

Session Plan

Secondary Mastery: Introduction

This professional development module is one of a suite of six modules designed to introduce secondary maths trainee teachers to the NCETM's Teaching for Mastery 5 Big Ideas. Each module shares a rationale, key messages and at least one practical strategy suitable for novices to adopt. Together, the modules form an *introduction* to teaching for mastery for the *novice*.

Goals	To help trainee teachers (TT) to: <ul style="list-style-type: none"> <input type="checkbox"/> understand what mastery is and isn't <input type="checkbox"/> consider the evidence base for mastery <input type="checkbox"/> explore the NCETM's vision for mastery.
Starting points	TT may have come across the term mastery and may have formed preconceived ideas of what this means (for example they may have come across Ark's Mathematics Mastery)
Materials required	PC & projector Whiteboard or flipchart & pens Group set of mini whiteboards & pens Session handout (optional)
Time needed	60 minutes, can be adapted to fit time available
Room layout	Room layout should accommodate TT working in pairs and groups of four.
Suggested approach	<p>What is mastery? (20 minutes)</p> <p>Ask TT what it means to master something in maths. Share Drury quote (S2). Ask TT to reflect on their understanding of mastery. Encourage them to discuss with their partner (S3) and discuss as group.</p> <p>Provide the statements (S4 and page 1 of the handout) to TT asking them to decide firstly in pairs and then groups whether each statement is True or False. Discuss responses:</p> <ol style="list-style-type: none"> 1. Mastery in mathematics has a single clear definition. FALSE www.nama.org.uk/Downloads/Five%20Myths%20about%20Mathematics%20Mastery.pdf <p>“In England, the term 'mastery' has recently become associated with East Asian mathematics — for example, the National Centre for Excellence in the Teaching of Mathematics (NCETM's) teaching for mastery. However, the word is used in lots of different ways with different, but overlapping, implications for pedagogy. One of these ways was promoted by Bloom as early as 1968 and is called 'mastery learning'. 'Teaching for mastery', promoted by the NCETM and influenced by Shanghai and Singapore practices, is relatively new — the NCETM referred to mastery approaches in 2014 and 'teaching for mastery' by 2016. The research evidence is varied both in</p>

terms of the amount and the quality of evidence for different schemes, textbooks, materials and practices that are referred to by the word 'mastery'."

www.cambridgemaths.org/Images/espresso_16_mastery_in_mathematics.pdf

2. Mastery in mathematics allows for differentiation. TRUE
3. There is a special mastery curriculum. FALSE
4. Mastery in mathematics involves repetitive practice. SOME (depending on what we mean by repetitive practice)
5. Mastery in mathematics means using specific textbooks. FALSE
6. For a new skill to become automatic or for new knowledge to become long-lasting, sustained practice, beyond the point of mastery, is necessary. TRUE

Willingham www.aft.org/periodical/american-educator/spring-2004/ask-cognitive-scientist

7. Mastery means staying on a topic for much longer. FALSE
8. Mastery is a new approach to teaching. FALSE

www.nama.org.uk/Downloads/Five%20Myths%20about%20Mathematics%20Mastery.pdf

'Mastery learning is not a new idea. Its origins can be traced to the early work of Benjamin Bloom.'

'Whilst there are numerous descriptions of mastery in mathematics there are some common features of the different approaches. What the approaches have in common is an emphasis on success for all and that this can be achieved by developing conceptual understanding in mathematics, with a focus on mathematical structures'.

"Pedagogy underpinning mastery approaches is grounded in theory and action research that has been espoused by those in mathematics teacher education for many years". (Jain & Hyde, 2020, p.2).

Share S5 Myths (NAMA) and S6 'Mastery Explained' (NCETM).

Share S7, an analogy for the basis of teaching for mastery. 'A project manager gives workers two weeks to build the foundations. The workers do what they can in that time. Maybe it rains, maybe some of the supplies don't show up. After two weeks the inspector comes to check on the foundations and says "Ok, the concrete is still wet right over here, and that part is not quite up to code. I'll give it an 80%." The project manager says "Great! That's quite good. Let's build the first floor." And so the story goes on. After the fourth floor the whole structure collapses.'

Mastery avoids the scenario whereby we try to build upon shaky foundations, by ensuring students have mastered knowledge and understanding before moving on.

What is Teaching for Mastery? (15 minutes)

Show the video (S8 <https://vimeo.com/306771359>) to TT, asking them to make notes about what it means to 'teach for mastery'. This video covers principles of teaching for mastery as well as the structure of the current Secondary Mastery Specialist Programme. TT should concentrate on the former.

Having completed the True/False task and watched the video, ask them to share with their partner their refined thoughts on what is meant by mastery.

Summary (10 minutes)

Having been exposed to lots of ideas about teaching for mastery, TT are challenged in pairs to create a list of what teaching for mastery is and isn't. Discuss as a group.

S10 to S13 explain four key ways in which the word 'mastery' is used: mastery approach (principles and beliefs), mastery curriculum (access for all), teaching for mastery (pedagogy) and achievement of mastery.

Share the big ideas model (S14).

A central component in the NCETM/Maths Hubs programmes to develop Mastery Specialists has been discussion of 5 Big Ideas, drawn from research evidence, underpinning teaching for mastery. This is the diagram used to help bind these ideas together. These ideas will be examined in the remaining five professional development modules but here's a flavour of what lies behind them.

Share explanations of 5 Big Ideas (S15-S19)

Remind TT that these approaches are strongly underpinned by research, some of it dating back a long time. (S20)

Close by encouraging TT to connect with the NCETM and their local Maths Hub (S21, S22).

What TT might do next

Signpost TT to the NCETM Secondary Mastery Professional Development materials. This is an extensive professional development resource. Classroom teachers, ITE tutors and trainee teachers will all be able to use it to develop subject knowledge, pedagogy and practice <https://www.ncetm.org.uk/classroom-resources/assessment-materials-secondary/>