



## Responding to the mathematics teacher shortage August 2015

### A short paper from the Association of Mathematics Education Teachers

It is clear and unequivocal that there is an immediate and significant need for a large number of mathematics teachers in English secondary schools. It is also clear, and well-recognised, that the demand for mathematics teachers will not be fully met through recruiting and training more mathematics graduates. Whilst pre-ITE SKE courses have become an established part of the landscape and support the development of high quality specialist teachers, again, the supply is not meeting demand.

The profession has both short-term and long term recruitment needs. In the long term, the profession needs to continue to recruit and, as importantly, retain highly qualified mathematics teachers with high levels of mathematics qualifications. Without doing so, aspirations to raise the attainment of the most able, compete internationally and provide the UK with high-quality mathematics graduates will not be possible. Our young people and our schools have a reasonable expectation that mathematics teachers are as well-qualified in mathematics as teachers of other subjects are in their own subjects and young people need teachers who can inspire and enthuse them to study mathematics beyond the qualifications taken at school. However, there is also a practical and immediate need to support those who are currently teaching mathematics as non-specialists and for a range of measures to support schools in filling current vacancies.

### Shorter term - What would help?

- Development of the 'return to teaching' programme – but schools need to be flexible and committed to providing good support;
- Less 'maths teacher bashing' in the press;
- Development and sharing of case studies of creative solutions schools are already using. e.g. a non-selective, large, diverse and multi-ethnic school with high proportion of EAL gets 80% A-C in maths with a department who are almost all part-time; another school uses a 'lead lecture' model for A level mathematics teaching; schools finding that primary-trained teachers with an A level in mathematics are a real asset to the mathematics department; team teaching type models might also be valuable, as all these promote high-quality expert teaching.
- Subsidiary subjects for some PGCE main subjects e.g. PE, where NQTs often end up teaching outside their specialism. This, along with developing a PGCE in Sports Science, could also be used to support shortages in science.
- Sustained specialism training, mentoring and coaching for those already in post teaching outside their specialism, including a lower teaching load. Such support is a key need, and recognised by those who are non-specialists.

---

#### AMET: Association of Mathematics Education Teachers

Chair: Rosalyn Hyde, University of Southampton  
Secretary: David Wright, University of Newcastle  
Treasurer: Rosa Archer, University of Manchester

r.m.hyde@soton.ac.uk  
d.g.wright@newcastle.ac.uk  
rosa.archer@manchester.ac.uk

## Proposal for 'Teach Next' conversion courses for NQTs

Such a proposal is likely to be met with considerable caution by the mathematics education community. What evidence is there of demand, from both schools to employ 'converted' NQTs and from unemployed NQTs to undertake such a programme? Schools need to be assured that they are employing those who have made a positive choice and are committed to becoming a mathematics teacher. What makes a conversion course more attractive than immediate employment as a supply teacher, covering mathematics classes?

### Conversion course content

Pre-ITE SKE is subject knowledge enhancement which is followed by subject-specific pedagogy gained whilst studying for a mathematics PGCE. If the PGCE is studied first and in another subject the mathematics specific pedagogy is therefore missed out. Teaching mathematics is different to teaching other subjects. We know, for instance, from working with Physics with mathematics trainees, that managing the range of attainment in a mathematics class is different, that there are different issues relating to misconceptions and also planning and managing progression is different in mathematics to other subjects.

The new National Curriculum and GCSE are increasing the demand on mathematics teachers with more demanding content and higher expectations. The mathematics teacher workforce needs to be more highly skilled, not less.

### Recommendations regarding the proposed conversion courses

We strongly recommend that the entry level is set at A level mathematics, as is common with the majority of pre-ITE SKE courses. Any alternative claims to equivalent subject knowledge would need to be closely investigated by the course provider to ensure a suitable breadth and depth of mathematics. Providers will want to be assured of the commitment of applicants to becoming a mathematics teacher and of their commitment to their own long-term professional development and that such a 'conversion' programme is not seen as a 'stop gap' towards eventual employment in a school in their own specialism or for those who were not strong enough teachers to gain a teaching post in their own specialist area.

Any course of this form would need a specification of content, contact hours, assessment and feature a proportion of face-to-face teaching. Some agreement as to what would constitute a suitable standard for 'passing' such a conversion course would also need to be agreed. Content would need to include both subject knowledge and pedagogy and time spent in school observing mathematics teaching, given that those undertaking such a programme are unlikely to have observed any mathematics teaching during their teacher training. Ten weeks is extremely short for a programme incorporating both subject knowledge enhancement and pedagogy. It should be noted that subject knowledge enhancement is a necessary part of such a programme because prospective mathematics teachers need to understand the 'whys' of mathematics, the big ideas in mathematics such as variation, proportion, place value, proof, equivalence and data distributions, and the connections between aspects of mathematics. They also need to develop their understanding of the importance of fluency, reasoning and problem solving in learning mathematics. One possible model might be one of an initial 4-5 week input including a day a week in school, then 4-5 weeks with 4 days in school and 1 day of directed study and a further 4-5 week input.

Those schools employing 'converted' NQTs should commit to providing them with enhanced support as NQTs towards development as a specialist teacher of mathematics. This should include careful consideration of suitable classes to teach so that they develop skills across the age and ability range.

---

#### AMET: Association of Mathematics Education Teachers

Chair: Rosalyn Hyde, University of Southampton  
Secretary: David Wright, University of Newcastle  
Treasurer: Rosa Archer, University of Manchester

r.m.hyde@soton.ac.uk  
d.g.wright@newcastle.ac.uk  
rosa.archer@manchester.ac.uk