Mathematical Knowledge in Teaching Seminar 4 : 10 January 2008

Discussion Group 1: Conceptualising and Theorising Knowledge for Teaching

In the following I provide a list of issues that were raised by the group:

A. Our discussion began as an open-ended reflection on the papers of the day. We discussed the role of proof in mathematics teaching, concentrating in particular, on the role of proof in the mathematics curriculum in England and Portugal. There was an agreement between the members of the group that teachers should use 'proof' as a teaching tool, which will help their students to develop better understanding of different mathematical ideas. This point led to discussing the role of teachers' understanding in effective teaching.

B. We continued our discussion concentrating on the conceptualisation of knowledge for teaching. A number of issues that need to be taken into consideration in any attempt to conceptualise knowledge for teaching were mentioned.

- Should we consider our conceptualisation as it is for individual teachers or for a community of teachers?
- The situated element of such knowledge should be taken into consideration.
- We need to think of any possible differences between primary and secondary teachers.
- We need to see teachers' knowledge as both interactive and dynamic in nature. Teachers' knowledge is developed in specific context, and often develops through classroom interactions with the subject matter, and the students. Furthermore, all aspects of teachers' knowledge (e.g pedagogical, subject-matter knowledge, teachers' beliefs) are related to each other, and all must be considered to understand mathematics teaching. No one domain of teachers' knowledge functions in isolation in 'effective' mathematics teaching.
- With need to think of the nature of teachers' professional knowledge: is this some kind of "declarative knowledge" that may be theorised outside of the profession (for example by mathematics education researchers), captured and transmitted by oral and written discourse? Is it some kind of "practical knowledge" that is held by practitioner in the field? In such case what is the role of mathematics educators in contributing to change this knowledge?

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