

## **Mathematics education and CPD: current and future needs**

### **A paper for the National Mathematics CPD Committee**

Recent years have seen the emergence of a large number of new initiatives and changes to qualifications and curricula in mathematics, and there are more to come. ACME is grateful for this opportunity to set out its thoughts on the CPD that will be necessary to ensure these initiatives are successful alongside some more general thoughts on the nature of CPD for mathematics teachers. We conclude that there should be a CPD development checklist that should be completed before there is a new initiative/curriculum so that teachers gain ownership as well as familiarity, and that this CPD should be developed according to the general criteria described below.

It should be noted that the subject of this paper is the need for CPD created by new initiatives; our conclusions should not be taken to mean that where there are no new initiatives there is no need for CPD. There is an ongoing need for professional development that exists outside curriculum changes and the entitlement to CPD throughout a teacher's working career referred to in the Smith Report still stands.

### **Background**

Continuous Professional Development should always be seen as an essential part of providing a professional career structure for teachers. As such, CPD should be designed to improve mathematics pedagogy, subject knowledge, management skills, strategic awareness and an ability to see mathematics in a broader perspective. This is exemplified by the NCETM and the development of the Mathematics for Specialist Teachers (MaST) Programme.

Of these aims, ACME believes that 'improving subject knowledge'<sup>1</sup> is the most often overlooked in mathematics CPD, particularly where CPD is being developed to support a curriculum change. Often new initiatives require teachers to see mathematics differently and make new connections, and it is not sufficient for CPD supporting a major change in curricula simply to update teachers on the latest guidelines. In particular, there are some new messages in the new primary curriculum which, if they are to make a difference to teaching and learning, will require more than a cursory glance at the planning documents. Encouraging teachers simply to implement a style of pedagogy without engaging with the mathematics itself or the rationale is unlikely to lead to any sustained change in classroom practice.

Subject knowledge and the opportunity to actually do some mathematics at one's own level is vital – indeed, Chartered Mathematics Teacher status rightly requires evidence of this.

With this description of CPD in mind, ACME has identified the following examples of recent and forthcoming developments that require attention:

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<sup>1</sup> And within that, subject-specific pedagogy

- **Primary curriculum changes:** CPD to support successful implementation of the new primary curriculum, particularly on the using and applying elements
- **New modes of assessment:** CPD to support teacher-led assessment following the removal of KS3 tests and any potential shift from written external tests at KS2.
- **Pair of Linked GCSEs:** CPD to support the new teaching approaches required to successfully deliver the linked pair of GCSEs
- **A-Level:** CPD to support expansion in the numbers teaching A-Level, with particular focus on equipping those who currently teach up to and including GCSE with the skills/confidence to also teach at A-Level. CPD to support the introduction of a full A-level in Use of Mathematics.

## Proposal

ACME believes that in order to bring about sustained reform in the teaching of mathematics any significant development should be supported by CPD which is grounded in improving subject knowledge and not simply briefing on the latest guidelines.

We propose that any new curricula innovation or initiative should be anchored from the outset to appropriate CPD that is couched in terms of developing the necessary subject knowledge and subject-specific pedagogy – this should be set out with a timeline and funds. We suggest that such proposals are submitted to the National Mathematics CPD Committee for agreement and that the Committee should be responsible for ensuring that the CPD is put in place. A procurement exercise should take place so organisations can mount the CPD, with quality assurance provided by the National Mathematics CPD Committee.

**Advisory Committee on Mathematics Education**  
**16 February 2010**