TEACHERS RESEARCHING THEIR OWN PRACTICES IN A PROCESS OF CURRICULUM CHANGE

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RESEARCHING OUR OWN PRACTICE

Teachers and teacher educators face many complex problems in their professional practice, as they make decisions concerning curriculum management, deal with particular students, approach parents, carry out projects in their schools and so on. Instead of waiting for someone to come and say how solve these problems, many teachers began researching them. A similar movement can be noted in many other professional fields such as health and social work.

Research that professionals carry out on their practice is a complex activity focusing on an evolving object and is often done in collaboration with other professionals and social actors. Collaboration helps to cope with problems that cannot be dealt with at an individual level and is a key feature of many projects involving mathematics teachers and teacher educators (Jaworski, 2001; Peter-Koop, Santos-Wagner, Breen, & Begg, 2003).

But what is research? One response is to view it as a process of knowledge construction in which someone identifies an intriguing question, methodically searches an answer, seeks to underscore it, and presents and discusses this work with others. This perspective is consistent with the suggestion of Beillerot (2001) regarding the three main conditions to consider an activity as an investigation: to produce new knowledge, to follow a rigorous methodology, and to be public. Therefore, I assume that there is a possibility for teachers doing research concerning their interests and issues and that such research may take a form significantly different of that of academic researchers. This is an important aspect to retain – we are to study teachers’ research on its own grounds and not by the particular lenses and standards of current research in mathematics education.

This paper addresses the relationship between theory and practice when teachers undertake research on their own professional practice, striving to follow current mathematics curriculum orientations, such as proposing exploratory and investigative activities to pupils and promoting group work and developing the communication in the classroom.

THE EXPERIENCE OF THE GTI STUDY GROUP

The GTI study group was formed in April 2000, within the Portuguese Association of Teachers of Mathematics, including teachers and teacher educators/researchers. The group decided to focus on the topic “Teacher as researcher” and planned to collect and disseminate information about it. The first idea was to organize a collection of
papers but soon this changed to the idea of producing a book with original papers, drawing on the experience of the participants. In October 2001 the group discussed the content and structure of the book. The topic was redefined as “researching our own practice” and the book was to include theoretical papers and reports from experiences that had finished or were in progress. All the members were to write papers and collaborate in discussing their colleagues’ papers. The successive drafts were to be sent by e-mail to everyone to be discussed in the following face to face meeting, a process that was used up to the final stage of production of each paper. In this way, the study group transformed itself into a working group.

The book (GTI, 2002) includes theoretical essays and reports of experiences. The essays address the meaning of researching our own professional practice, the relationship between researching and reflecting, and the role of collaboration. All reports of experiences include a research question, conceptual framework, methodology, evidence, and indicate the implications for the authors’ professional practice. Five reports concern the activity of the authors as teachers of basic/secondary education. From these, three focus on the study of issues related to carrying out mathematical investigations in the classroom, a curriculum orientation that attracts high interest in Portugal, one studies the reactions of pupils to different kinds of tasks and computer environments. Five other reports concern the activity of the authors as teacher educators. From these, three papers refer to the pre-service preparation of teachers to use mathematical investigations in the classroom and two refer to in-service education experiences focusing on the new curriculum orientations for mathematics teaching. In both cases there is a strong connection with the curriculum, either addressing a specific idea or a wider perspective.

A second cycle of work was completed in 2005. The work proceeded very much in the same way and the focus was on the role of the teacher in curriculum development (GTI, 2005). There are theoretical essays, on curriculum management, on the notion of mathematical competence and on the role of the teacher. There are ten reports of experiences, ranging from problem solving as a strategy to develop the concept of division, education for autonomy in mathematics learning, statistics, algebraic thinking, using materials and technology, and discussing in the mathematics classroom. The papers that constitute the book show the complexity of the curriculum and curriculum management questions, as teachers today have to deal with a large social and cultural diversity of pupils. The book tells experiences lived by the authors in the management and development of the curriculum with their pupils. For example, Ferreira (2005) illustrates a strategy for teaching elementary arithmetic operations over the four years of the elementary school, with particular attention to division. Rather than start by teaching the algorithm and then solving exercises, she proposed to students problems involving different situations, supporting and reinforcing their strategies and concluded that students are able to solve relatively complex problems quite early. Rocha and Fonseca (2005) deal with classroom discussions of investigative work in a grade 10 classroom. They document how the
students gradually participate in a more productive way in such discussions and conclude that these moments involve two fundamental processes – confrontation and defense – and allow further work, taking the students and teacher to reason mathematically, formulate new problems and new conjectures and enhance the process of justification/proof.

A third cycle was completed three years later (GTI, 2008). The theme was working on school projects, and concern the ways the culture of the school, in relation to mathematics teachers, can be changed to become more attuned with current curriculum orientations. The seven papers testify different realities of school projects and dynamics of several school mathematic subject groups. In these papers we can identify testimonies of ways developed by the group members to create collaborative working dynamics and, on the other hand, to keep the energy sustaining the subject group that, as always, identifies itself as collaborative. A theoretical paper discusses issues of collaboration and leadership, in relation the culture of school mathematics.

THEORY AND PRACTICE IN RELATION TO THE EXPERIENCE OF THE GROUP

Reflecting collectively on their experience, at the end of each cycle, the participants in the GTI study group have indicated that they developed their knowledge and competences, and felt they were growing professionally. They indicate that this activity contributed in a significant way towards knowing better what is involved in researching his or her own professional practice. They also feel that they developed their competency in doing collaborative work and in communicating (especially in writing), as well as their self-confidence. Some of them expressed a feeling of professional growth and reinforcement of their reflexive attitude.

All teachers indicated that they experienced difficulties and constraints of different kinds. Some of them reported problems in making the work of the group compatible with other personal and professional commitments (and this is NOT a small issue). Others referred to aspects of an affective and relational nature such as the lack of security and self-confidence and some inhibition with the group. There were also references to communication problems, related to the process of writing and also of reading papers in English. But the general feeling is that of success of the group and the participants attributed it to the collaborative environment, the personal relationships, the group dynamic and the methodology. They also indicate that such environment and dynamic developed from the style of leadership, largely shared by the group, and the emerging nature of its objectives and working processes.

In the first phase of the group’s work, there was a clear emphasis on theory. This is not surprising, as it started as a study group. Most of the time was assigned to reading and discussing papers on “Teacher as researcher” and discussing its relation to concepts such as reflection, research, and action-research. The practices within the group shared by all participants were the identification of relevant papers and books, exploration of Internet sites, and analysis and discussion of papers. In the second
phase, the emphasis was on practice: the practice of writing and discussing papers (essays, reports) whose authors were members of the group. Of course, theory was also present, since it was used as a main resource to discuss the papers and to improve them.

An interesting question concerns the way theory and practice is interrelated in this process. In cycle I, in the first phase, when the main activity was reading and discussing papers from the literature, the link between theory and practice was weak. The issues addressed by theory were somehow distant from the actual practice of participants. In contrast, the second phase, when the main activity was writing about our own experience and discussing these papers, witnessed a stronger link between theory and practice. The second phase was much richer in terms of interactions among participants and products generated. However, it would have been impossible to skip the first phase and start directly with the second. The first phase was a period of exploration, in which participants developed their mutual knowledge and joint working processes. As several group members indicated, the time spent in maturing these relationships was a key factor for the success of the group. In cycles II and III there have been also moments when the link between the two is stronger and moments in which it is weaker. The most productive moments are when theory and practice come together, but these are prepared by moments of distance between the two. Given the pressure of the professional activity of teachers, it should be no surprise that practical concerns tend to dominate. However, the success of this group, so far, is based in the relevance put in the study of theory related to the teachers’ own projects.

The experience of the GTI study group shows that theory and practice may become strongly interrelated for teachers actively involved in purposeful professional projects. Researching our own practice is a powerful framework for the development of such projects. The fundamental issue is that such projects are important and meaningful for participants, draw on the potential of collaborative work, and have some wider professional resonance, for example with curriculum perspectives. Academic researchers may be of assistance in starting and sustain those processes, carefully negotiating meanings and purposes and providing enough time for the development of trusty interpersonal relationships.

References
GTI (Ed.) (2002). Reflectir e investigar sobre a prática profissional. Lisboa: APM.

