Teacher1A spoke like this: "I am a 1st-grade teacher, explain to me how you are thinking of doing this. I want to do the same for the students."

Teacher4B

Yes, that was the group I was in too.

Researcher

She said: "What is to be done? I did not understand." (*laughs*) For us, there are times when it seems that it is very clear, but when you present it to the other and he raises some doubts...

Teacher4C

People say: "I didn't think about that..." (*laughs*)

Although at school there were already moments when the entire group of teachers and coordinators met, they had not yet had the experience of socializing and discussing in the large group, the teaching situations they develop with their students. This opportunity, manifested in the previous dialogue, involved the teachers and also helped them to evaluate the planned teaching situations.

After that moment, it was intended that the teachers could develop the teaching situations already modified from the group's suggestions and return to present the work carried out. This movement could generate the need to reorganize their actions and it also made possible, through collective study, the appropriation of new knowledge about the organization of mathematics teaching.

According to Moura (2000, p.125),

If school activities are organized so that the teacher can organize in collective actions for the viability of the school project, we will have the opportunity to develop school education with increasing quality, because, in the educational community, there is the possibility of the teacher become the quality professional. When elaborating the teaching activities, having as a reference the set of actions of the partners for the educational activity, the teacher will be able to elaborate his evaluative syntheses of new quality and, therefore, he is modified and starts to give a new quality to the isolates that have interdependencies with their self-training activity.

Thus, it was intended that the planning and discussion of teaching situations on the decimal numbering system would trigger the continuity of the teacher training process. However, this was not possible, because, due to the conditions, only three collective formative meetings were held, which were insufficient to carry out all these actions.

However, although this proposal did not materialize, the actions developed throughout the formative movement, even in small groups, also made it possible for the teachers to value collective work, as illustrated by the dialogues, transcribed below, 4th and 5th-grade teachers at two different times.

Formative meeting held with the 4th and 5th-grade group – Discussion and resolution of mathematical challenges involving fraction, percentage, and the use of tangram.

Teacher4A

(Talking about the students' difficulties, the amount of content, and the need to have time so that they can practice what they are learning) We tried to work everything together, but everything tangles [...] Even because, I don't know, but as we always have to go back to the base, it's not possible to start everything together *(Referring to the work with fractions, decimals, and percentage)*.

Teacher5A

Teacher4A, you know, what I noticed, for example, when we started working on fractions and percentages, I hadn't thought about that. It was based on the girls' idea *(referring to Teacher5B and Teacher5C)*. Teacher5C had commented on how she had worked, so I also talked to a professor from the Mathematics Laboratory [...]. So what I realized is that, from the experience of others, I could think differently about my way of doing things, and I could do things differently. Because before I hadn't done it like that because I didn't know, I didn't master it. From this idea [...] I was doing just a percentage, then just a fraction. And I saw that the kids started to understand

and I started playing challenges, I challenged them. I said, “What if it was 20%? Using the geometric figure and at the same time using the values. What if it was 10%?” And of course, it was not 100% correct, but some students managed to reach the result with the support of the geometric figure.

Teacher5A, when commenting on what was said by Teacher4A, admitted that she also had difficulties in articulating the work with these contents. However, she learned that this was possible from the experience of the other teachers, as evidenced by her speech: “[...] *from the experience of others, I could think differently in my way of doing things, and I could do things differently*”.

The relationship established with Teacher5B, Teacher5C, and the teacher of the Mathematics Laboratory enabled Teacher5A to appropriate new meanings about the teaching of rational numbers and, from there, review her way of organizing teaching. The mediation process, carried out by their peers, was fundamental for this.

At the formative meeting in which working with the decimal numbering system was discussed with the 5th-grade group, the discussion about the importance of working collectively appeared again.

Formative meeting held with the 5th-grade group – Discussion about working with the decimal numbering system.

Coordinator3

That's what the researcher said, we won't be able to change everything at once, but suddenly, next week, with planning, we'll already think about this content, let's think about an activity where we can explore more.

Teacher5B

An activity that you can do several things, explore that activity.

Coordinator3

Contemplate this time of this exploration in planning...

Teacher5B

Because sometimes alone. Alone as we do, each one prepares their activities at home, alone. But this moment of preparing the activity would be cool if, at least this week, the math, we did together.

Coordinator3

It's an idea...

Teacher5A

Thinking together.

Teacher5B

Thinking together. And then, suddenly, these activities will improve. Especially in Portuguese and in mathematics, we may be doing this. You know, one week you do the math, the other week you do Portuguese.

When thinking about the actions that could contribute to a new way of organizing teaching, allowing greater exploration of the tasks proposed to students, Teacher5B proposes that this be done together, because, despite collectively discussing the work to be developed - selection of contents to be worked on –, the elaboration of the teaching situations was carried out individually.

By arguing that collective work could contribute to improving the quality of teaching situations, Teacher5B recognizes its importance, an aspect that was sought to be highlighted during the formative movement developed, since the sharing of actions was present as a principle in the organization of this process.

In this context, the words of Moura (2000, p.82) stand out:

A collectivity is not formed by the gathering of people or individual needs. The collectivity is only formed from a need understood and assumed as a common need that, therefore, creates the reason for the union of efforts to solve or satisfy this need.

Thus, the fact that the teachers guaranteed a moment for group work at school did not necessarily mean that they were developing collective work. To do so, they needed a common need, objectified in a motive that would be the engine of their actions.

In the words of Petrovski (1984, p.8, emphasis added), “the factor that transforms the group into a collectivity is the *joint activity* of its members, a socially significant activity that responds both to the demands of society and to the interests of the personality”.

When, during the formative movement, situations that encouraged collective work were carried out, having as a common objective, the elaboration, development, and evaluation of teaching activities, the teachers had the opportunity to recognize that, as stated by Teacher5B, “*thinking together*” contributes to improving the quality of its actions. Thus, there are indications of the appreciation of collective work by the teachers.

The written record produced by Teacher2B, Teacher2C, and Teacher2D, when evaluating the formative movement developed at the school, also highlights the importance of collective work and expresses the desire to continue studies.

We consider the study carried out throughout this year to be of great value, especially the contribution of the complementary texts suggested by the researcher. We suggest that, for the coming year, the study has a different organization, using the schedule of a secondary HAPW [Hours of Articulated Pedagogical Work] monthly (2h) and that lasts from March to November. It would be interesting to set up a work plan with a fixed schedule and readings, so that we can organize better and, thus, be able to develop both our study and our work at school with quality. In addition to the contributions to our theoretical enrichment, we realized that it is productive to discuss with peers the issues that most afflict us in practice and to seek solutions for them. Finally, we thank the researcher for her availability and her patience with our doubts and anxieties. (Teacher2B, Teacher2C and Teacher2D)

By declaring that “[...] *we realize that it is productive to discuss with peers the issues that most afflict us in practice and to seek solutions for them?*”, the teachers show that collective work has brought contributions to their practice, since the search for solutions to their problems could come from collective actions, enabling that, by organizing work collectively, the quality of work relationships within the school can be changed (ARAÚJO, 2009).

However, as presented throughout this scene, at the same time that collective work has become a necessity of the group of teachers and school coordinators, it has also been configured as a challenge, because, as previously mentioned, working collectively does not mean just being together. The group must constitute a collectivity and, for that, to develop a joint activity so that its actions are linked to an object of the collectivity, enabling the achievement of goals that satisfy both the individual and the group (MOURA, 2000). Goals that need to be articulated to the expectations of the school community, expressed in the school's Political Pedagogical Project, and also to the teacher's education activity.

Furthermore, in the current school form, as it is presented, there is little room for collective work, as the increasing degree of division of work in the school and the fragmentation of tasks performed by teachers, in addition to hampering the development of collective actions, values individual work and encourages competitiveness both among students and among the teachers. Thus, proposing to develop collective work actions at school implies walking in the opposite direction of this reality.

The changes triggered in the relationship between content and form of teacher actions in training activities

When the teaching activity becomes the object of the formative activity, as defended by Moura (1996, 2000, 2010), it can contribute to the learning processes of both students and teachers.

When highlighting the actions developed by the 5th-grade group is working with the decimal numbering system, we can observe signs of change in the form of the teaching activity of these teachers.

These changes were triggered by the changes that occurred in the content of the teaching activity, generated mainly from the reflection carried out on the choice of teaching instruments and the

content to be taught, which enabled the teachers - through mediations – the appropriation of new meanings.

According to Fischer (1976, p.144), these situations demonstrate that “[...] the new content breaks the limits established by the old forms, creating new forms”. However, this is a process that takes time, because, according to the author, “always and everywhere, the form [...] offers resistance to the new”. Expressed in other terms, this movement of change is quite complex because it also involves considering the resistance offered by the current school form to changes in the teacher's activity.

Therefore, as already defended by Moretti (2007, p.187),

[...] thinking about the continuing education of teachers [...] involves enabling collaborative working conditions in the school environment. These conditions are not limited to the necessary working time, although this is an essential condition. They also imply the organization of these moments of work in a way that it is possible to collectively produce teaching proposals suited to the needs of teachers in the reality of their students and articulation with the expectations of the school community expressed in the Political Pedagogical Project of each school.

Valuing and implementing collective work at school, together with the development of the teacher's theoretical thinking, become indispensable elements in this process of change.

SOME CONSIDERATIONS

Discussing teacher training also means discussing the role of the school in today's society. Based on the assumptions of the cultural-historical theory, we argued that the school should enable students to appropriate elaborated knowledge, scientific concepts. Reinforcing the thesis of Vygotskian studies that teaching should promote development, it is up to the school to teach the knowledge historically elaborated by humanity to enable students to develop their theoretical thinking.

Therefore, in this context, the need to change the modes of organization of current teaching stands out, which implies rethinking the proposals for teacher training. The research developed sought to contribute to this process, by analyzing how changes in the content and form of teaching activity can be produced through the modes of organization of teachers' continuing education and their teaching organization.

Through actions of planning, development, and evaluation of teaching situations, carried out collectively, understanding the school as a learning space for the teacher, possibilities for changes in the content and form of the teaching activity were evidenced.

By taking the teaching activity as a training object, the teacher can reflect on their actions and, through the appropriation of new knowledge, modify them. Also, planning, developing, and evaluating teaching activities, in partnership with other teachers, as observed during the formative movement, can lead to the creation of new needs and the appropriation of new knowledge, which can lead teachers to produce other meanings in the developed actions.

Another aspect highlighted in the process of carrying out teaching activities, carried out throughout the training movement, was its contribution to the development of the collective work at school, going against the individualization and fragmentation of teaching work, characteristic of the current form of school education in a capitalist society.

However, changes in the form of teaching organization, as already stated in the content-form dialectic, depend on changes in the content of the teaching activity, since the content operates as a guiding principle of the form (ROSENTAL, STRAKS, 1960). This is a complex relationship, because, as explained by the same authors and observed in the formative movement developed in this research, the content causes changes in its form, but the form also influences the development of the content.

In this way, the process of changing the form as a result of the content takes time, since, despite the content being in constant movement and transformation, the form offers resistance. Only when there is a sharp conflict between the new content and the old form does a new form arise. Form and content, therefore, act in the process of development as dialectical opposites, which mutually condition each other. (CHEPTULIN, 1982; FISCHER, 1976; ROSENTAL, STRAKS, 1960).

We also need to emphasize that, in the analysis of the relationship between content and form in the teacher's activity, it is also necessary to consider the concrete conditions of their reality, since the dialectical movement between content and form does not happen naturally and without interference but it is conditioned to historical and social conditions.

When discussing the relationship between content and form in the teacher's activity, it is also necessary to consider their working conditions - salary, working hours, material conditions of the school, time for study, among other factors -, since the processes of teacher training are not defined in isolation.

An effectively transforming action in school education depends on training processes that configure as an activity for the teacher and also as ways of overcoming the contradictions generated by the current concrete working conditions, an aspect that is related to changes in the current form of school organization. Expressed in other terms, the contradictions that involve the current school form and the teacher's activity must be overcome.

The change in the content of the teaching activity depends on the activity developed by the teacher, both in the training processes and in their performance at school. It is only in the process of appropriation of theoretical knowledge about the teaching object, the subject of learning, and the relationships established between the two in the teaching and learning processes that the teacher will be able to develop his theoretical thinking and, from there, change the content of the teaching activity, enabling changes in its form.

Thus, the transformations in the way of teaching organization, observed in our research, reveal that only when it is constituted as an activity and acts at the level of theoretical thinking can the process of continuous training, supported by the organization of teaching as a training activity, be able to contribute to changes in the content and, consequently, in the form of the teaching activity.

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DECLARATION OF CONFLICT OF INTEREST

The authors declare that there is no conflict of interest with this article.

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