

Technologies which enhance student engagement with mathematics and promote teacher continued professional development across key stages 2 and 3

ESRC Collaborative (CASE) Studentship, 2008

A partnership between the School of Education, University of Leeds and the National Centre for Excellence in the Teaching of Mathematics

This work will be concerned with how digital technologies can be used to enable KS2 and KS3 teachers and their students to work together to enhance student engagement with mathematics and promote teacher continued professional development (CPD). Our vision is that of collaborative student engagement across the key stages and teachers across the key stages engaging in mutual lesson planning, observation and feedback via shared technology. The dual focus on student engagement with mathematics and CPD arises because of a belief that teacher development initiatives that do not aim to enhance students' educational experience are vacuous.

The proposal builds on the work of the two academic supervisors in a successful recent project funded by the non academic partner, *The use of ICT (spreadsheets) in mathematics in KS2 and KS3*. Although the project had many positive outcomes shortcomings noted included no student collaboration over key stages and practical problems for teachers travelling to another school. A vision of student and school connectivity formed using course management systems, e.g. Moodle, and on-line collaboration tools, e.g. Elluminate. With these technologies, students, teachers and researchers can engage in shared tasks, data generation, competitions and shared lessons. Teachers would not have to leave their own school to collaborate with, or to observe the lessons of, a teacher in another school – provided that a video camera with suitable audio recording equipment was placed in the other teacher's classroom. This is an exciting and practical vision for collaborative work in education but there is a need to research the affordances and constraints of such technologies, since it would be naïve to expect this vision to be realised without problems.

Aims

- 1) To enhance the engagement with mathematics of students in KS2 and KS3.
- 2) i) To promote teacher development through cross-phase teacher collaboration.
ii) To investigate how cross-phase teacher collaboration promotes CPD.
- 3) To explore technologies that assist aims 1 and 2.

We state three research questions (RQ) that link these aims, but the development of research questions is an important part of the development of a doctoral student and we would expect the CASE Student to develop these research questions and the approach and methodology.

RQ 1 - What technologies enhance KS2 and KS3 student engagement with mathematics?

RQ 2 - What technologies promote cross-phase teacher collaboration?

RQ 3 - What are the affordances and constraints of technologies with regard to RQ 1 and 2?

The research is expected to fall into three phases approximately one year each:

(i) research design, skills training and initial school-based meetings; (ii) school-based work and data collection; (iii) data analysis, interpretation, writing up and dissemination.

The CASE student will also be required to: (i) engage in a literature review on student learning, teacher development and the use of technology; (ii) develop expertise in the use of course management and on-line collaboration technologies; (iii) develop research skills required for qualitative data analysis; and (iv) learn about the work, and the ways of working, of the NCETM.