

## **A Review of Curriculum 2000 – AS/A-level Mathematics**

Well we are now well into our second year of the new AS/A-level maths and of Curriculum 2000 and I wonder how we are all feeling. I think that we have probably recovered a little from the shock of last year but a bitter taste has been left in the mouth and there is more than a little anger (a word I will come back to later).

### ***What did we have?***

I work in a large FE college in Richmond. We have been for many years a diverse and successful maths department. In SMP 16-19 we had found a course that truly encouraged the development of mathematical ideas and thinking and which appealed to a wide range of students. SMP was not perfect but we had learnt to deal with its shortcomings. Before Curriculum 2000 (BC?) we were recruiting about 280 students (with GCSE grade A-C at either Tier) into Year 12 – there had been a slow rise in recruitment for a number of years. Having such a large intake allowed us to offer a wide range of courses to suit many different needs, interests and abilities – namely A/AS Maths and A/AS Further Maths. The syllabus – and its assessment structure – allowed us time to nurture students and we achieved real success with Intermediate Tier GCSE students. We also successfully provided preparation for STEP and had started to offer Foundations of Advanced Maths.

Achievement levels for our A-level courses were high – 90-94% pass rate with about 80% retention. Year on year we achieved a significantly high value added.

### ***What have been our experiences of C2000?***

Given that we had to adopt a new system we looked around at all of the specifications and decided to go with AQA Specification A. Right from the start we felt under pressure simply because information and material was unavailable. Everyone felt it, we were all on a steep curve and there did not appear to be the support network available to answer our questions or concerns.

Having started the planning process it was clear from the outset that we were not going to have enough time to effectively deliver the AS. The teaching year had been severely telescoped. Topics that had previously been taught towards the end of term three (or even in term four) were now having to be taught at the start of term three (or before) – crucially students were now being formally assessed on those topics after two and half terms. We felt obliged to enter our students for all three modules. There was little or no time for consolidation or revision.

We lost about 10% of our students during the course of the first year. Of those that took the exam 79% passed (8% above the national average – so we must be doing something right!). A further 35% dropped the course at the end of the first year, i.e. only 55% of those that started AS-level continued onto A2. Given that most first year students were on a four AS-level programme we had anticipated a dropout rate by the end of the first year of about 35%.

However, we should expect our A-level results to be *very* good. Many students who, in the past, would have obtained a grade D or E at A-level have given up. Indeed, a disturbing feature was that some very good students (even those that achieved a grade

B) dropped maths – the overriding reason was that maths was just so much harder than their other subjects.

### ***What were the changes designed to achieve?***

Remember, that there were two changes that affected maths - firstly, the introduction of the new Common Core and, secondly, Curriculum 2000.

One of the aims of the new Common Core was to “define the relationship between the AS and A level specifications, with the AS as a subset of the A level”. There is little doubt in my mind that there is a severe imbalance – especially as we now have experience of teaching A2. The subject criteria also stated that:

“Students embarking on AS and A level study in Mathematics are expected to have achieved at least Grade C in GCSE Mathematics or equivalent, and to have covered all the material in the Intermediate Tier.”

Our success with students who achieved grade C GCSE has been very limited in spite of the additional support we are able to offer them.

We might have hoped that with many more students studying four subjects in their first year that numbers for AS maths might have grown – we have not found this to be the case. Additionally, of course, the four subject expectation has meant a substantially increased workload for all students.

### ***What will happen next?***

We are undoubtedly in a new era. Another QCA Review has just published its results. We will have to live with the current arrangements for the next few years and then there will be yet another review. The only concrete proposal was another consultation on a possible exam session in the Autumn Term (fine in principle but this poses severe logistical problems for a large centre like ours). Why was it not proposed to introduce a more useful formula book or to relax the restrictions on the use of graphic calculators? All agree that there are major problems with AS Maths.

Part of the anger I referred to earlier was due to the fact that potential problems with the Common Core were foreseen and that many felt Curriculum 2000 would have been better if it had been Curriculum 2001. But these concerns were largely ignored.

Now I am unsure what the future holds – what tack should we be taking? A positive scenario is that we will adapt – and adapt very well. For example:

- we will change our entry requirements. Few, if any, Intermediate Tier GCSE students will be encouraged to take up AS-level;
- there will be a growing expectation that only half the students that start AS will continue to A2;
- we will make the AS-level route more attractive and relevant by offering AS in Use of Mathematics and/or combinations of Free Standing Maths Units for different student groups;

- the overall number of maths students in Year 12/13 remains constant;
- the number that goes on to study maths in HE remains stable;

(It is ironic that QCA itself is now promoting the AS in Use of Mathematics which has many of the elements that, say, the SMP 16-19 or MEI schemes offered. Namely, a substantial, formative coursework element and a real emphasis on the use of ICT (including graphic calculators). What we really need are the accompanying A2 modules.)

A less rosy picture is that AS/A-level maths is increasingly viewed as being much harder than other subjects. We could witness:

- numbers of students wishing to take AS/A-level decline;
- university departments left scrabbling for students and the smaller maths, physics and engineering department close;
- the whole cycle of review and consultation starts again followed by a series of minor fixes.

There is a real sense of – well I was going to say panic, but in fact it is a real sense of lack of clear direction. It seems to be that nobody wants to admit to having made a mistake, so hindering progress towards an effective long-term solution. We have certainly seen officials at the highest level simply walking away from the problems.

Professional bodies, schools, colleges and universities all warn of the crisis – a crisis that has already arrived. The governments stated aim is to develop a society that is more mathematically able and aware but we are in danger of creating a small, elite society of mathematicians. It is difficult to look to the future with much confidence.

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