

Transfer from GCSE to AS level mathematics

How can it go wrong? What can we do about it?



The difficulties young people in the UK experience when transferring from pre- to post-16 mathematics are well known. A study which explored this issue highlighted an apparently simple approach that could help to reverse the trend – helping all learners to see themselves as people who can do mathematics.

The researcher argued that practices such as having minimum GCSE grade requirements for studying the subject at AS level, and well meant advice such as ‘don’t do it if you don’t really enjoy mathematics and if you’re not genuinely good at it’ could be counterproductive. Certain teaching strategies plus stereotypical images of mathematics and mathematicians also reinforce the idea of natural ability – that mathematics is not for everyone. The negative impact of this view of mathematics learning is illustrated in the following story.

Maryann’s story – a vignette

Within a few months of starting her AS level mathematics course, Maryann went from a lifelong love of mathematics to eagerly waiting to drop it at the end of the year. What went wrong?

During a succession of interviews, it became clear that Maryann’s loss of engagement with the subject was not due to the content. In her final year of GCSE mathematics the group had fallen behind schedule and her teacher had split the class up into two: mentors and mentees. The mentors sat with the mentees and made sure they understood the work and did their homework. The mentors went to extra classes on Saturday mornings to learn the topic they would have to teach the following week. Maryann felt flattered about being chosen as a mentor and loved having to teach others. She felt she was good at it, ‘everyone used to say to our teacher how I’m gonna take her job!’

‘I used to be the best, I’m not being funny ... I was the closest to an A* out of everyone’.

But after just three weeks of the AS course, Maryann no longer felt she was good at mathematics, ‘I used to be the best, I’m not being funny ... I was the closest to an A* out of everyone’. Now she felt stupid. Why?

Maryann commented on a different ethos in the AS level classroom. Her AS level teacher placed great emphasis on working quickly, actively encouraged competition between learners, and constantly talked about some members of the group being more ‘naturally able’ than others and some being ‘badly prepared’ by their schools. This classroom culture, very different to the collaborative GCSE one, had a negative impact on her beliefs about her own ability and confidence in mathematics. She worried about holding the others back, yet not being left behind herself. But in her GCSE class, which was similarly divided, she did not feel held back by helping others to understand. In fact, helping others was precisely what she had enjoyed about those lessons.

In this research, Maryann’s experience, and those of others like her, pointed to the need to open up mathematics to more learners by reducing the emphasis on assessment. It highlighted how mathematics is many things to many people rather than an absolute body of knowledge that cannot be argued with. Such strategies, according to the researcher, may not necessarily lead to everyone wanting to carry on with mathematics, but have the potential to give learners a chance to explore what they can do with mathematics rather than find out what they can’t.

Evidence source

Mendick, H. (2008) Subtracting difference: troubling transitions from GCSE to AS level mathematics. *British Educational Research Journal*, 34 (6), pp.711-732.

Altogether, the researcher interviewed 43 students from three sites: an ethnically diverse, largely working-class 11-18 comprehensive school; a large FE college situated in a deprived area and a highly academic sixth form college with an ethnically diverse but largely middle-class intake. Two students’ experiences were reported in this paper.

Did you know?

72,475 The number of learners who completed A level mathematics in 2009

85% The proportion of learners who give up studying formal mathematics beyond GCSE

66% The proportion of learners in France who continue studying mathematics post-16

9% The number of A-level entries in mathematics in the UK

< 50% of those getting A and A* grades in mathematics GCSE go on to do an A level in the subject

People who do A level mathematics earn around **10% more** over a lifetime than those who don’t

Evidence source:
Confederation of British Industry, News Release, August 2009