

**PROFESSIONAL DEVELOPMENT OF 1st CYCLE – BASIC EDUCATION
TEACHERS: CONTRIBUTION OF PARTICIPATING IN A CONTINUOUS
PROGRAMME OF MATHEMATICS TRAINING**

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Foreword

Professional development is a process which takes place throughout life. The teacher needs to update, enhance and deepen knowledge and skills which help him to face the needs of his/hers professional life concerning either Mathematics or the curriculum, didactics, the students and him/herself. Although experience is an essential factor to professional development it is not enough, at times, to find solutions to situations arising from practice. As a main element of his/her development it is up to the teacher to integrate theory and practice, to reflect on his practice with the goal of improving it and selecting the projects and training to undertake. Participation in continuous training programs is one of the possible means of contributing to his/her professional development.

The Program for Continuous Education in Mathematics for 1st Cycle of Basic Education Teachers was launched by the Board of Education and the Board for Science, Technology and Higher Education in the school year 2005/2006 having as a guiding principle the *valorization of the teacher's professional development*. It aims at providing a site for joint experimentation and reflection so that one can ponder on the practices and use them to develop a sustained knowledge, which takes into account the characteristics of the students whom it addresses.

Activities to be developed within this program take the form of:

— joint training sessions (group sessions) taking place every other week for the development of curriculum proposals to be tried in the classroom, increasing the mathematical knowledge needed to their enforcement, and reflecting upon them;

– classroom support sessions (class supervision), corresponding to performing activities which put into practice the plans worked out in the joint sessions and the appropriate discussion.

In the evaluation modality the elaboration of a portfolio to reflect the professional development resulting from the training is proposed.

In this investigation, my aim is to study the professional development of 1st cycle teachers in the context of the aforementioned program. Knowing that, on the one hand, professional development involves a number of dimensions and that, on the other, the context of the performance has particular characteristics, namely the kind of sessions foreseen and the form of evaluation, I have devised the following questions for investigation:

- How does the professional development of the teacher take place through participating in the training program?
 - How does the professional development of the teacher evolve throughout the training?
 - Which changes can be found in his/her teaching practices?
 - How does the reflexive capacity develop?
- Which is the contribution of the portfolio usage in the training program towards the professional development of the teacher?
 - How does its use contribute to the development of the teacher's professional knowledge?
 - In which way does its use contribute towards changes in the teaching practice?
 - In which way does its use contribute towards the development of reflection on the practice?
 - Have there been any difficulties with its use? Which? How were they sidestepped?

Theoretical Framework

In the theoretical framework of this work I approach some of the matters related to the subject under appreciation, namely the importance of professional

knowledge of the teacher, the concept of professional knowledge, the importance of reflection in this process, the consideration of other strategies of professional development, and the substantiation of this process. The analysis also approaches the regulating function of evaluation of professional development and specifically, portfolio building as a means towards the professional development of the teacher.

The constant changes taking place in society, the will to improve students acquisitions, curricular orientations to teaching/learning Mathematics and the very nature of the profession, lead the teacher to the constant need of updating his/hers professional knowledge.

Reflection in and upon action is a key element for the teacher to perform his/her work with quality. However, teachers need adequate training, because, to teach, it is not enough to be able to think correctly, it is also needed to master a large range of knowledge and competencies which we may qualify as professional knowledge (Ponte, 1999). In this investigation the contributions of different authors are taken into account, for instances the work of Freema Elbaz (1983), for whom professional knowledge is fundamentally *practical*, the work of Donald Schön (1983), who stresses the importance of the study of *knowledge-in-action* and the work of Lee Shulman (1986), who points to the importance of mastering the contents one teaches and of a general pedagogical training, putting forward the concept of *didactic knowledge of the content*.

Several authors analyze the concept of professional development (Day, 2001, Guskey, 2000; Sparks e Loucks-Horsley, 1990). For instances, to Guskey (2000) professional development is a set of processes and activities designed to improve professional knowledge, the skills and attitudes of teachers so that they can on their turn, improve students' learning. He adds that this is an intentional, continuous and epistemic process.

Regarding the ways the teacher can develop him/herself professionally authors point towards, among others, attending courses, participating in projects, exchange of experiences (Borko & Putnam, 1995; Hiebert, Gallimore & Stigler, 2002), collaborative work (Day, 2001; Hargreaves, 1998; Serrazina, 1998) and reflection (Schön, 1983; Zeichner, 1993).

Whatever the strategy for professional development adopted by the teacher, his/her teaching must reflect some professional evolution, which is only possible to assess through an evaluation process. Specifically, building a portfolio may help evaluation take an essentially regulative function, to the point that it serves as a base to the teacher's reflection on the whole process in which he/she is involved, favoring a change in the practices and, consequently, promoting his/hers professional development (Klenowski, 2000; Lyons, 2002).

Investigation Methodology

This study takes place in a natural environment, in which the investigator is also the trainer in a work group of nine teachers among which are the three participants in the study. Selection of participants was undertaken taking into account time served as a teacher, each one's academic training and availability to participate in the study.

I opted for a qualitative methodological approach (Bogdan & Biklen, 1994), performing three case studies (Gall, Borg & Gall, 1996), using for data gathering, semi-structured interviews, participant observation and documental analysis.

Beyond general interviews to assess the track taken and opinion of the participants an interview also takes place after the observation of each supervising session in the classroom. Interviews, group training sessions and classroom supervision are audio-taped and transcribed.

Documental analysis focuses on the records included in the portfolio (planning, material used, students productions and reflections), on the field notes of the supervising sessions and on reflections about group training sessions.

The first phase of this investigation started on October 26th 2006, date of the first group training session.

The second stage of the investigation will take place in the school year 2007/08 in which the track taken by the teachers is followed with the aim of assessing the influence of the training program in their practices in mathematics teaching. Data gathering takes palce through classroom observation or a context of mathematics teaching practice, followed by an interview.

Analysis of the information started after the first stage of data gathering was completed, i.e. after the end of the training program. This analysis consists in selecting the most representative data and their organization according to *a posteriori* defined categories, taking into account the problem under study, theoretical presuppositions and the empirical work undertaken.

The structure of the case studies, which is still undergoing preparation, presents the following points:

1. The Teacher
 - a. Presentation
 - b. Professional Curriculum
 - c. Teaching profession
 - d. Teaching and Learning Mathematics
2. Teacher and Training
 - a. Vision on Training
 - b. Professional Knowledge
 - c. Teaching Practice
 - d. Reflection
 - e. Portfolio

Taking into consideration that, up to this moment, I only possess a first analysis, still incomplete, of one of the case studies, it seems at this point premature to elaborate any considerations about it.

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