

“Quaderni di Ricerca in Didattica (Matematica)”, Supplemento n.4 al n. 19, 2009.
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Some Personal Reflections

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Based on the findings of the Survey Team on Relations between Mathematics Education Research and Practice set up by the Program Committee of 10th International Congress on Mathematical Education (ICME 10), in Copenhagen, July 6, 2004, some important observations are made (Sfard, 2005). In addition to research for students' learning, there is a need for the focus on the teacher and the teacher practice (Hoyles, 1992). Research into the teacher's input, the interaction and the discourse in the classroom context is getting more and more important. In addition, there is a growth of recognition of the dialogical relation with the practitioners (teachers) and the researchers. Qualitative research with a focus on how things work and try to make the practitioners aware of alternative possibilities rather than trying to arrive at simple view of “what works” is important.

What may be observed in research studying classroom practice? The answers are indeed many different possible thematic foci, e.g., the teacher's perception, the students' perception, the nature of interaction, the tasks and activities in the lesson, the theories for pedagogical strategies and learning assumptions, etc.

Very often to bring about meaningful learning of mathematics in classroom, appropriate tasks for students are essential. Tasks can range from simple drill-and-practice exercises to complex problem-solving tasks set in rich contexts. Obviously the design and nature of tasks are something we have to investigate when we study different classroom practice. Time in a lesson is very limited. When students spend time learning a task, they learn from task the knowledge and the nature of mathematics it presents. Therefore, a good task means a lot. However, it is not only the content of the tasks alone that determine the opportunity for learning. A challenging problem can be taught in such way that students simply followed some routine procedures, whereas a simple task for some fundamental basic skills can be taught in a culture fostering mathematical understanding (Carpenter and Lehrer, 1999). Another important factor is how the task being carried out in the lesson. The learning environment that encompasses both the task and the interaction between the participants in the lessons thus determines the learning opportunity. Mok and Kaur (2006) proposed to use “learning task lesson event” as a legitimate unit of analysis. They analysed both the content of the task and how the task was taught in the lesson. In their definition, a learning task lesson event is characterised by its purpose for teaching something new or forming a part of a coherent sequence of the development of an object of learning. When we study lesson events, we naturally come to an awareness of the importance of how the discourse is organized in the lesson. According to National Council of Teachers of Mathematics (1999), discourse refers to the ways of representing, thinking, talking, negotiating between teachers and students. Embedding in the discourse are the fundamental values about knowledge and authority. Teachers, through the ways they orchestrate discourse, convey messages about the nature of the mathematical knowledge, the way of thinking and value for the subject. More specific, Sfard (2000) suggest that essential features in a mathematical discourse include: extensive use of symbols and mathematical conventions, explicit argument in the form of proof. The proficiency in mathematical discourse thus empowers the students' study tool for the subject.

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What may we propose to practicing teachers who want to study intensely upon their practices to bring about better learning? There are truly many different options. In this brief personal reflection, I propose a few suggestions: tasks, learning task events and mathematical discourse. These provide a platform for teachers to reflect upon: what to do, how to do and what has been done? More importantly, via these studies of the possible themes and foci in classroom practice within different theoretical frameworks and assumptions, they can develop an understanding of the alternatives in classroom practice and deepen the understanding of their own practice via contrast and explorations.

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