

A Standing Subject Committee for Mathematics – Some Proposals for Further Discussion

These proposals were originally developed in June 2010, and they are relevant today in the context of the National Curriculum review, GCSE and A-level reforms. 15 June 2012

Introduction

England has a long and distinguished tradition of curriculum development in mathematics. Often, this leadership has come from the subject communities themselves, funded by charitable foundations. In the past, the innovation and creativity this brought into the education system was highly valued.

However, there is now a general feeling that the current regime whereby curricula are developed and revised is no longer fit for purpose.

In particular, we believe that:

- Curriculum has increasingly been driven by the demands of assessment, rather than by the quality of the learning experience;
- Which, in mathematics, has resulted in a concentration on techniques to pass examinations and in less emphasis on understanding;
- Reviews of the different phases of the curriculum are undertaken out of sequence, which given the hierarchical nature of mathematics, is particularly problematic. This has led to a lack of coherence, uncertainty and instability;
- This is further exacerbated through an absence of a structured timetable in which curricula are reviewed on a regular cycle;
- And a lack of transparency in how advice is currently sought by, and what advice is given to, agencies leading to a culture of mistrust and a lack of confidence in the decisions taken
- Competition between awarding bodies has not helped to raise standards, with a focus solely on assessment to the detriment of curriculum development; and
- An unhealthy close relationship between awarding bodies and publishers which can sometimes lead to conflicts of interest (e.g. endorsement of text books and other resources) which distorts the market and inhibits innovation

As a result of these concerns – many of which are shared across other subject communities – ACME has devoted some time to considering how an alternative model for curriculum might be developed.

This is in part informed by Recommendation 9¹ of the Science and Learning Expert Group report, led by Sir Mark Walport. This recommendation highlighted the need to establish standing expert groups for each major subject in order to advise on the development over time of the 5-19 curricula. This is a model which ACME finds attractive, subject to many of the details being discussed and finalised.

Guiding principles

No matter what form the subject standing committees take, ACME believes that the following principles should be adhered to:

- The committees should not be left in the hands of volunteers; curriculum development work must be properly resourced;
- Curriculum development should always be research-informed, and should build on previous work, not start from first principles;

¹ Ensure that the higher education sector and other stakeholders are engaged in the design and development of qualifications and assessment in ways that will enable them to accept accountability for ownership of the systems. In particular:

- Standing STEM expert groups should be established in each major subject to advise on the development over time of 5-19 curricula and GCSE and A-Level criteria in these subjects (Science and Learning Expert Group Report <http://interactive.bis.gov.uk/scienceandsociety/site/learning/2010/02/25/new-science-and-learning-expert-group-report/>)

- Sufficient time must be devoted to the work involved – curriculum development should not be rushed and the membership of the group must be stable over a reasonable period;
- There should be cross-linkage between subject committees;
- The work of the committee should be transparent; and
- Curriculum should be informed by a range of stakeholders and users of mathematics, and not be just driven by the needs of higher education (nor, specifically, the needs of only mathematics departments within higher education).

A Standing Subject Committee for Mathematics – Some Details

ACME has therefore spent some time thinking in more detail about how a standing subject committee in mathematics might operate.

Objective

ACME proposes that an objective for a mathematics standing committee ought to be:

“To ensure that there is a coherent policy for mathematics education that ensures continuity and progression for all learners from early years to entry to university or employment”

Remit

As noted above, starting from first principles in constructing a new curriculum could needlessly reject decades of sound educational research. The immediate task for the committee would be to set appropriate timescales for revision of the National Curriculum and advise on interim measures using what is already known, familiar and available.

To address the government’s immediate concerns the committee’s remit would be:

- To review, and revise as necessary, the National Curriculum for mathematics at regular intervals (probably somewhere between every five to ten years to avoid excessive disruption) and to ensure that the implementation of such reviews is phased in progressively from the primary years through to secondary and then through to tertiary education;
- To ensure that any such revisions to the curriculum are firmly based on researched-based evidence on pedagogy, the needs of learners, teachers, employers and HE, trends, attainment, the nature of the subject and tradition;
- To set up mechanisms for establishing the development of appropriate assessment instruments and qualifications that fully reflect the purpose and structure of the mathematics curriculum at any time;
- To set up mechanisms that ensure the production of quality text books in mathematics and other resources to best support the teaching and learning of mathematics;

To impact longer-term on the STEM landscape, the remit would include:

- To ensure that the importance of mathematics, both culturally in its own right and as an analytical tool in other subject areas, is fully understood and that a symbiotic relationship is established between the curricula for mathematics and these other subjects;
- To encourage innovative curriculum development projects in mathematics and statistics;
- To coordinate an international dimension that compares the goals of mathematics education in successful countries and looks at students' attitudes towards mathematics and their understanding and attainments in the subject relative to performance in other countries;
- To inform government and MPs about mathematics for informed debate in Parliament and to give evidence to Parliamentary Select Committees;
- To set up appropriate working parties, with nominated representatives from all the professional bodies involved with the teaching, learning and assessment of mathematics, to ensure a high quality product for each revision of the National Curriculum for mathematics and its associated assessment instruments;
- To inform the wider public about national developments relating to mathematics education.

Independence

One of the major challenges would be the degree of independence of any committee. For subjects and stakeholders to have confidence in the standing committee, it would need to be one step removed from government and officials – this, to all intents and purposes, necessitates an independent standing subject committee.

Cross-Subject Issues

There is a concern that a focus purely on subject committees may reinforce the silo effect of developing curriculum in isolation of other subjects. This is a particular concern for mathematics, which forms a key component of many other subjects and is valued by users of mathematics. Mechanisms will need to be created to address these concerns.

Membership & Transparency

The process of appointment to the committee would be transparent, with names and affiliations of advisors (and all correspondence and advice) made publicly available. By having membership over a fixed period, it will permit a degree of stability – something which has often been a criticism of the curriculum development process led by QCDA, where there has sometimes been an absence of stability.

Concluding Remarks

None of what is outlined above will be easy to achieve but we are faced with the chance in a generation to ensure that we have in place appropriate structures for overseeing the curriculum. There remain many other directly related concerns – such as the effectiveness of the independent regulator, issues around the links between publishers and awarding bodies, and whether a competitive market between awarding bodies is the best model for raising standards – but we have restricted ourselves in this paper to the immediate task of constructing a system by which curricula can be developed and reviewed.

ACME

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