The education of able students

Policy statement

1. Education of Able Students

1.1 The UKMT supports a policy of mathematical enrichment rather than acceleration through the examination system. In particular:

1.1.1 talented students, who are likely to specialise in mathematics, should experience a deep, rich, rigorous and challenging education in the subject;

1.1.2 the emphasis in teaching should be on profundity of understanding rather than exam technique;

1.1.3 there should be a healthy diet of multi-stage problems and a willingness to take risks. Able students need to find things difficult and to experience both failure and success. They should also be encouraged to ask penetrating questions and to adopt a critical approach to the ideas they encounter;

1.1.4 strong mathematicians should stay, as far as practicable, with their peer-groups and experience whole-class teaching. Able students should be expected to master essentially the same material as their peers – but more robustly, fluently and deeply, and with a greater emphasis on making connections. They may, in turn, become 'experts' who can explain ideas to their peers;

1.1.5 in any scheme of work, there should be a clear pathway through to the next stage of mathematical education - ensuring continuity and progression. More advanced ideas can only be fully understood if there is a deep and rigorous mastery of core material;

1.1.6 early advancement to the next stage in the curriculum should not be encouraged unless the foundations established earlier are thoroughly understood. Such acceleration in mathematics is often counterproductive, encouraging only a shallow mastery of the subject and a reluctance to revisit and reinforce key ideas from an earlier stage;

1.1.7 early entry into public examinations should be discouraged if the consequence is that students focus on superficial technique, promoting procedural learning at the expense of deep understanding;

1.1.8 the examination syllabus offers only a subset of the topics available for study, and there are many age-appropriate concepts outside of the syllabus that are worthy of study by a young mathematician.

2. Related reading

2.1 Further support for this policy can be found in:

2.1.1 the ACME document "Raising the bar: developing able young mathematicians": http://www.acme-uk.org/media/10498/raisingthebar.pdf;

2.1.2 the NRich page "Supporting highly able mathematicians": http://nrich.maths.org/7741;

2.1.3 the Mathematical Association policy document "On Enrichment": http://www.m-a.org.uk/resources/Policy_on_Enrichment.pdf.