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Staff room

A student's letter to PASS Maths

In the Issue 8 editorial, Interesting Times, we mentioned the upcoming broadening of the A−Level curriculum and the new AS−Level. We received a letter on the subject from James McGivern, an A−Level maths student, which we present here together with our Editor's response. There is more on a similar topic in this issue's editorial.

Dear Sir,

After reading the information on the Y2K A−level plans I was shocked, especially at your apparent liking of the new system. Ever since I started GCSE maths and all the way through to my current place at the end of an A−level maths course I have been told over and over by many different maths teachers that the standard of maths is falling in pre−university courses.

I am a member of a private school where each A−level is given six fifty minute periods a week, up to a maximum of four A−levels. I study maths and further maths which is allocated 1.5 A−level slots and we have completed the course and done some extra non−curriculum work as well. As I see it, if we had to "endure" the reluctant and not so confident mathematicians, those with a passion for maths who plan to continue into university, like myself, may be put off by the more slow moving first year.

I agree fully with the idea that a wider range of subjects is important. I personally take maths, further maths, chemistry, and physics. I would like to have done an AS−level in combined languages, e.g. English + French, but no such subject exists. From those who I have spoken to who have done the Baccalaureate they know more generally but less specifically which is something that discouraged me from taking it.

I would like to know how the new course hopes to maintain high mathematical competency while broadening horizons.

Yours,
James McGivern

Dear James,

Thank you for your message about the government's new A−level plans. I'm sorry to hear that you don't think much of them, or of the fact that I support them. But then disagreement over educational trends is nothing new, and debate is certainly to be encouraged!

You say that you've been told by many different maths teachers that "the standard of maths is falling in pre−university courses." Since I teach many first−year mathematics students at University, I can see this effect first hand. The standard has indeed fallen in some areas (for instance, algebraic manipulation): while in others it has improved. (Most A−level students nowadays, for instance, have a much better grasp of networks and graphs than they used to.) Overall, I think it probably *is* fair to say that standards have slipped. An A grade in Further Maths now means much less than it did say 15 years ago.

It is difficult to really compare, though, because one is not comparing like with like. For instance, it used to be the case that all A−level students did some mechanics. Now only about half do any mechanics at all: the rest often spend their time doing probability and statistics instead. Does the fact that these students know no mechanics mean that standards have fallen? Or does it simply mean that the syllabus has changed? At University it is now necessary to teach both mechanics and statistics from scratch; whereas before it was only necessary to teach statistics from scratch. This certainly reinforces the impression that standards have fallen, but that may not be a fair impression. What do you think?

You think that the new system will mean a "more slow moving first year" of A−levels. I don't think that the intention is that this will happen at all: the intention is rather that just as much material will be covered during the first year as it is now. Sixth formers will simply be expected to spend more time working to cover more subjects but at the same depth. If schools can make this work − and this may mean introducing "streams" for AS−level Maths − then there should be no dilution of first year material, and strong students should not be held back by weaker ones. Hopefully, AS−level Maths will become a very popular subject (large enough to mean that schools can support more than one stream for Maths), and the more students who are exposed to Maths at this level the better for the general public's understanding of mathematical issues, underlying everyday issues which really involve them.

The Baccalaureate fulfils slightly different needs to those which British Universities have, and I agree with you that it is not completely suitable for most British sixth formers. However, the Government is trying to take the best of the Baccalaureate and the current A−level system; we can only wait and see how successful the mix is.

To answer your specific question about "how the new course hopes to maintain high mathematical competency while broadening horizons": I can only state what I believe the Government's hopes are. No A−level is going to be diminished in its depth. Students will be expected to work longer hours to achieve as much as they currently do and more besides. If this works out, then mathematical competency should at least be maintained at its current level; and for those students who take an AS−level who before would have studied no Maths at all beyond GCSE, their mathematical competency will certainly be improved. The Government clearly thinks that the new system will achieve these hopes. Whether it will or not we can only guess, but I personally applaud the attempt.

It sounds as if you don't believe that depth of study can be maintained while increasing breadth. Only time will tell.

It's interesting to compare this with the situation many years ago for O−levels, the predecessor of GCSEs. It was quite common for schoolchildren to choose to study only arts subjects at O−level: the less scientifically able would take languages, classics, history and so on and would study no science past the age of around 12 or 13. The system was changed so that all pupils would have to study some science to O−level, to ensure that they all had a basically sound scientific training. If you had been around at the time, would you have argued against this change? Many of the arguments you mention now would have also applied then.

Yours,
Dr Robert Hunt,

Editor, PASS Maths.

Plus is part of the family of activities in the Millennium Mathematics Project, which also includes the NRICH and MOTIVATE sites.