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In-service teacher education and scholar innovation: The semantics of action and reflection on action as a mediation device

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Abstract: This paper presents and discusses the results of a research project in Education Sciences, which aimed at identifying and understanding the effects of in-service teacher education carried out in schools, on the educational practices of a school of the 1st Cycle of Basic Education (CBE). The training was organized with small project groups consisting of six teachers and a trainer, and lasted three years. The present study analyzed the narratives of the educational practices of teachers and of reflection in small groups, from one of the Project groups. The analysis highlighted the importance of the semantics of action and reflection upon action as devices for mediating the training and the changes in individual and collective educational practices.

Introduction

Current Western civilizations are characterized by the presence of intense, uncertain and complex times, particularly with regards to today's school education. This situation was identified in many studies as a social and educational crisis associated with socio-cultural conditions characteristic of the Late Modern Age (Giddens, 1992; Pereira, 2010a). It has led to successive calls, in political and educational discourses, for changes in teaching and in the identity of teachers and schools. In this context, continuous teacher education can be seen as an opportunity to contribute to the changes that can be made to adapt to the challenges of the school crisis for teachers and schools.

Given this problematic, this paper presents a study that sought to identify the training rationalities that guided the development of an investigation-action (I-A) project that was proposed and developed over three years in the first cycle of basic school (CBE). In Portugal the first cycle of basic school corresponds with the first four classes of compulsory education. The I-A project on teacher education, organized through the creation of project groups of teachers and supervised by a trainer, sought to integrate a creative dimension into daily school work and to observe the effects on student development. The research approach focused on the training processes experienced by one of these project groups.

The questions of the study emphasized the importance of developing new rationales in organizing and developing training for teachers, which can meet the

current challenges of the *crisis of schooling* (see Correia, 1998; Dubet, 2002; Pereira, 2010b). The research questions were:

- What factors may contribute to the success of in-service teacher education?
- What are the rationales of in-service teacher education that enable professional learning and institutional changes?
- What are the devices of mediation between in-service teacher education and change in their work practices?

A case study was carried out - the training process developed by one of the groups in the I-A project, taking individual narratives as the corpus of analysis the educational practice of teachers who formed the group and narratives of the reflection in small groups, produced throughout the three years of the project.

This paper presents the study and the results that are significant for understanding the possibilities for in-service teacher education in the transformation of educational practices carried out in the classroom and school.

Theoretical dimension

The study focuses on two dimensions: the current state of the changes taking place in schools (the reason, the meaning and the creators) and the actual state of the relationship between teacher education and the processes of change in schools (the logics and the rationale; see Pereira, 2009). In this respect, Grossman (2008) refers to a crisis in teachers' education, given that several studies show its weak impact on improving professional practices and teachers' learning.

For our analysis, we focused on the idea that we are currently experiencing a deep paradigmatic crisis, both in epistemological and methodological knowledge production and socio-economic models of development (c.f. Pereira, 2009). School, the place, par excellence, of knowledge transmission and (the place) historically dependent on the system of production and forms of social reproduction, is experiencing the intense effects of this crisis. For those who sought innovation and change in schools and teachers during the last three decades, the emergence of this crisis is not a surprise (Bascia & Hargreaves, 2000). But what are these changes about? Despite the systematic application of concepts such as democratization of education and equal opportunities, the official speeches reveal a tendency to reconceptualize the educational problems in technical terms. This reconceptualization excludes the ethical-social dimensions that are at the core of educational practices and does not clarify the real intentions of the advocated changes (c.f. Popkewitz, 1998). The references to modernization, to the strengthening of relationships between school and work and technological development, provoke educational subjectivities that guide institutional practices towards a one-dimensional technique (Dubar, 1990).

In addition, the change implementation rationalities in schools do not take into account the local particularities of the schools and those who will implement the changes (Canário, 1991). The use of technical models for the transformation of schools, focuses on the shortcomings of the paradigm of modernity, and maintains an epistemological framework based on linear rationality to produce a

working knowledge that legitimizes the breakdown of educational knowledge (Schön, 1996).

The limited influence that educational research has had on the real life of schools is mainly due to the dichotomy established between theory and practice. Landsheere (1994) states that the progress of educational knowledge has been concretized without involving the teachers, who remain ignorant.

The concept of reflection in education and reflective practice for teacher education became most relevant in the 1990s, but it still remains useful to the current conceptual framework on teacher education (see Procee, 2006; Jay & Johnson, 2002).

Given this complexity of factors that influence in-service teachers' education, it is important that its objectives are to focus on teachers' professional development and on students' development. Day and Leitch (2001) stress the importance of considering the emotional dimension of teachers' work and its impact on the ability to make decisions within the context of the classroom. The relationship with students interferes with the emotions experienced by the teacher in the classroom. Thus, the analysis of teachers' development cannot fail to consider the different dimensions that compose their professional identity. The emotional dimension is a vital part of that identity and continuing training should take this into consideration.

Another dimension to reflect upon in the analysis concerns the understanding of the teacher as a reflective practitioner (see Zeichner, 1993). The author argues that the role of reflection in educational practice and in training practices is critical to professional development and changing of practices. Schön (1992) also analyzes the training of teachers as reflective professionals and draws the attention to the instrumentalization of the training that has been produced by educational reforms. That instrumentalization has led to the regulatory control of schools and of teachers' work. Despite being nearly two decades old, these arguments remain valid even today. Indeed, education policies tend to put teachers' education at the service of the implementation of the reforms, producing legislation that regulates their educational practices. Schön (1992) conceptualizes a new epistemology of professional practice, in which he refers to the construction of professional knowledge on the basis of four dimensions: knowledge in action (tacit knowledge); reflection in action (to think about what we do in the course of action itself); reflection upon action (in face of an unexpected event we analyze the action and its effects); and reflection upon reflection upon action (to analyze later the characteristics and the process of our action); the latter dimension will have an increased epistemological value if developed through a collaborative work among teachers.

Meijer et al. (2009) refer to the core reflection, an approach based on the principles of positive psychology and the theory of contingency. That approach aims not only at integrating the self and its forces into teaching, but also at considering the requirements of teaching specific conditions. Such perspective implies considering the teacher's self – with its main qualities – and the environment as interconnected dimensions in the construction of educational practices. By knowing the qualities of the self and understanding the classroom conditions, namely students' characteristics, the teacher becomes more able to carry out his/her work successfully. The assumption of core reflection is that

professional behavior becomes more effective and complete if it is involved with the various dimensions of the teacher: environment, behavior, skills, beliefs, identity and personal mission (regarding spirituality).

The aforementioned different approaches share the assumption of the centrality of the teacher – his/her knowledge, beliefs, qualities and identity – in the dynamics of continued teacher training. In that regard, it should be noted that, in order to understand the teaching practice and the possibilities of transforming it, it is necessary to be aware of the interactions between the three different context levels that condition it. According to Popkewitz (1990, cited in Gimeno, 1991), those levels are: the context of *classroom* practices, the context of the professional group in which models of professional behavior are designed and the socio-cultural context that provides the values and contents considered important. However, these determinations are not unidirectional, which would represent a weakness in teachers' professional autonomy, but rather teachers' actions also determine the transformation of those contexts. Carrington et al. (2010) emphasize the fact that the processes of critical reflection enable teachers to verbalize the framework for their beliefs and educational practices, which may be more helpful for them to understand their work and support alternative practices than action based on intuition and on ideas about the practice.

Writing is one of the most commonly used devices for critical reflection developed in teachers' continued training. To Goody (1979), writing gives a visual-spatial dimension to what was audio-temporal and serves to secure, retain and particularly structure thinking, influencing cognitive structures. Writing prevents one from forgetting and allows the interpretation and structures debates, turning the work into the object of thought and deep understanding. To register work in writing means an:

effort to move from a know-how included in the intimacy of the gesture and in the complexity of the action to a formalized knowledge, that is, independent from the person who owns it and from the conditions of his/her putting-into-action. (Jobert, 1990, pp. 78-79)

The narrative on work is a device for understanding, rationalization and cognition that also implies the expression, authenticity and exposure of the self; it also allows the exposure of the way in which a group organizes its practice. Chené (1988) advocates that training practice is enhanced by communication practice, through which the trainer will allow the trainee to be the author of a discourse about his/her training. Therefore, the training narrative emerges as a possibility for repossession of the experience by the person in training; it serves also as a:

turning point in understanding the experience, as it encompasses and goes beyond the "experience" We find within it the before and the after, the outside and the inside of the present experience, with the distancing that characterizes the writing. (Chené, 1988, p. 94)

The training narrative may also be considered as a text, in the sense that it offers itself to the interpretation of the author and of possible readers, becoming a mediation device between the irrationality of the experience and the rationality of the meaning of the experience. Cifali (1996) stresses the fact that the narrative refers to the idea that his/her author has of profession, and is one of its elements of intelligibility.

Ricoeur (1986) considers human action in its various aspects as a quasi-text, supporting this idea upon the fact that human activity reveals features that are

similar to those in the text: it is externalized similarly to writing; it is separated from its agent and acquires semantic autonomy; and it leaves a mark by inscribing in the course of things, attaining the status of a document. The impact of human action is not just about the importance that it has in the moment it is produced; rather, it has implications in other contexts, where it allows re-inscribing of its meaning. The action, as a text, is an open work, allowing a myriad of possible readings and possible readers. Hence, the semantics of action is essential in the training processes. In this regard, the concept of wise action should be noted, which, according to Hameline (1991), is the action that carries a meaning that is part of the intelligence of all things and that assumes its interactive and dialogic nature.

These theoretical dimensions, in their diversity, constitute a map of concepts that are fundamental to both the organization of the training dynamics, and the interpretation of the narratives, allowing the study and its conclusions to be scientifically legitimized.

Methodology

As previously mentioned, the purpose of the study was to understand the effects of continued teacher training on individual and collective professional practices. This study was carried out within the scope of a research-action project that was developed in a school of the 1st CBE for three years, and that was organized on the basis of the formation of small project groups (six teachers) supervised by a researcher/trainer. The project groups developed a reflection of the educational practices on the basis of sharing and analysis of work narratives produced by each of the teachers. A case study was conducted, focusing on the work and training narratives produced by one of those groups. The work narratives consisted of descriptive and reflective individual records on educational practice, made by the teachers, and the teacher education narratives related to records on the training processes developed in small groups, made by the trainer. The case study aims to attain an in-depth understanding of a particular phenomenon and, therefore, uses different sources of information (Bogdan & Biklen, 1994). In this study, we not only used the work and teacher education narratives, but also helpful documents concerning the process of training and educational practice of teachers and of the institution. For example, we looked at teaching and pedagogical projects developed by the group, assessment records and minutes of school meetings.

The aim of the study was to clarify the concerns of the relationships between the personal and professional dimensions, individual action and collective action and theory and practice, and how these relationships impacted the educational dynamics, both at the professional and at the institutional levels. Language and communication were ascribed a central methodological role, on the basis of the acknowledgment that the actor is also the author, that is, he/she is able to narrate the social reality and to define him/herself in that narrative. In conducting the case study, I relied on the assumptions of qualitative research methodology (Lessard-Hébert et al., 1994), considering, thus, a set of epistemological and ontological perspectives that encompass a diversity of

methodological procedures that, although privileging qualitative research techniques, do not reject the use of quantitative techniques. The qualitative approaches in education share a vital interest in the meaning, which social actors grant with their actions. This meaning is a product of a process of interpretation, which is critical in social. The essential interest guides the definition of the object of study and methodological choices (Lessard-Hébert et al., 1994). Therefore, qualitative research sets its specificity in the shared and instrumented quest for the meaning of human action, trying to apprehend heterogeneous systems of attribution of meaning and to interpret their discourse. The case study is one of the methodologies suitable for the qualitative paradigm in educational research.

Three hundred and eighty-five individual work narratives and fifty-one teacher education narratives were analyzed. The use of narratives as a foundation of knowledge production is based on epistemological perspectives, which advocate that knowledge is essentially a form of narration about life and society. The construction of narratives by the subjects is an essential component of the process of understanding inherent in educational research that results from the process of linking information and interpretation (Goodson, 1996).

The narratives were examined by content analyses that was integrated into the overall methodological procedures, taking into account the considerations and techniques of several authors (see Bardin, 1995; Krippendorff, 1980).

Through an interactive process that appealed to an inductive as well as to a deductive research attitude, a provisional, roughly defined analysis model was produced encompassing a broad web that compared the texts. This comparison showed us the need to organize the empirical material in accordance with its epistemological values and the technical needs of the research. It was clarified that the epistemological values of the texts had two dimensions that needed different analytic approaches. One of the dimensions included the teacher education narratives and the other dimension included the work narratives. The definition of the analytic categories and subcategories resulted from the interaction between the production of the interpretation, which showed significant themes, and the production of an informal, hypothetical language, emerging from the theoretical work.

Capacity for training (of the narrative)	«Driving» the practice	Mediation	Professional knowledge
<ul style="list-style-type: none"> ▪ Authorization/ legitimacy of the innovation ▪ Enhancement of the teachers' practice ▪ Formalization of the professional knowledge ▪ Formalization of the meaning of the practice ▪ Collective memory 	<ul style="list-style-type: none"> ▪ Communication of the practice ▪ Problem solving of the practice ▪ Construction of the path of the practice ▪ Visibility of the process ▪ Production of intervention devices ▪ Educational decision ▪ Daily school life ▪ Curriculum ▪ Educational project 	<ul style="list-style-type: none"> ▪ Instituted values and representations – instituting values and convictions ▪ Theory - Educational Action - Discourse ▪ Objective world – subjective world ▪ Theory – practice ▪ Research – action ▪ Individual – social (group) ▪ Group – school ▪ Agent – author of the practice 	<ul style="list-style-type: none"> ▪ Reflection about the practice ▪ Clarification and organization of the professional knowledge ▪ Knowledge production and acquisition of competencies by teachers

Table 1: Model of Analysis for the Teacher Education Narratives

As a result of an interpellation between different kinds of languages, and mediated discussions based on provisional conclusions about the interpretational work, two models of analysis (Table 1 and Table 2) were constructed. Although these models were used with the necessary flexibility for qualitative analysis, they allowed for a first transformation of the research data from the texts. As the reliability of the data was of concern, the codification of the text was reviewed with a certain temporal distancing from the first analysis in order to verify the coherence of the classification logic of the recorded units in each subcategory.

Practice	Attitude (in the narrative)	Affection	Justificative logics of the practice	Knowledge
<ul style="list-style-type: none"> ▪ Rules <ul style="list-style-type: none"> ▪ Instituted ▪ Instituting ▪ Codes <ul style="list-style-type: none"> ▪ Instituted ▪ Instituting ▪ Direction ▪ Focus of the practice ▪ Intelligibility <ul style="list-style-type: none"> ▪ Professional group ▪ School ▪ Professional subgroup ▪ Practice places ▪ Practice time 	<ul style="list-style-type: none"> ▪ Critical ▪ Reflective ▪ Self-critical/ self-valorization ▪ Authorization/ legitimization 	<ul style="list-style-type: none"> ▪ Emotions ▪ Feelings 	<ul style="list-style-type: none"> ▪ Moral ▪ Pedagogic ▪ Organizational ▪ Technical ▪ Affective ▪ Civic ▪ Others 	<ul style="list-style-type: none"> ▪ Formal knowledge ▪ Experimental knowledge ▪ Emerging knowledge ▪ Others

Table 2: Model of Analysis for the Individual Work Narratives

With consideration of the internal validity of the categories and with regard to their completeness, the entire text relevant to the analysis was submitted, which did not always coincide with the corpus of the research. Concerning the exclusivity, consideration was given to the fact that some units of the records have registered a plural semantic value and therefore could be codified into different categories but never in different subcategories within each category.

Most significant results
Work narratives

The analysis of the work narratives organized data around the following categories: *Practice, Attitude, Affection, Justificative logics of the practice, and Knowledge.*

The analysis showed that, over the three years of training, teachers’ practice has proved to be more instituting: (by instituted we mean what is institutionally defined and by instituting what is created throughout the educative action in the context of the production of pedagogic innovations) “we would reflect together” (Rose) (The teachers’ names are fictional); “students came up with the music and chose the songs they liked most” (Anna). Instituting rules related to the freedom of the practice and the empowerment of children in school

activity and to the pedagogical cooperation. The reference to the meaning of the practice that, early in the project, was more related to the immediate pedagogical activity, proves, from the second year onwards, to be more aware of the aims of education: “the whole pathway followed causes students to become happier in fulfilling their work, more free, and this will make them more creative” (Martha). These suggest a new attitude towards school knowledge (knowing for producing and not for consuming). The meaning of practice undergoes further changes over the three years: in the first year, it is related exclusively to the traditional meaning of the pedagogical practice, and in the remaining years there are apparent concerns for pedagogical innovation that include the communication of knowledge and achievements of children to the whole school. The places of practice reveal an openness of *horizons* in pedagogical intervention, which are, initially, confined to the classroom and the canteen, whereas in the last year that was studied the whole school and the surrounding area were utilized. The registered practices refer to the progressive involvement of other classes and the pedagogical activity.

The critical attitude is a constant dimension across all teachers, in the three periods analyzed, and moved from the children’s school work towards their own work. In the first two years, the reflection focused mainly on the effects of school work on children, and in last year it focused on teachers’ professional development. The approval/legitimacy is the dominant dimension in attitude in the record. Permission is granted and legitimized to educational practice, highlighting the positive emotions and feelings it creates in children, emphasizing the *products* of that practice, both in terms of learning and in terms of integral development. As one teacher pointed out “autonomous and cooperative learning has once again been offered to students, with which they cheered” (Mary). Another teacher stated “If we imagine with joy, we create beautiful things, such as the children’s smiles” (Rose).

The reference to affections is a constant feature in narratives, especially children’s emotions: “They [students] were thrilled with all the activities” (Louise); “with tears and smiles at the same time” (Anna). The feelings to which most of the teachers refer are related to job satisfaction. “In this spirit of openness that existed, I think I feel more fulfilled in my profession” (Rita).

The justification of practice on the part of teachers has a stable core, consisting of the organizational and pedagogical logics: “Once everything was prepared, students gathered in groups to carry out to the different activities” (Louise); “naturally they could not create poetry for the first time in their lives without tips, the teacher’s guidance, without vocabulary, etc.” (Martha). Other logics also emerge in an unstable manner: affective, technical, cultural, moral, civic and ethical. In the final year, there was an intensification of the reference to logics of professional development.

Formal knowledge is rarely reported in the narratives, and when it is, it relates to the pedagogical practice and to children’s development. Experiential knowledge was only recorded in the first two periods and mainly relates to educational methodologies. The emerging knowledge was not recorded in the first stage and showed a marked increase in subsequent stages. The knowledge that emerged relates to the ability to think globally about educational practice, integrating the children and the teachers’ education and school functions, in a

rationale with reference to educational goals. “These records lead the teacher towards a better reflection upon his/her work and the teacher who really enjoys what he/she ought to reflect upon his/her practice.” (Rose), “We decided [group of teachers] to address these issues in a creative way, so the child becomes more uninhibited and able to communicate more easily.” (Anna).

Teacher education narratives

The analysis of the teacher education narratives organized data around the following categories: *Capacity for training* (of the work narratives), «*Driving*» *the practice*, *Mediation* and *Professional knowledge*.

In the capacity for training (of the work narratives), authorization/legitimization of innovation is managed by integrating educational decisions in a process of reflection on practices. This reflection shows the changes and the co-operative character of the action of the teachers and records the *successes* of the children’s work and the improving communication between the teachers at the school. The appreciation of the teachers’ practice refers to the importance of experimental knowledge and personal and professional performance and commitment, also enhancing their personal and professional satisfaction with their work. The formalization of the direction of the practice includes insight into the processes of development, the goals of the research, the reflection in the project groups and the effects on the children, the teachers and the parents caused by the implementation of the educational project in the school. It also integrates the explanation about the *location* of the practice of the classroom, which is part of the teachers’ responsibility, in the dynamics of the educational project of the school. The collective memory includes all the aspects of the work done by the group: the theoretical and empirical reflection, the most significant educational practice for the research and the decisions taken by the teachers in the group.

Regarding the driving of the teachers’ practice, the communication of the practice in the first two years needed to be induced, yet in the last year became voluntary. The educational matters that were communicated about the practice extended its scope from the practice with children in the classroom to the practice in the whole school (with children, with colleagues and parents). The questioning of the practice, which presents a very significant dimension in the narratives, exposes a deeply complex *professional world*. Teachers questioned attitudes of the children and of themselves, professional insecurity related to experiencing change, inequality of opportunities in school, communication with colleagues and parents, pedagogic organization to enable the project work, pedagogic sharing, human resources and materials, etc. The construction of the path of the practice proves to be stable over the three years and enables the analysis and discussion of the processes experienced. The study has tried to identify the practical reason and the educational reason in the children’s pedagogic activity and the teachers’ practice and simultaneously clarify the educational principles that are involved in this practice. The mediation between values and instituted representations and values and instituting beliefs was more significant in the first year and processed through action, discourse and theory – “In today’s session, the teachers reflected

on the problems identified on the work narratives and analyzed them under the light of the discussion of the text by Ribeiro (1991). The analysis was allowed jeopardize some of the educative conceptions of the teachers, originating new ideas that may reflect on their educative relation with the children” (trainer). The mediation between theory and practice is developed by integrating the reflection of pertinent, theoretical concepts that enhance a better understanding of the professional practice. With regard to the mediation between research and practice, the reflection of the action is emphasized with the work narratives as a base, the methodological guidelines for the realization of a case study of each of the teachers and the identification of problems in the group study. Mediation between the group and the school had little expression in the first year and presented with greater significance in the following two years: “The school project raised some reflection, mainly in the articulation that should exist between pedagogical class projects and the school’s project” (trainer); “It should be pointed out that the children wish to broaden the exchanges to the remaining classes of the school (...)” (trainer).

Regarding professional knowledge, the reflection on the action is a constant factor in the teacher education narratives and the areas it covers show an expansion of the pedagogic work done with the class to the fields of collective actions in the school and professional development of the teachers.

The situation was analyzed and the teachers concluded that it is due to several factors, namely: difficulties in organizing the pedagogical work on the school and the handicapped communication between teachers and between classes. (...) Reflection was made on the complexity of the project’s work, which requires the activation of cognitive abilities to understand space-time dimension of the actions, its planning and coordination in achieving a goal. (trainer)

The clarification and organization of professional knowledge was created by formulating practical procedures in the form of educational methodologies, highlighting educational strategies used in the development of the teaching and recording observational data of the children.

Given the pedagogical difficulties identified in the work narratives shared by the different classes, the group is developing the following strategies: creation of situations of living together and communication among all the children from all the classes; awareness of the children to the project’s work and the pedagogical exchanges; pedagogical sharing from the elderly ones to the youngest ones (preparing posters and information for the 1st year classes) (trainer)

The semantics of action

The processing of the research data highlights the action as the core of the training dynamics. Schön’s (1992) findings, based on the difficulties linked to the transformation of the educational action and the failure in the training practices, attempt to implement its transformation. The author refers to a topography of professional practice with two dimensions: one is the firm *highlands* and the other he calls a *swamp*. In the first dimension, problems are easy to control through the application of theory and techniques based on research. In the low lands of the *swamp* the problems, confusing and unpredictable, resist a technical solution. Paradoxically the problems of the *highlands* are seen by individuals and by society as being of greater importance, whereas, in fact, it is in the *swamp* where we find the problems of greater human concern.

We risk affirming that the teachers' professional action is mainly developed in the area of the *swamp* with vague and poorly badly defined problems, but on whose understanding depend the possibilities of transformation of the educational reason in schools. Therefore, even though the empirical analysis reveals the existence of a dialectic game among the various training dimensions – *Capacity for training* (of work narratives), «*Driving*» *the practice*, *Mediation* and *Professional knowledge* – this game is only possible through an effort to appropriate the action by the teachers of the project group. The device that enables this appropriation is the work narrative that the teachers have about their action.

In analyzing the results, we found, on one hand that, through the *work narratives*, the teachers explain the meaning and intelligibility of the action, realizing that it is difficult to discern in the immediate context of professional practice. On the other hand, over time it manifests an appropriation of the educational changes through the understanding and explanation of the educational action. In this way instituting rules and codes are emerging that coexist with the institutional rules and codes already in place. The intelligibility of the action clarified by the work narratives reveals the subjective nature (understanding) of the appropriation of its semantics, because by using a common project as a reference its semantic is expressed in diverse ways by the different teachers.

In the explanation of the meaning of the action in the various *work narratives*, a convergence is revealed that comes from the identification of the meanings that are divergent in the different teachers and over the three periods of time will highlight core themes that will converge towards certain educational reasons: promoting the children's and the teachers' participation, working on the projects, and the communication in the school – "(...) each group began by presenting their own project to their colleagues (...)" (Rose); "The project's work has necessarily implied the creation of community places where the full realization of global actions and communication in the school would be possible." (Rita); "I think the school as a place of living tends to reacquire the sense of the unexpected and it's where the creative intervention of the different interlocutors reconquer an irreplaceable place." (Rita); "The project has gradually developed in three fundamental areas: in the classroom – small/large group – School Council (by opening the project to the school and organizing the participation)." (Mary); "From this kind of interactive work, reignites the power of communication in the school, and a chart of the activities to be developed is born." (Martha); "(...) we would meet monthly with all of the teachers and educators of the community (...)" (Anna).

Ricoeur's (1986) conception about the interpretation of action as a text is heuristic for the analyses. In the study, this transfer of the characteristics of the text to the action is reinforced by the fact that all of the narratives analyzed made reference to the action itself: they refer to it, redefining it and remaking it. The idea is that the action can become a *document* and as such, it is an interpretable and structuring element of our analysis. The «*driving*» *of the practice* (educational action) takes place through the *Communication of the practice*, the *Problem-solving of the practice* and the *Construction of the path of the practice*, (as seen in the Table 1 - Model of Analysis for the Teacher Education Narratives), which requires interpretation of a work that is performed by the group.

The action taken and recorded by the group in the teacher education narratives seems to be imbued with a laborious intention that is focused on the educational action, and it disentangles and reconstructs it. It is the *skilful, technical work* that underlies sensible action (see Hameline, 1991). This work is visible in all of the analytical categories, which show an effort to make clear and significant that which before was confused and dispersed; *untie the knot* and find a relevant and coherent path for the educational action. It reflects an effort that, when shared by the group, allows the educational action to assume an importance that transcends the context in which it was produced. The action stops *belonging* to each one of the teachers and becomes the group's object of analysis and gains membership to a collective intelligibility and memory. It turns into social action by being submitted to the censorship of the group and by being subscribed to the *history archive* of the institution.

Going back to the idea expressed at the beginning of the analysis, that educational action is mainly developed in the domain of the *swamp*, and that problems resist theoretical and technical solutions, we seem to understand through the empirical work that the training logics did not result in a rationalization previous to the development of the project. Rather, they were constituted by the topologic construction of the action. This construction had at its base the domain of good sense and became involved in the landscape of intellectual action (Moles, 1995) of those who constructed it.

The training dynamics accomplished through the writing of the work narratives and its sharing and interpretation within the group allowed clarification of the «semantics» of educational action. The teachers' understanding of educational action constituted the main factor in the possibilities of practice change, not only in the classroom but in school in general. The trainer did a mediation task when creating the conditions of communication in the group and theoretical interpellation on the representations that the teachers had on their practices. Accordingly, the communicational rationality and hermeneutics proved to be important in the training dynamics.

The reflection on the action

The professional development of the teacher is related to his/her capacity to discern the direction that an action should take in a particular case. This discernment is only produced as a result of a deep understanding of the situation. Therefore, the reflection on the action became evident as the most adequate procedure for the training logics and is developed in three interconnected dimensions: individual reflection produced in the work narratives, the reflection about the action that was carried out in the project group and that provoked deliberations that impacted the curriculum development, and the reflection produced in the teacher education narratives. As discussed by Schön (1983), a new epistemology of professional practice has been assumed.

By appropriating the action through the work narratives, the teachers reinforce an awareness of their knowledge, which results in a greater clarity in terms of professional practice. The knowledge that emerges from the analysis of the teachers' narratives not only refers to their knowledge about the action but

also represents a reconstruction of that knowledge. Our descriptions of the knowledge within the action are always, according to Schön (1983), intentions to make explicit a form of symbolic intelligence that starts by being spontaneous and tacit. This process of the reconstruction of knowledge through the written record made in the narrative is fundamental for the understanding of the training logics that favor the occurrence of changes in the educational practices of teachers.

Throughout the first period, the reflection was almost exclusively focused on the children's actions and the effects on the learning process and their global development. Alternatively, in the following periods, while keeping up this dimension of reflection, there was also self-reflection, whereby the teachers explained their involvement in the ongoing development processes and make professional changes. However, the emergence of that self-reflection occurred at different times for each teacher, showing that the process of self-expression remained in the *hands of the actor* and that the breaks took place at the *right spot* (Pereira, 2001).

The implication of the reflected dimensions within the emerging explicit knowledge is evident in the analysis, manifesting regularly in each of the teachers' narratives – “It was learned that to develop creativity facilitating activities and creative attitudes from students and teachers it is necessary to take the risk of feeling the probability of error.” (Rose); “(the reflection) guiding me on the quest of new manners and attitudes to have with the children (...) be more flexible (...)” (Martha); “It was a sensational pedagogical sharing (...) research acquired knowledge, that was analyzed by the group” (Rita).

By reflecting on the action through writing, an abstraction is reached regarding the understanding of the action with a higher degree of clarification, because it is necessary for the reader of the text to unite the lived experience with the requirements of intelligibility. This decentering, which is triggered by situations in everyday school life perceived by the teachers as divergent from the *routine*, acquires a strong training dimension that entails the emergence of professional knowledge in relation to the cases recorded, which then expands into the global dimension of the educational area.

The knowledge involved in the action, built up in socially and institutionally structured contexts, also makes up part of the professional heritage of the teachers. In reflecting on the knowledge involved in the educational action, the teachers are reflecting on their professionalism.

The triggering factor of the reflection on action in the project group is not in the area of a *surprise situation* (though sometimes it might seem to be), but it is the experiences of day-to-day school life that most troubled the teachers and that, somehow, reveal a certain professional fragility. Rather than trying to find solutions for these problems, a profound discussion about the conditions of pedagogic action, the beliefs, values and educational concepts the teachers emerged. These discussions proved fruitful in the production of propositions about the nature and the conduct of the teacher's action and when faced with the educational reality acquired their true meaning: “So, taking into account the pedagogical value of communication, the students will be responsible for organizing the exhibition (...)” (trainer); “Identifying creativity indicators: on the performance of the students it was concluded that they imagined the different situations; they altered the text; had new ideas, namely in the introduction of new

elements of the play and transformed the story from the original; in the teachers performance: used a different methodology that worked (...)" (trainer); "These indicators will only be part of a referential for each one of the concepts, leaving open the record of the observations by the teachers." (trainer).

Reflection on the action proves to also be a reflection on professional knowledge, extending its focus to cover all aspects of the teachers' intervention: pedagogical relationships, discipline, curricular organization, assessment of children, professional conflicts, etc.

The work of reflection was also about visibility and organization of professional knowledge. It was about producing a break with the teachers' deep-seated training concepts, in which knowledge is focused on the trainer and therefore provides a prescription of the action: "(...) an important addition for the research we're doing is the fact that each teacher builds a structure for the children's project work appropriate to the characteristics of the students and their way of being 'teacher'." (trainer); "I've asked (the trainer) that each teacher analyzed all the records in their project file in order to conclude on the developed course for her/himself, the children, the group and the school." (trainer); "Mary recorded in her work narrative that she understood that group work requires not only cognitive abilities, such as the attention to the ideas of others, the shared perception of situations and the enumeration and distribution of tasks, but also socializing skills, how to define and share rules in a cooperative way." (trainer); "Some of the strategies to be used are already clear enough to the group and relate to the teachers' teamwork, the work of groups of different students and with a series of strategies already identified in the group as simplifiers of an education for creativity." (trainer); "(...) it was identified: as teachers' attitudes more favorable to the development of creativity (...) as more favorable activities (...) as students' activities (...) as teachers' creative activities (...) the group will try to operationalize these concepts according to their representations and the developed work, in order to elaborate an observation grid at the next meeting." (trainer).

In this sense, the work narratives of the teachers reveal a discursive (oral and written) process of clarifying and organizing professional knowledge that begins from the reflection and is also echoed in the teachers' pedagogic work as it is in their understanding about teachers' professionalism. It becomes clear that by clarifying and organizing professional knowledge (including the instituted and instituting knowledge in an interdependent way), the teachers gradually assume a new professionalism that is translated into an attitude of self-evaluation, an investigating action stance regarding the decision taking in terms of the curriculum, the educational project and the organization of the reflection in the group itself.

The most relevant mediation devices in the training processes were: the work narratives and the individual and collective reflection that resulted from them. The mediation between theory and practice was a key device in the project for the rupture with some educative beliefs of the teachers that revealed a barrier to change.

The work of the reflection in the group could not run the risk of closing in on itself, ignoring other language discourses on educational action. It is exactly with this epistemological vigilance that the trainer took on his/her most important role. It was not to confirm an already existing professional knowledge and an

existing practice. Rather, it was to consider them as a starting point for change, introducing a dimension of critical rationalism that would extend the range of reflection and contribute to the creation of more enlightened practices and more emancipated teachers.

The trainer constitutes the interface, the means of communication between the scientific discourse and the practice discourse. The communication is produced mainly by using theoretical information that is part of the discussion arising from its relevance to clarify the situations of educational actions and as a way to define the issue. The role of the trainer includes listening to the discourses of practice with a sensitivity to ethics and epistemology and whilst valuing the teacher, introducing a theoretical and practical discussion that is able to produce the necessary self and peer reflection to *put in crisis* the institution (Ribeiro et al., 1994) and the educational concepts.

Therefore the trainer was not the *specialty specialized specialist* (Hameline, 1991) but a mediator that, in taking on a secure role, created the conditions that enabled the experimentation, confrontation and agreement on a sustained basis, both theoretically and empirically.

Conclusions

This paper presents a study on a process of in-service teacher education developed in a 1st CEB school for three years. The study aimed at understanding the factors that may contribute to the success of in-service teacher education, by identifying training rationalities that enable professional learning and institutional changes; and the mediation devices between in-service teacher education and changes in their professional practices. The main corpus of analysis consisted of (individual) work narratives and (group) teacher education narratives. The issues of the study highlight the difficulties that in-service teacher education has been experiencing in creating professional practices that are appropriate to the situation of school crisis, which presents new challenges and new social mandates to teachers' work.

In conclusion, it is relevant to say that the training logics that are produced by the school can re-enable the processes of collective learning that define *the rules of the game* within the organization. If, according to Perrenoud (1988, as cited in Canário, 1993) the reality of education is transformed by the reconstruction of representations of projects, attitudes, their own identity and the values of the actors, this reconstruction must be addressed in its entire social and organizational dimension.

As teacher education is focused in the school, it also focuses on the problems of its operation and can therefore facilitate the construction of devices that not only enable the confrontation, but also the production of new systems of action, that result from a common project to maximize the transformation of the institution.

The dynamics of the research activities that were developed took the school as a starting point, to make new relationships between theoretical and practical discourses. These relationships also produced new knowledge and the construction of devices that facilitated instituting changes that make the training

dimension of the organizational contexts and the work situations more visible. The concept of *reflective teacher* stands out as central to the change of a school, but not integrated into an *epistemological norm* that defines a priori that the model must obey. The concept can only be adequate for a “(...) movable, unstable field worked by the actors and that is critically, constantly redefined by the operations that are tried, with success or failure,” (Stengers, 1995, p. 10) involving them and imposing positions.

If the social construction of school pre-supposes a collective learning process, the *reflective teacher* must be re-evaluated on a level of collaboration and professional and organizational interaction that provides a way to shift concrete professional thinking to individual professional formal thinking in order to design the knowledge for how to act professionally, as an individual as well as collectively. The reconstruction and formalization of professional knowledge by teachers is an *open door* for a meaningful and fertile communication between two worlds that have been separated: the world of theory and research and the world of practice.

The results of the study allowed the role of the trainer, teachers, schools and research in organizing and promoting in-service teacher education to be re-conceptualized. Teachers’ continued training, focused on educational settings, on the problems they pose to the work of teachers and on the production of professional and educational knowledge, creating new devices and mediation characters that can make a difference. This difference relates to the actual effect of in-service teacher education in changing educational practices in the classroom and in school.

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