A mastery approach: Taking the long view.

Fiona Tidbury offers her perspective on the mathematics mastery debate.

As someone involved in primary initial teacher education, I would like to present a slightly different perspective on the current mathematics mastery debate. This is one which I have not seen expressed elsewhere, but which to me seems significant in informing the discussions we might have around this approach to teaching mathematics. I would like to step back, take the long view, and look at the mathematics mastery approach within the context of the history of primary mathematics education over the past 50 years.

It would appear that a mathematics mastery approach is seen by some currently as the key way to develop mathematics teaching and learning in England, with, for example, considerable funding being provided by the Government to promote the approach through the Maths Hubs Programme run by National Council for Excellence in Teaching Mathematics (NCETM). However, I have also heard many involved in primary mathematics education express the view that much of what is being proposed is nothing new.

Recently however, two comments, one heard during a Maths Hubs CPD session and one read on a mastery website from a different organisation, prompted me to think about this whole debate slightly differently. It is these thoughts I share with you here. One of these comments was that, whereas Shanghai had taken on board the messages of Cockcroft (see Cockcroft,1982), we in England had not. The second, that, "until recently, teaching children to follow a process had been at the core of mathematics education" …but that… "with the 2014 curriculum, this began to change." (see https://thirdspacelearning.com/resource-maths-mastery-ultimate-guide/).

From my understanding of the development of primary mathematics education in England since the mid twentieth century, I would argue that both of these comments misrepresent the situation here. During that period, primary mathematics education in England was following what has been referred to as a "reform agenda", with a move away from transmissive teaching with a focus on procedure or following a process. Instead, and as espoused by the Cockcroft Report, came greater focus on the development of conceptual understanding through, among other things, practical work and the use of a range of resources, as well as focus on the use and application of mathematics alongside a recognition of problem solving as a key element of mathematics education.

During this time, many of the elements often associated with a mastery approach were present, in the mathematics education literature and debate and practically in the classroom, albeit not combined in this specific format and with this particular label. For example, many argued that mathematical teaching and learning needed to focus on conceptual understanding, and not just procedures, facts and formulae and that this was developed by, among other things, making connections between different areas of

mathematics and the use and application of mathematics in solving problems (See Richard Skemp in MT77.) In the last MT Anne Watson and John Mason explained how the work of Bruner on enactive, iconic and symbolic representation has underpinned the use of resources and images within mathematical teaching and now emerges in the concrete-pictorial-abstract approach.

So, maybe the "heard it all before" camp do have a point? I would argue that, yes, to a certain extent they do, but I believe there are more important considerations to explore, which become apparent if we continue with the long view of mathematics education. Despite the "reform agenda", the current Government clearly believe there is still an issue with mathematics teaching and learning which needs tackling. This concern appears partly to be informed by the UK's position in the PISA rankings, but it is important to note that those elsewhere in the field of mathematics education have also voiced concerns. Leone Burton noted that there was evidence that much mathematics teaching continued to be transmissive (see Burton, 2004) and the Williams Report highlighted the need for increased focus on the use and application of mathematics and problem solving (See Williams, 2008) .

In which case, if we are taking the long view, I would suggest that, rather than deciding whether we sit in the mastery camp, or in the "heard it all before" camp, it might be more useful to consider a different set of questions. If the various aspects of mathematics teaching which we see combined within a mastery approach have been identified for some time as effective mathematics teaching, even if not in this specific combination and format, but are often not actually being put into practice in the classroom, a key question would seem to be, why not? If we want to improve primary mathematics teaching, whether through a mastery approach or otherwise, comes the question 'What can we do to make it more likely that these approaches will be adopted in the future? Perhaps this is common ground for all in the mathematics education community. However, without some understanding of what has gone before, the importance of even asking these questions may not be recognised.

To my mind, answering these questions involves discussions around the curriculum itself. For example, one aspect of a mastery approach is to cover fewer topics in more depth. It also involves debate on the current assessment system and the impact this has on primary mathematics teaching. There are questions around access to resources and teachers' own mathematical subject knowledge. The teachers who teach mathematics in primary schools in England are usually not mathematics specialists, unlike in Shanghai. Perhaps CPD for teachers and other adults in the classroom is the key?

A mastery approach may be the buzzword of the moment, but it sits within the broader flow that is the development of mathematics education over time. As such, it seems reasonable to suggest that anyone seeking to promote this as an approach is likely to gain from glancing back over their shoulder and reflecting on what has gone before. Taking the long view also shows us that improving mathematics teaching and learning is an ongoing challenge.

Recognising what has been tried previously, what succeeded or failed and reflecting on why, may help address those challenges in the future. My own opinion is that no one approach is going to provide the answer, but that progress comes from a willingness to be open minded, to engage in debate and not to get stuck too firmly in any one camp.

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References

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