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Dear Minister of State for Schools,

Many thanks for your letter dated 22 May 2012 in which you suggested that, following publication of the draft National Curriculum Programme of Study for Mathematics, you would like to engage with key stakeholders, including the joint Association of Teachers of Mathematics (ATM) and Mathematical Association (MA) primary expert group, on the next steps. As chair of the group, I write to you in response to this invitation.

As you can imagine, our members (including practising primary and middle school teachers, university lecturers, freelance consultants and employees of national mathematics bodies) have read the draft Programme of Study very carefully and have subsequently engaged in lengthy, detailed and passionate conversations about its content. In total, I believe that in excess of 100 hours of unpaid time have been invested in forming our response. Over this period, I have been struck by the expertise and commitment of my colleagues, their deeply held beliefs about what good mathematics education looks like, and their commitment to ensuring that all children get the best deal at primary school. I have summarised a selection of our conversations for you below.

In developing a new curriculum, we agree that it is important to look at the education systems of high attaining jurisdictions overseas, which are similar to ourselves, in order to build on the strengths of current practice in our schools. Ever since the introduction of the National Curriculum in England, there has been the notion of an entitlement to education for all, and we welcome comparisons with nations who share this belief. However, Singapore is culturally very different from England. Apart from its people, Singapore has no resources, with the consequence that systemic investment in the education of its citizens is the only means of ensuring continuing economic success. We also understand that there is widespread use of after school tuition and school holidays are much shorter. At a time when English politicians are looking to Singapore for inspiration, it seems that those in Singapore are dissatisfied with the national approach to mathematics and are changing the teaching so that problem solving and creativity are even more central. The Education Minister for Singapore says they need to move towards being 'less about content knowledge' but 'more about how to process information' (http://www.bbc.co.uk/news/business-17891211).

In order to best enable schools to implement this curriculum, it will be necessary to demonstrate joined up thinking between DfE and Ofsted. We find it surprising that the Ofsted findings are not reflected in this draft curriculum. The latest reports: *Made to Measure* and *Evidence from 20 Successful Schools,* provide useful examples of fantastic teaching from within our shores. The best practice from England should be feeding into how other schools are asked to perform. Teachers may be more able to adopt good practice when it is from a context similar to their own.

We welcome an aspirational curriculum; however, we strongly believe that the increased demands in this draft curriculum are unrealistic (without guidance on the numbers or percentages of pupils expected to attain the targets), especially for KS1, and will result in children being labelled as failures from an early age. We warn strongly against teaching too much too soon and would encourage the Government to take into account the, generally higher, ages at which children start school in most of the high performing jurisdictions overseas. Whatever the child's age, the recommendation that 'before moving on to formal representations, children must have secure conceptual understanding of mathematical ideas' needs to be built into the curriculum. For example, children's additive and multiplicative reasoning need to be developed through practical, meaningful experiences and problem solving before they are introduced to abstract concepts such as fractions, standard measures or traditional algorithms.

We need a curriculum to empower children to achieve their very best in the high-tech, data-rich, digital world of the 21st century. The ATM and the MA view mathematics as an interesting, useful and creative subject, with many interconnections and links with other subjects and to real life, through which children develop an enthusiasm and curiosity for learning mathematics and use that knowledge to solve problems in the widest sense, including using technology. Developing children's capacity to think, talk and behave like mathematicians is an approach commonly found across the mathematics teaching profession in the UK and abroad (e.g. Poland, The Netherlands) and could be addressed by threading the aims stated in the introduction throughout all parts of the document. For example, replacing the statements that 'children will carry out word problems' with 'children will solve a variety of problems and record and interpret results', and replacing some of the references to 'practise' or 'recall' with words such as 'understand', 'explore' or 'investigate'.

We welcome the opportunity to develop a new assessment regime alongside a new curriculum. However, we respectfully remind the Government that the nature of the assessment and accountability regime will influence the way in which the curriculum is delivered and therefore needs careful consideration.

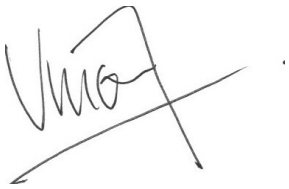
The content of the new curriculum and the requirement that schools must publish year-on-year teaching programmes, will place heavy demands on teachers and they will need high quality support to ensure successful implementation of the changes across all subject areas. A piecemeal approach may not be as successful as providing (for example) clear and consistent guidance, resources, personnel to support schools directly, additional INSET day(s) and opportunities for school leaders to network and learn alongside others. The bottom line is that success will cost money.

Please be reassured that the joint ATM and MA primary expert group has also submitted a fully referenced response to ACME using the official questionnaire. I am attaching the response for your information.

The members of the expert primary group of the mathematics subject associations offer our support as you continue to develop the primary mathematics curriculum. We will happily meet with you or your representatives, read and respond to any proposals, and offer suggestions for how we could support you to develop and implement ideas.

We look forward to hearing from you.

Yours sincerely,



Vivien Townsend (chair)