

## Portuguese Group of the Project PDRT

### Working Plan for Semester II

(September 2006 – February 2007)

For Semester II of the PDTR project, the Portuguese Group involves 14 teachers. All of them already participated in the project in the previous semester, but some of them changed school.

We have 6 teachers who teach (or aim to teach) at lower secondary or secondary schools<sup>1</sup>:

- Ana Matos, *ES Lourinhã*,
- Neusa Branco, *EB 2-3 de Mem Ramires, Santarém*,
- Carmen Salvado, *ES Vitorino Nemésio, Lisboa*, and *Externato Marcelino Champagnat, Lisboa*
- Elisa Mosquito, *EB 2-3 Marquesa de Alorna, Lisboa*,
- Idália Pesquita, *Escola BI/JI D. Carlos I, Sintra*,
- Maria João Lagarto, *EB 2-3 Vieira da Silva, Carnaxide*,

Also 7 teachers teach at middle schools<sup>2</sup>:

- Ana Isabel Silvestre, *EB 2-3 Gaspar Correia, Portela, Loures*,
- Sandra Marques, *EB 2-3 Piscinas, Lisboa*,
- Alexandra Simões, *EB 2-3 Gaspar Correia, Portela, Loures*,
- Cristina Garcia, *EB 2-3 Mário Sá Carneiro, Camarate*,
- Isilda Marques, *EB 2-3 Piscinas, Lisboa*,
- Maria José Molarinho, *EB 2-3 Gaspar Correia, Portela, Loures*,
- Sara Costa, *EB 2-3 Gaspar Correia, Portela, Loures*.

One teacher works now at primary level:

- Guida Rocha, *EB 1, Luísa Neto Jorge, Chelas, Lisboa*,

All of these teachers have their own research project in progress.

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<sup>1</sup> In Portugal, lower secondary school includes grades 7, 8 and 9 and secondary school includes grades 10, 11 and 12.

<sup>2</sup> In Portugal, middle school includes grades 5 and 6.

Acting as mentors there are João Pedro da Ponte, Hélia Oliveira, both from the University of Lisbon, and Cláudia Nunes and Nuno Candeias, both secondary school teachers with a master's degree. The English instructor is Rosário Oliveira, an English secondary school teacher and the mathematics instructor is Nuno Candeias. The secretary of the Project is now Sílvia Dias.

## **Activities**

During the Semester II of the PDTR project, the following activities are planned:

- 1) Presentation of work in progress by participating teachers;
- 2) Discussion of papers with experiences of the members of the group;
- 3) Discussion of theoretical/methodological papers for the TR Handbook;
- 4) Discussion of Mathematics Action Plans from schools;
- 5) Review of the website / preparation of participating contributions ;
- 6) Discussion of papers from books (e.g., NCTM) / English interface.
- 7) Mathematical further study;
- 8) English further study.
- 9) Participation in national mathematics education and mathematics education research meetings

1. Presentation of work in progress by participating teachers is one key feature of our activity. For this semester it is planned detailed presentations by Guida Rocha and Carmen Salvado.

2. Production of papers with experiences of the members of the group. Teachers of the project, as well as mentors are encouraged to write papers (in English) with experiences. It is hoped that some of these papers will appear in the *TR Handbook* and in the *Teaching Strategies Handbook*. This semester, such activity concerns especially Cláudia Nunes, Nuno Candeias, Ana Isabel Silvestre, Sandra Marques and João Pedro da Ponte. Some of these may follow the model of a research paper and others the model of a professional paper. This activity represents an interface between English and TR work. (details below)

3. Production of theoretical/methodological papers for the TR Handbook. The group is committed to produce and discuss in small groups and plenary sessions theo-

retical papers (English versions) for the TR Handbook. This work will involve Hélia Oliveira (with a paper on *interviews*) and Cláudia Nunes (with a paper on *collaboration*). This represents an interface between English and TR work.

4. Discussion of Mathematics Action Plans from schools. These plans, asked by the Ministry of Education, constitute at present a major challenge to Portuguese schools. The discussion of such action plans will be the main strand of Portuguese PDTR in this semester. (details below)

5. Review of the PDTR website and preparation of participating contributions. We will discuss and propose tasks, teaching episodes, experiences, questions, and try to stimulate interchange with other teachers in the Project in Poland, Hungary, Italy and Spain.

6. Discussion of papers from books and journals. We will keep with this activity, in order to be in tune with current developments in mathematics education and in the activity of teachers researching their own practice. Two external papers are already selected for discussion, one by Victoria Williamson (MT 195) and another one by Graham Jones (MT 195). This represents an interface between English and TR work. In addition, we will propose some papers for common discussion in all the countries, as agreed in the Debrecen meeting (see below).

7. Mathematical further study. We will be working with Voronoi diagrams and the theme of Prof, as agreed in the Debrecen meeting.

8. English further study. As indicated above, this will focus on writing and discussing papers.

9. Participation in national and international mathematics education and mathematics education research meetings. Such participation is planned for SIEM XVII – *Seminário de Investigação em Educação Matemática*, in Setúbal (13-14 November 2006) and well as for ProfMat, *Encontro Nacional de Professores de Matemática*, also in Setúbal (15-17 November 2006). Two collective presentations will be made in SIEM as well as several individual presentations from teachers in the group. Furthermore, the national coordinator will attend international meetings in South America, where the work of the Portuguese group of PDTR will be presented.

## **Mathematics Action Plans**

For the discussion of the Mathematics Action Plans from schools, the main line of work in this semester, the following steps are planned:

1. Introduction. This will involve a general presentation of schools and a proposal of the activity in the next sessions.

2. Learning indicators. We will take a look at national indicative tests (Provas de aferição nacionais), national exams grade 9, PISA tests – What do they measure? What information do they give to us? What information do they not give? We also consider qualitative indicators – What they might be? (students' reports of investigations or projects, student portfolios, organized pieces of student work...) What information do they give to us? What information do they not give? What indicators are considered in PAM?

3. Collaboration. We will discuss the purposes of collaboration, the key elements in collaboration, the different forms of collaboration and the role of leadership in collaboration. We also will make the analysis of selected examples of collaboration. What kinds of collaboration are considered in PAM? What problems related to collaboration arise in the development of PAM? What styles of leadership appear in PAMs?

4. Project design, development and evaluation. Key issues in project design: diagnosis of the situation, identifying resources, devising an opportunity, setting goals, constructing a detailed plan of work. Key issues in project development – interim evaluations, “feeling” the development of the activity. Key issues in project evaluation – Internal versus external evaluation; Indicators; Other measures of project success or failure. Questions: Analysis of PAM regarding issues of project design, development and evaluation

The following school action plans will be considered:

- 1) Ana Isabel Silvestre + M<sup>a</sup> José Molarinho + Alexandra Simões (EB Gaspar Correia)
- 2) Sandra Marques + Isilda Marques (EB Piscinas)
- 3) Ana Isabel Silvestre (Voz do Operário)
- 4) Idália Pesquita (EBJI D. Carlos I)
- 5) Cristina Garcia (EB Camarate)
- 6) Guida Rocha (EB Brandoa)
- 7) Nuno Candeias (EB Ramada)
- 8) Elisa Mosquito (EB Marquesa de Alorna)

## **Papers to discuss**

We propose the following three papers for common discussion in the PDTR project:

Mary Kay Archer, Theresa J. Grant and Kate Kline - *Using Your Own Teaching as a Site for Research into Practice*

Summary - The purpose of this chapter is to convey the authors' journey as they participated in a long-term process of systematically analyzing classroom teaching in order to uncover what it takes to support children to learn mathematics with understanding. This occurred in the context of a five-year professional development project involving the implementation of the *Investigations in Number, Data, and Space*<sup>1</sup> (*Investigations*) curriculum across several different districts. We begin by briefly describing the professional development project that provided the context and impetus for our drive to pursue more deliberate inquiry into teaching, and then describe the specific journey of one teacher – Mary Kay Archer. Although most of the chapter is written in Mary Kay's voice, the words, thoughts, and insights into teaching represent our collective attempt to convey the depth to which this experience has affected us all.

Tracey Smith - *Exploring connections between teaching, learning and assessing mathematics for understanding*

Writing reflectively about your own practice is one way of making sense of experience so that it can be shared by others. In writing this chapter, I have attempted to capture some of the inherent complexities that I faced when I decided to change my approach to the teaching and learning of mathematics. My description takes the form of a narrative inquiry (Clandinin & Connelly, 2000) which seeks to piece together some of the insights I gained as a teacher researcher seeking to transform my classroom practice. Not only did I seek to teach mathematics for understanding, I also wanted to explore ways of assessing students' understanding of mathematics in more strategic ways.

João Pedro da Ponte, Lurdes Serrazina, Olívia Sousa, Helena Fonseca – *Professionals investigate their own practice*

This paper discusses the notion of researching our own practice. It presents two examples of such research from the activity of a study group on teachers' research that included teachers of all grade levels and teacher educators. One of these examples refers to mathematics teaching in the middle grades and another to pre-service teacher education. The paper concludes with an analysis of the potential and issues concerning this kind of research and its meaning in terms of the relationship between theory and practice.

## **Papers to produce**

Research papers to produce may have a first version in Portuguese and second version in English. They will address experiences of the members of the group aimed at the TR Handbook. These papers follow the “model” of a research paper and include:

- Introduction, with objective, motivation and context (with links to TR issues)
- Theoretical framework (as a separate section or included in other sections)
- Teaching proposal (aims, general principles, tasks, practical setting, evaluation)
- Research methodology (paradigm, genre, participants, data collection, data analysis, with links to TR issues)
- Results and discussion
- Conclusion (with links to the literature and implication for teaching and/or curriculum development, with links to TR issues)

Research report proposals: Cláudia Nunes, Nuno Candeias, Ana Isabel Silvestre, Sandra Marques.

Methodological proposals: Hélia Oliveira (*interviews*); Cláudia Nunes (*collaboration*); João Pedro da Ponte (*Investigating our own practice*)

Professional papers may also have a first version in Portuguese and second version in English. They will address experiences of the members of the group aimed at journals such as *Educação e Matemática*, *Mathematics Teaching* and the *Teaching Strategies Handbook*. These papers follow the “model” of a “professional” paper, for example:

- Description and reflection on a teaching episode
- Description and reflection on a class
- Description and reflection a unit
- Description and reflection a school project/activity
- Diagnosis of a problem in students’ learning (e.g., Matos, Branco, Ponte, 2005)

Besides publication in the PDTR community, these papers are also target to Portuguese and Brazilian research and professional journals and other kinds of publications.

Professional paper proposals: Cláudia Nunes, Nuno Candeias, Ana Isabel Silvestre, Sandra Marques.

## Calendar

Sessions	Day		Content	Dinamization
1	16.Set.2006	1	<ul style="list-style-type: none"> <li>▪ <i>Presentation and reflection about the Debrecen meeting</i></li> <li>▪ <i>Discussion of papers for SIEM</i></li> </ul>	CCN, NC CCN,HO, JP,NC
2	16.Set.2006	2	<ul style="list-style-type: none"> <li>▪ <i>Discussion of papers for SIEM (conclusion)</i></li> <li>▪ <i>Plan of work for the semester</i></li> </ul>	CCN,HO, JP,NC JP
3	21.Out.2006		<ul style="list-style-type: none"> <li>▪ <i>Presentation of work in progress by participating teachers (Guida Rocha)</i></li> <li>▪ <i>Slides for SIEM</i></li> <li>▪ <i>Selection of papers for general discussion in PDTR</i></li> </ul>	HO  HO, CCN HO
4	21.Out.2006	3	<ul style="list-style-type: none"> <li>▪ <i>Discussion of two external papers: Victoria Williamson (MT 195) and Graham Jones (MT 195)</i></li> <li>▪ <i>Discussion of Mathematics Action Plans from schools (working plan).</i></li> </ul>	Ana Isabel  JP
5	11.Nov.2006		<ul style="list-style-type: none"> <li>▪ <i>Discussion of Mathematics Action Plans from schools (Learning indicators)</i></li> </ul>	HO
6	11.Nov.2006		<ul style="list-style-type: none"> <li>▪ <i>Mathematics work – Voronoi diagrams</i></li> <li>▪ <i>Review of the website / preparation of participating contributions / contacts with teachers in other countries</i></li> </ul>	NC  NC
7	25.Nov.2006		<ul style="list-style-type: none"> <li>▪ <i>Discussion of Mathematics Action Plans from schools (school cultures and teachers' collaborative work)</i></li> </ul>	CCN
8	25.Nov.2006		<ul style="list-style-type: none"> <li>▪ <i>Discussion of papers with experiences of the members of the group (Sandra Marques-João Pedro)</i></li> <li>▪ <i>Review of the website, etc.</i></li> </ul>	NC
9	16.Dez.2006		<ul style="list-style-type: none"> <li>▪ <i>Discussion of Mathematics Action Plans from schools (intervention projects – diagnosis, planning, managing, evaluating)</i></li> </ul>	JP
10	16.Dez.2006		<ul style="list-style-type: none"> <li>▪ <i>Presentation of work in progress by participating teachers (Carmen Salvado)</i></li> <li>▪ <i>or</i></li> <li>▪ <i>Mathematics work – Proof</i></li> <li>▪ <i>Review of the website, etc.</i></li> </ul>	NC NC
11	03.Fev.2007	4	<ul style="list-style-type: none"> <li>▪ <i>Mathematics work – Proof</i></li> <li>▪ <i>or</i></li> <li>▪ <i>Discussion of papers with experiences of the members of the group (Nuno Candeias)</i></li> <li>▪ <i>or</i></li> <li>▪ <i>Discussion of papers with experiences of the members of the group (Ana Isabel Silvestre-João Pedro)</i></li> <li>▪ <i>Review of the website, etc.</i></li> </ul>	NC
12	03.Fev.2007	5	<ul style="list-style-type: none"> <li>▪ <i>Discussion of Mathematics Action Plans from schools</i></li> </ul>	
	To the next semester		<ul style="list-style-type: none"> <li>▪ <i>Math</i></li> <li>▪ <i>or</i></li> <li>▪ <i>Presentation of work in progress by participating teachers (Elisa Mosquito)</i></li> <li>▪ <i>Discussion of theoretical papers for the TR Handbook (Cláudia Nunes, collaboration)</i></li> <li>▪ <i>Discussion of theoretical papers for the TR Handbook (João Pedro Ponte, Research our own practice)</i></li> <li>▪ <i>Discussion of theoretical papers for the TR Handbook (Hélia Oliveira, interviews)</i></li> <li>▪ <i>Discussion of papers with experiences of the members of the group (Cláudia Nunes)</i></li> </ul>	

