

Widening Participation: Keeping open the door to mathematically-demanding F&HE programmes

NEWSLETTER 2007(1)

www.lta.education.manchester.ac.uk/TLRP

User conferences

Our second teacher conference in the series "Classroom practices in mathematics that make a difference to student engagement" is taking place on Friday February 16th in Manchester. Building on the successful work of the November conference the day will involve participants in discussing our initial findings, exploring different aspects of classroom practice from teacher and student viewpoints (e.g. coursework) and assisting the team with practical development of the next phase of data collection.

If you would like to take part in this or future conference days please contact Tim Millar whose contact details are given at the end of the newsletter.

Case Study Colleges

Five colleges in the UK were selected as our case study colleges on the basis of what teachers told us about their practices in relation to engaging all students in mathematics, and what they think makes these interesting and successful. In three of the colleges AS Use of Mathematics courses are offered in addition to AS Mathematics. Here we briefly outline the some of the interesting features of the developing case studies:

(i) College A is situated in one of the most socially deprived areas in the UK. However, their most recent Ofsted report has rated the college as outstanding.

Their AS Use of Mathematics course relies in great part on the use of technology and particularly the use of graphic calculators.

(ii) College B has been very successful in retaining students on their A-level mathematics courses.

We are investigating practices of the type promoted by the Standards Unit resources across a range of classes here.

(iii) With a wide ethnic diversity amongst the student population College C enjoys such a good reputation that students travel relatively long distances to study at the college. Their Use of Mathematics course, which is used with BTEC students, is motivated by coursework which is integrated with other areas of study and the use technology.

(iv) College D offers both AS Mathematics and AS Use of Mathematics courses (particularly to BTEC students). The department has been particularly good at retaining students in mathematics by adopting flexible approaches and a range of practices. Here we are particularly focusing on the impact of coursework and use of technology.

(v) Finally in College E teachers have been working hard to retain students on AS Mathematics courses. They believe that some of the reasons for their success are due to the incorporation of some highly structured teaching practices (using ICT) and their tracking system which allows them to target maths support.

Survey samples

During early September we sent out to colleges the first version of our students' survey questionnaire. This was divided into three sections: (A) Students' background information, (B) their disposition towards further study in HE in general and in mathematically demanding subjects in particular, and (C) their mathematical self-efficacy. The completed questionnaires were all back with us by early November, and following data entry we are currently carrying out the initial phase of analysis. Our main study sample consists of 1722 students with 1228 of these being AS Mathematics students and 476 studying AS Use

of Mathematics. These students come from 37 colleges around the UK.

We are currently developing the second in the series of three questionnaires that will give us data about the development of students over their AS year and beginning A2. This will be circulated ready for completion by the sample just before the end of their AS course in April.

Student interviews

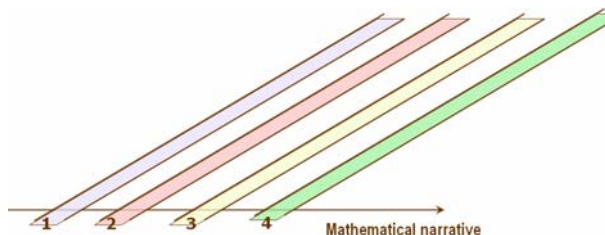
So far we have conducted 50 interviews with students in the early stages of their study of AS Maths or Use of Maths. These interviews focused on students' experiences of learning maths in primary and secondary schools, learning maths now and how maths figures in achieving their future aspirations. Analysis of the interviews is underway.

We will soon begin the second round of interviews, when we will go back and talk to the same students about their current learning of mathematics and their intentions towards entering HE or work. By the end of the project we aim to have at least three interviews for each of the 50 students, which will allow us to look at how their dispositions towards maths change over this period of time.

Classroom practice

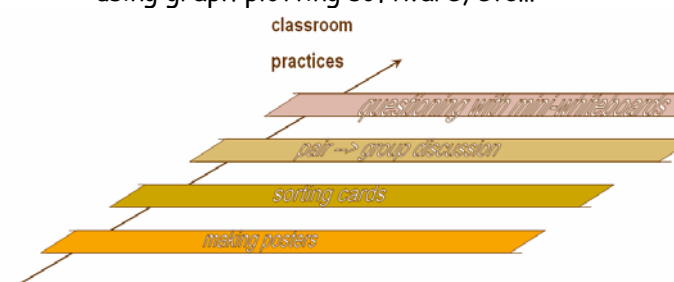
In the remaining strand of our research we have been focussing on classroom practice by observing and videoing a wide range of lessons in each of our case study colleges. This confirms just how complex lessons are and highlighting the possibility of there being many different levels on which they might be analysed.

One way we have analysed lessons is to look at two interacting elements: mathematical narrative and pedagogic practice. The former of these, mathematical narrative, focuses on the unfolding mathematical "story" as presented to students with teachers making decisions about the key mathematical ideas in a topic and the order in which these should be presented or developed with students. This storyline might be represented by the diagram below.

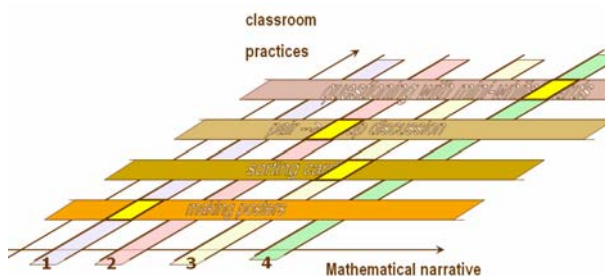


We have then been interested in how for each key element of the learning sequence teachers consider which pedagogic practice they might use with pupils. For example, teachers have a wide range of different practices available:

- making posters
- questioning with mini-whiteboards
- using graph plotting software, etc...



We then consider how different classroom practices interact with the mathematical narrative:



We have yet to draw any conclusions! But watch this space.....

Date for your diary:

Third teacher conference: **Friday 15th June 2007**

Contact details:

For information about any aspect of the project:

Tim.Millar-3@manchester.ac.uk (0161 275 3490)

www.lta.education.manchester.ac.uk/TLRP