



Advisory  
Committee on  
Mathematics  
Education

## Beginning teaching: best in class?

Background paper, November 2015

### 1. About ACME

The Advisory Committee on Mathematics Education (ACME) is an independent committee that develops advice on mathematics education policy in England. ACME was set up in 2002 by the [Royal Society](#) and the [Joint Mathematical Council of the UK](#) (JMC). [ACME's advice](#) is underpinned by evidence-informed analysis and harnesses and reflects the expertise of the mathematics community. ACME members serve in an individual rather than representative capacity. ACME's advice is developed with the support of its Outer Circle, 36 independent experts with expertise on mathematics.

### 2. About the report *Beginning Teaching: Best in Class?*

To develop its policy reports, a working group made up of ACME members work with an advisory group. For the ITE report *Beginning Teaching: Best in Class?* the following people were involved.

Working Group
Robert Barbour (ACME Chair) Dr Sue Gifford (ACME member) Anne White (ACME member)

Advisory Group
Dr Jennie Golding (Outer Circle member) Debbie Morgan (Outer Circle member) Professor Anne Watson (Outer Circle member)

### Additional ACME involvement

Richard Browne (until August 2015) Professor Philip England, ACME Chair (from May 2015) Phoebe Harris, ACME Secretariat Dr Mary McAlinden, ACME member Niamh Mc Mahon, ACME Secretariat Professor Andy Noyes, ACME member (until August 2015) Professor Jeremy Hodgen, ACME member (from September 2015) Professor Steve Sparks, ACME Chair (until May 2015)
---

### Review of the ACME report

As with all ACME reports, this report was reviewed by the Royal Society and JMC Review Panel (see below).

Royal Society and JMC Review Panel
Professor Alex Halliday, Vice President, Royal Society Professor Tom McLeish, Education Committee Chair, Royal Society Professor Tim Rowland, Chair of the JMC

In addition to this formal review, the recommendations in the report were discussed with a range of organisations including the JMC (16 June 2015) and the mathematics subject associations through the Meeting of the Mathematics Subject Associations (8 October 2015).



## **Beginning teaching: best in class?**

**Background paper, November 2015**

### **3. Activities undertaken**

For this project, ACME undertook desk research and stakeholder engagement.

In addition, ACME undertook a range of other activities to gather information:

1. A desk review of selected international jurisdictions.
2. A call for views from the education and mathematics communities.
3. Eight case studies (7 commissioned and one undertaken by the ACME Secretariat).
4. A roundtable with members of the education.

#### **3.1 Desk review of international jurisdictions**

ACME undertook a review of some of the elements of the ITE system in four jurisdictions (Germany, Massachusetts, Shanghai and Singapore) in addition to England. These jurisdictions were chosen for their known improvement in education performance and higher achievement in mathematics than England in recent years.

The elements that were identified as important across jurisdictions were entry requirements to ITE, mathematics-specific education, mentoring provision, the emphasis on critical evaluation skills during ITE and the commitment to professional development for teachers of mathematics. See [here](#) for more detail.

In this discussion paper ACME acknowledges the challenges involved when drawing on international practice, something also discussed in ACME's Maths Snapshot on [international comparisons](#). In addition, ACME acknowledged that statistics produced by each jurisdiction are not absolutely comparable and are collected in different ways. ACME notes that ITE practice in each jurisdiction is complex, situations on the ground can be in flux and individual systems are constantly undergoing change and development, something that is not always acknowledged in policy debates. ACME produced a broad and non-comprehensive overview showing some contrasts and similarities, in order to pose questions to the community about the English case. ACME invited the community to consider what the findings of the review might mean for ITE in England.

#### **3.2 Call for views**

In ACME's discussion document, ACME invited views on a series of questions covering the themes entry to ITE, mathematics-specific education, critical evaluation skills, mentoring and the linkages between ITE and professional development. (See pages 10 and 11 (<http://www.acme-uk.org/media/24413/acmeitehaveyoursay2015.pdf>) for the questions posed.)

71 responses were submitted, 59 via Survey Monkey and 12 via email. Not all respondents indicated whether their response was an organisational or an individual response. Not all respondents indicated their expertise/ job. 23 respondents did identify their association with a university, 23 noted their association with a school or college. Several subject association and professional body responses were received.

In the report, some quotations are utilised for illustrative purposes. ACME does not attribute these quotes, but notes their jobs roles or expertise when quoting their responses.



## Beginning teaching: best in class?

Background paper, November 2015

### 3.3 ACME case studies.

In spring 2015, ACME circulated an invitation to tender to undertake some short illustrative case studies for the ACME ITE project. Five bids were received and the contract was awarded to Dr Barbara Allen from the Open University. Dr Barbara Allen led a small team of researchers.

A number of university and school settings were identified for the case studies. These seven different settings case studies covered both primary and secondary level and university-led and school-led approaches (see table below). Interviews were carried out with those involved in the provision of ITE, for example ITE tutors, admissions tutors, training managers and trainees. The interviewees were guaranteed anonymity. The questions posed to interviewees were based around the key elements of ITE set out in ACME's 'Have your say' document. In some cases, interviews were followed up by the researchers with email communication. Short summary reports were provided by the researchers.

To supplement these case studies, the ACME Secretariat carried out interviews with Teach First, interviewing a mathematics lead and a Teach First alumnus (currently Newly Qualified Teacher (NQT)).

The case studies included in ACME's report exemplify some of the themes ACME identified. They are not evidence of 'best practice' and should only be seen as illustrative.

Please note that these figures were provided by those interviewed for the academic year 2014/15). The figures may not be exact.		
<b>School 1 (primary)</b>	14 School Direct (salaried) and 14 School Direct (fee), the latter undertaking PGCE. All 'Primary general' trainees.	
<b>School 2 (secondary)</b>	12 School Direct (2-3 mathematics trainees per year).	
<b>University A</b>	42 PGCE (university-led).	
<b>University B</b>	<b>Primary</b> 25 Bachelor of Education (BEd) 90 PGCE 'primary general' (university-led) 30 School Direct (general route)	<b>Secondary</b> 120 PGCE (of which 20 PGCE secondary mathematics)
<b>University C</b>	<b>Primary</b> 44 PGCE 'primary specialism' (university-led)	<b>Secondary</b> 20 PGCE (general route) (university-led) 10 School Direct (fee) 3 School Direct (salaried)
<b>University D</b>	<b>Primary</b> 20 PGCE 'primary specialism' (university-led)	<b>Secondary</b> 25 PGCE 25 Schools Direct (fee) 6 Schools Direct (salaried) 10 BSc Mathematics with Secondary Qualified Teacher Status (QTS)
<b>University E</b>	<b>Primary</b>	<b>Secondary</b>



## Beginning teaching: best in class?

Background paper, November 2015

	20 PGCE 'primary specialism' (university-led) 40 School Direct (general route)	25 PGCE (university-led) 19 School Direct
<b>Teach First</b>	Interviews for this case study were carried out by the ACME Secretariat. See above.	

### 3.4 ACME ITE Roundtable, 18 March 2015, The Royal Society, London

On 18 March 2015 ACME convened a round table to discuss the themes identified in ACME's discussion paper ['Initial teacher education of teachers of mathematics at primary and secondary: have your say'](#) and to consider the questions set out in the paper regarding ITE practice in England.

The group discussions focused on six themes:

- Applicants to ITE
- Mathematics-specific training
- School-based mentoring
- Practitioner research and evaluation skills
- Early stage professional learning
- The ITE landscape and mathematics

The round table was attended by a range of representatives from the mathematics education and education policy communities. There was representation from subject associations, professional bodies and education initiatives. The round table was also attended by those who work across a range of subjects, STEM and more widely. These include learned societies, charitable organisations, teaching and teacher education professional bodies, the Department for Education and the Carter Review of Initial Teacher Training. A full participant list is included below. ACME representatives also attended.

<b>Participant list: ACME ITE Roundtable, 18 March 2015, The Royal Society, London</b>		
<b>First Name</b>	<b>Surname</b>	<b>Organisation</b>
Andrew	Carter	Carter Review of Initial Teacher Training
Chris	Chipperton	The Institute of Mathematics and its Applications
Els	De Geest	National Numeracy
Jenni	French	The Gatsby Charitable Foundation
Atif	Jaleel	AMET
Carol	Jones	Association of School and College Leaders
Scott	Keir	The Royal Statistical Society
Lizzie	Kelly	Department for Education
Peter	Main	Institute of Physics
Aaron	Maras	The Royal Society
Zoë	Martin	Royal Society of Chemistry
James	Noble-Rogers	Universities' Council for the Education of Teachers
Chris	Pope	Princes Teaching Institute



Advisory  
Committee on  
Mathematics  
Education

## **Beginning teaching: best in class?**

**Background paper, November 2015**

Peter	Ransom	The Mathematical Association
Trisha	Rogers	National Centre for Excellence in the Teaching of Mathematics
Tim	Rowland	The Joint Mathematical Council of the United Kingdom
Naomi	Sani	Core Maths Support Programme
Cathy	Smith	The Further Mathematics Support Programme
Louise	Stubberfield	Wellcome Trust
Jim	Thorpe	Association of Teachers of Mathematics
Charles	Tracy	Institute of Physics