

Nuffield Seminar Series on Mathematical Knowledge in Teaching

Seminar 4. *Mathematical knowledge in teaching: the case of argumentation and proof.*

This seminar will discuss the following three studies of mathematical knowledge in relation to argumentation and proof:

Yackel, E. (2002) What we can learn from analyzing the teacher's role in collective argumentation? *Journal of Mathematical Behavior* 21 (4) 423-440

Stylianides, A. J. & Ball, D. L. (in press) Understanding and describing mathematical knowledge for teaching: Knowledge about proof for engaging students in the activity of proving. *Journal of Mathematics Teacher Education*.

Knuth, E. J. (2002) Teachers' conceptions of proof in the context of secondary school mathematics. *Journal of Mathematics Teacher Education* 5(1) 61-88

A plenary session will be given over to discussion of each study. Each discussion will be launched by two short prepared inputs (of 5-10 minutes) from nominated participants: offering a critical appreciation of the design and conclusions of the study, and proposing issues for attention in the discussion. (Short written versions of these inputs will be made available on the seminar website after the meeting.)

The final group and plenary sessions will relate these three studies of the specific topics of argumentation and proof to the major themes of the seminar series:

- conceptualising and theorising mathematical knowledge for teaching;
- auditing and assessing such knowledge;
- developing and deepening such knowledge.

Each group will be assigned to focus on one of these themes in its discussion, relating the studies to relevant issues of research, policy and practice, and to introduce discussion of that theme in the plenary discussion. (Short written versions of these introductions, revised by the group leader in the light of subsequent plenary discussion, will be made available on the seminar website after the meeting.)

The timetable for sessions will be as follows:

11.00-11.15	Introduction to the seminar
11.15-12.15	Plenary discussion of Paper 1: Yackel
12.15-13.15	Plenary discussion of Paper 2: Stylianides & Ball
13.15-14.00	Lunch
14.00-15.00	Plenary discussion of Paper 3: Knuth
15.00-15.45	Group discussion relating all three papers to seminar series themes
15.45-16.30	Plenary discussion relating all three papers to seminar series themes
16.30-16.45	Future plans