

Toolkit: Mastery in Mathematics

Myths and Facts about Mastery

Mastery is what more able children achieve.

Myth

Mastery is about expecting the vast majority of pupils to attain at least age-related expectations. It is also about helping all pupils develop sound understanding of mathematical ideas, so that they can connect different aspects of mathematics and demonstrate understanding that goes beyond simply replicating procedures that they have been shown.

International research and comparisons have shown that it is possible for more – if not the majority – of pupils to achieve highly in mathematics, provided that they see themselves as being capable of learning mathematics and that their efforts are an important part of their achievement. This contrasts with a popularly held view that mathematical ability is what determines levels of attainment and that some people are simply more able to master mathematics than others.

Mastery teaching means one-size-fits-all teaching.

Myth

No, teaching for mastery is not about one-size-fits-all teaching. The trend in teaching involving putting pupils into ability groups means that different learners then experience different curricula. In particular, learners who are put in the 'low attaining' group tend to experience a reduced curriculum as the teaching often then goes more slowly.

In a mastery approach, the expectation is that the vast majority of pupils will experience the same curriculum. That means differentiation then comes about through the different types of support that are offered to pupils to help them access that curriculum.

Mastery means teaching fewer topics for longer.

Fact

One implication of teaching for mastery is that units of work have to be designed to allow pupils sufficient time to develop sound understanding of the content. Again, some current practices are predicated on the idea that if learners don't 'grasp' a particular idea first time around, then there will be an opportunity for them to grasp it later.

Planning and teaching for mastery works on the idea that learners should have plenty of opportunity to fully understand an idea when they first meet it (with some revisiting, of course, to keep the understanding in place). Some ideas will take longer for this depth of understanding to be secure, while others may be understood more quickly. That means plans not only have to take into account the different amounts of time that might be needed for different concepts, but they also need to have some flexibility, so that if pupils do not securely understand an idea at the time it is met, then more time can be devoted to it.

Mastery teaching means goodbye to differentiation.

Myth

Individual needs still have to be met, but meeting these needs means helping pupils have access to their age-related curriculum. Needs are met through differentiating the support that pupils need in order to access that curriculum, or through challenging them to think more deeply about the content.

Mastery teaching means higher-attaining pupils are going to get bored and turned off mathematics.

Myth

Higher-attaining pupils need to be challenged to go more deeply into the ideas being explored. For instance, pupils may come to understand that adding two odd numbers always gives you an even number as the answer. Higher-attaining pupils can be challenged to come up with justifications as to why this is always the case. This could involve beginning to explore how a result like this can be expressed algebraically.

Mastery teaching means less confident pupils are going to get left behind and turned off mathematics.

Myth

The important thing in teaching for mastery is to find ways of helping pupils to keep up, so that catching up becomes less necessary. This involves making sure the curriculum is presented in ways that maximise access for everyone; the use of the concrete, pictorial and abstract is key to this. It also means anticipating when you think a learner might be going to experience some difficulty and thinking about ways to support them in overcoming this.

Teaching for mastery is a long-term project and not something that can be achieved overnight. As pupils in the early years of school develop sound understanding of key mathematical ideas, such as place value, then the breadth of attainment as pupils move up through the years should be reduced.

Ofsted expects to see evidence of teaching for mastery.

Myth

Ofsted's School Inspection Handbook does not explicitly require evidence of mastery. It does, however, include the statement that inspectors will consider how well a school: "Uses resources and approaches to enable pupils in the class to understand and master the mathematics they are learning".

The National Curriculum for Mathematics specifies the aims and then states: "The expectation is that the majority of pupils will move through the programmes of study at the same pace".

A mastery approach is compatible with this requirement.

Mastery is now a national requirement.

Debatable!

Mastery is not a requirement in the sense that it is explicitly stated in the National Curriculum. However, what is a requirement is that pupils as far as possible are expected to achieve at least age-related standards of attainment. Teaching for mastery is one approach to achieving this aim.