
Workshop Report

Maths support for non-specialist students in science and engineering departments

Friday 15 March 2002, Imperial College, London

A fuller version of this report, with live Web links and resources, is available on the Web at <http://ltsn.mathstore.ac.uk/workshops/maths-support/report.htm>

22 academics from 18 institutions attended this workshop for academics who are supporting students in science and engineering departments. Participants were given copies of a Facts and Formulae leaflet, the Algebra Refresher book, a report on Post-16 mathematics within Curriculum 2000, and the handbook on Good Practice in the Provision of Mathematics Support Centres. Further copies of these can be provided on request; bulk supplies of the leaflet are available free of charge, and Algebra Refresher book currently costs £125 for 100 copies.

1. School/university interface - Peter Saunders, King's College, London

Peter talked about the need for a real interface between school and university, since at present there is a chasm for students to cross. Schools are concerned with producing good exam results rather than preparing their students for higher education. Now that over 35% are going on to further study this is no longer acceptable.

A similar gap at an earlier stage was addressed by the National Curriculum, which ensures that secondary schools know what their incoming ex-primary student have learned. The problem in mathematics begins at GCSE, where pressure for good exam results means students are advised to take the intermediate rather than the upper tiers, and modules which gain more marks (data handling rather than algebra). Additionally the GCSE course is roughly half a year shorter than its predecessor O level.

School students are normally allowed to study a subject at A level if they get grade C in GCSE, but in mathematics they may never have seen material included in the upper tier. Prior to the introduction of AS levels the trend was for less material to be covered during the first year in A level (one third of the syllabus in year 1 and two thirds in year 2). AS level replaced this with equal amounts of material in each year, with results now recognised as disastrous. An announcement for an improvement is imminent; LMS has proposed making the AS modules much easier.

It is no longer the case that universities dictate the A level syllabus - what's taught in the first year at university is dictated by the gaps in student knowledge. Peter posited that basic algebra is better learned at age 15 in a small supported group. Giving a higher profile to mechanics at A level would reinforce ideas learned in pure mathematics. Some of the statistics syllabus could be dropped to accommodate this.

Peter finished by encouraging a joint approach by

schools and universities to this problem. Negotiation is needed on what should be in the syllabus at each stage. Lecturers should talk to teachers more, be more aware of what is happening so we can help to put it right, and should be prepared to make changes for a smooth transition from school to university.

2. Holistic support materials - Tony Croft, Loughborough University

A repeat of a talk reported in our February issue.

3. Use of IT to support mathematics teaching - Phil Ramsden, Imperial College

The METRIC project (Maths Education Technology Research at Imperial College) has existed in its current form for 18 months. It is funded by Imperial College with HEFCE money as a widening participation project, trying to improve student knowledge on arrival and hence retention. The problems of declining student ability, less complete preparation and less emphasis on *traditionally* prerequisite topics are well documented. The project's brief is to devise, prepare, test and implement computer-based resources aimed at school students, of a preparatory, introductory or complementary nature. Further Education colleges in London are partner sites for research and evaluation, and a base from which to roll out the findings. There is a mixed social background; computer and net use is widespread among the target group, as are HE ambitions. An initial version containing expositions and examples is being evaluated in observed sessions. The key findings to date are that staff want more, and better, explorations, while the student want more, and better exercises; a new interface is being developed for the next version.

4. Good Practice in the Provision of Mathematics Support Centres - Duncan Lawson and Susan Starkings, South Bank University

5. The MathsTEAM project - Christine Hirst (project coordinator)

Repeats of talks reported in our February issue.