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Session Information

24 SES 14, Mathematics Teacher Professional Development

Parallel Paper Session

Time:2012-09-21
15:30-17:00

Room:ESI 3 - Aula 2

Chair:Mette Andresen

Contribution

TPMET: A Path to Knowledge about Mathematics

Knowledge evolves and the teacher needs to keep up with such evolution. The teacher?s professional development comprises a multiplicity of mechanisms, one of them being the participation in programs.

This study has as its main goal to study teacher?s Professional development through participation in the Training program in Mathematics for Elementary Teachers (TPMET). This training program is underway in Portugal since the academic year of 2005/2006. It foresees undertaking three kinds of sessions (i) group training sessions for the development of curricular proposals to be tried out in the classroom, and the deepening of mathematical knowledge; (ii) classroom supervision sessions putting in practice the planning sorted out during training sessions, and (iii) a plenary session at the end of the program to assess the work carried out. Evaluation is based on portfolio building.

We aim at providing an answer to the following research questions:

o How does the didactical knowledge and the teaching practice of the teacher evolve during TPMET?

o How does the reflecting ability of the teacher who has taken place within the program develops? What is the contribution of portfolio usage towards such a development of the capacity to reflect?

The teacher?s professional development is taken to be a process to the improvement of professional knowledge and of his competencies, having as an ultimate purpose the improvement of student?s acquisitions. (Guskey, 2000). Such a process must be managed according to its needs (Day, 2001; Fullan & Hargreaves, 1992) and can take several aspects (Day, 2001; Marcelo, 2002; Sowder, 2007).

Professional knowledge is seen as being as essential practical knowledge in nature, arising from theoretical knowledge and experience, mediated by the personal characteristics of the teacher and his experience and training (Elbaz, 1983; Santos, 2000). In this study the didactical knowledge of the teacher has assumed a particular importance, since i tis the knowledge directly connected to the teaching practice, involving the knowledge of Mathematics, of the students, of the curriculum and of the the instruction process (Ponte *et al.*, 1997; Santos, 2000).

Teaching practice, involving classroom planning, their conduction and reflection thereof is a relevant aspect of professional development, and directly connected with professional knowledge, since it is in the practice that it come forward (Schön, 1983), practice being simultaneously one of the sources of knowledge (Azcárate, 1999).

Reflection must be envisaged by the teacher as a constituting part of his practice so as to to allow its improvement and, consequently, students scholarly achievement (Schön, 1983, Zeichner, 1993). It is fundamental that reflection be envisaged as a deliberate, systematic and structured process, its beginning and end being situated in action (Dewey, 1933).

Method

We have decide for a qualitative methodological approach (Stake, 2005) performing three teacher case studies (Yin, 2009). Thus the study has considered three 1st cycle teachers, Aida, Dora e Sara, belonging to the same training grouo who voluntarily enrolled in PFCM. Selection criteria were number of teaching experience and academic training. Data gathering started in the academic year of 2006/2007 and used semi-structured interviews, participant observation and documental gathering. The group training session (GTS) and classroom supervision sessions (CSS) were observed. At the end of each observed class, interviews directed at the emerging aspects of experienced classroom activity also took place. Interviews and observations were audio taped and transcribed. Analyzed documents were the records included in portfolios (planning, materials used, students? productions and reflections), the field notes on the CSS and the reflections upon GTS. Information analysis has consisted in the creation of categories constituted from the theoretical reference Framework and afterward adjusted or completed from emerging aspects of its own analysis.

Expected Outcomes

From this study it is possible to conclude that teachers? Aida, Dora and Sara, participation in PFCM has contributed to their professional development, each teacher, however, presenting specific gains in dimensions such as didactic knowledge, teaching practice and reflection upon practice. For instances, regarding their knowledge about Mathematics it is possible to conclude that theachers Aida, Dora e Sara have acquired a new vision about the nature of this subject. Specifically, concerning learning undertaken, important improvements can be remarked about mathematical themes which had not had been part of their initial academic curricula

(for instances themes Geometry and Gathering, organizing and analyzing data). In Dora?s specific case a significant improvement in her relationship with mathematics has been noticed. This teacher presented a negative relationship with this subject as a result of a traumatic experience in a Mathematics class, with her primary school teacher, as well as a weak investment in training in this area. It can also be concluded that the contributions achieved are mainly related to: (i) the relationship of the teachers towards mathematics and their taste for learning; (ii) the characteristics of PFCM.

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