

PROFESSIONAL DEVELOPMENT OF MATHEMATICS TEACHERS: TWO RESEARCH PROJECTS

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Today's world, characterised by sudden, complex, diverse and uncertain changes that profoundly influence the social practices, is obliged to rethink the concept of professional development in the educational context by associating it to a personal, continuous, dynamic, unlimited and situated process.

This poster will present, schematically, two ongoing research projects focused on teacher professional development. These projects are integrated into DIF, a research group of the University of Lisbon, whose study object is the mathematics teacher.

The poster will include a diagram organised in three parts (A, B, C): A will be a DIF's characterising schema, while B e C will present, with more detail, the research projects **P1**, *Professional development of mathematics teachers: two life stories* and **P2**, *Professional development of mathematics teachers and the teaching of mathematical argumentation*, showing the relationships between them and DIF's work.

Both P1 and P2 have in common the fact that they aim to describe and understand professional development processes of elementary mathematics teachers, adopting, in methodological terms, an interpretative approach of phenomenological inspiration. P1 is included as a biographical approach, using life stories (Pineau, G. & Jorbert, G., 1989) and P2 frames in the paradigm of the co-operative research proposed by Reason (1988). In order to understand the processes and dimensions of the professional development – both in its more broad aspects and in the ones more connected to mathematics teaching – the perspective transformation theory (Mezirow, 1991) and the concept of project (Boutinet, 1996) will be applied in P1. P2, which focus on teachers' knowledge, competences and dilemmas, will be developed in a context of a collaborative work organised around the teaching of mathematical argumentation. Concerning this last aspect, the concepts of argumentation (Toulmin, 1993; Perelman, 1993) and speech genre (Bakhtin, 1986) will be applied, as well as the relationships between proof and argumentation in mathematical activity.

Bakhtin, M. M. (1986). *Speech genres and other essays*. Caryl Emerson e Michael Holquist (Ed.). Austin: University of Texas Press.

Boutinet, J.-P. (1996). *Antropologia do projecto*. Lisboa: Instituto Piaget.

Mezirow, J. (1991). *Transformative dimensions of adult learning*. San Francisco, CA: Jossey-Bass.

Perelman, C. (1993). *O império retórico: Retórica e argumentação*. Porto: ASA.

Pineau, G., Jorbert G. (1989). *Histoires de vie (I e II)*. Paris: L'Harmattan.

Reason, P. (1988). (Ed.). *Human inquiry in action: Developments in new paradigm research*. London: SAGE Publications.

Toulmin, S. (1993). *Les usages de l'argumentation*. Paris: PUF.