

February 2020

Newsletter

In a blink of an eye January passed and February is coming to a close! This is the start of a busy time of activity in Maths Hub as we see many of our Work Groups meet for the second time this year. It has been great to hear and see the impact of the Work Groups' on participants' own knowledge and practice development as well as wider impact across schools. We have also seen the start of other Work Groups such as our Subject Knowledge Enhancement for Primary Teaching Assistants.

March would have seen the start of the return leg of the Shanghai-England teacher exchange programme. Unfortunately due to the novel coronavirus, the exchange has been cancelled. Both our Primary and Secondary Teaching for Mastery teams have been working hard and we are delighted that we have several open classrooms at Primary and Secondary running across the region. This is a great chance to explore what Teaching for Mastery looks like first hand and to learn from others who have already made changes to the way they deliver Maths. If you would like details of these events, please email us: laura.greener@churchillcc.org

January and February have been the months where we have taken stock of our journey so far. Maths Hubs have come a long way since their inception and a recent video released by NCETM captures just how Maths Hubs can support professionals across the region. You can find that video [here](#). We are so proud to be part of such a transformational programme and even prouder of the impact we have had in our region. The figures below show how many schools and professionals we have supported since 2014:

MILESTONES ACHIEVED



393 Schools Participated



1255 Participants

As we move into our planning phase for 2020/21 academic year we can't wait to work with more schools and professionals. Continue to read our newsletter to find out how you can have your say about future Work Groups in the Great North Maths Hub.

As well as offering you the opportunity to shape our programmes for future years, this edition of our newsletter also explores the big idea of variation with a focus on the use of examples and non examples.

Variation

Laura Tullock

Variation, one of the five big ideas of Teaching for Mastery, is often the one area of the Teaching for Mastery approach which takes longer to develop in teachers' practice. The aim of variation is simple; to develop a deep understanding of the mathematical concept. *It aims at understanding the essence of object and forming a scientific concept by putting away the non-essential features (M Gu 1999)*

One way to develop variation in lessons is to make use of examples and non examples. We often give children definitions of what something is, but by giving examples of what something is not can focus children on the essential features. As a teacher, it can also focus our explanations to ensure we are clearly describing all the essential features. For example, when children first encounter squares, we could have in the past, risked stopping at a *square is a four sided shape*. We know that not all four sided shapes are squares, but as adults we have the benefit of experience. Including non examples, like in the image below, helps to avoid ambiguity and crystalises the essential features of the concept. As stated in the Think Math blog [here](#), 'selected non examples help focus attention on details which may otherwise have been missed.'



Definition

A quadrilateral with four equal sides and angles.

Characteristics

- Four equal length sides.
- Four interior right angles (90°).

Squares

Examples



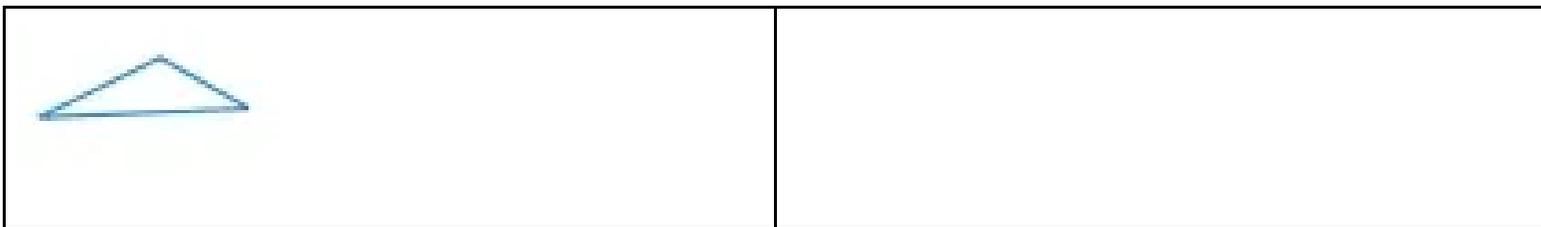
Non-Examples



Furthermore, the use of examples and non examples helps to clarify a concept and deepens an understanding.

Every time I observe teachers from Shanghai, I am blown away by their careful choice of examples and non examples to ensure children secure a deep understanding. For example in a lesson around quadrilaterals, pupils were shown the following images

Examples	Non examples



Even the choice of line colour in these examples and non examples ensures that ambiguities do not arise.

Whilst both these illustrations of examples and non examples are focussed in the geometry strand, this activity lends itself to all areas of Maths. In this instance, simplified fractions:

Examples		Non Examples	
$\frac{16}{25}$	$\frac{3}{5}$	$\frac{12}{21}$	$\frac{14}{35}$
$\frac{7}{10}$	$\frac{1}{2}$	$\frac{9}{6}$	$\frac{51}{102}$

Many teachers can become caught up in thinking about what conceptual and procedural variation as two separate elements however, as Anne Watson states, it could be more beneficial to *think about what is to be learnt, and how it is going to be learnt through experiencing, or generating, and reflecting on a varied set of examples, cases or questions.* (Anne Watson, *Variation: analysing and designing tasks* ,ATM June 2016). This illustrates perfectly the benefits of using the examples and non examples in the classroom.

If you want to read more about examples and non examples, Craig Barton explores the research behind the use of examples in maths teaching in his blog [here](#).

Core Maths

Eleanor Baggeley

You'd have to have been hiding in a cave somewhere to not have heard about Core Maths. It's a qualification that's been around since September 2014. I was one of the lucky Early Adopters who started teaching it at that time, with no specifications in existence and no materials to guide us. In a way, we were lucky as we were able to experiment more and use our imaginations.

The Nuffield Foundation suggested that the study of post-16 mathematics in the UK is an outlier internationally. It found that fewer than one in five students study mathematics after the age of 16, compared to more than half of students in the majority of mainly OECD countries it surveyed.

As Sir Adrian Smith put it in his review of post-16 mathematics:

“Core Maths plugs a critical gap for students who are progressing to higher education and into higher technical study”

Core Maths is the umbrella name given to the Level 3 qualifications offered by a number of awarding organisations. It is growing in popularity year on year with increasing numbers of schools and centres getting on board. It's being more widely recognised in Higher Education and employment as the quantitative skills that the students continue to develop while studying Core Maths are extremely valuable in an increasing number of sectors and subject areas.

The Core Maths qualification is for students who have passed GCSE mathematics at grade 4 or above but have decided not to study A level mathematics. The qualification strengthens students' existing skills and focuses on applying mathematics to solve problems relevant to everyday life.

Core Maths builds on GCSE mathematics, with a sharper focus on problem-solving skills. Students will consider and tackle mathematics in meaningful contexts, including through financial applications and statistical ideas that can support work in other subjects.

In the 2017 Autumn Budget, the Government announced that schools and colleges will get **£600 for every extra student who studies mathematics post-16**.

The advanced maths premium applies to **all level three maths provision**. So as well as funding for additional students studying AS and A level mathematics, further mathematics and statistics, the premium also includes the Core Maths qualifications.

The six different Core Maths qualifications that are available are:



- [AQA Level 3 Certificate Mathematical Studies](#)
- [City & Guilds Level 3 Certificate in Using and Applying Mathematics](#)
- [NCFE Level 3 Certificate in Mathematics for Everyday Life](#)
- [Pearson Edexcel Level 3 Certificate in Mathematics in Context](#)
- [OCR Level 3 Certificate in Core Maths A \(MEI\)](#)
- [OCR Level 3 Certificate in Core Maths B \(MEI\)](#)

They are all structured in different ways with varying content and each suited to different learners, if you are considering introducing Core Maths it's worth doing your homework to work out which one is most appropriate for your setting. We run a Core Maths Work Group each year to support centres in their teaching of the qualification. If you'd be interested in joining the Work Group next year get in touch to register your interest.

Meet our Team



This month, we would like to introduce you to Helen Chambers. Helen is an NCETM accredited PD lead, Secondary Teaching for Mastery Lead and Cohort 1 Teaching for Mastery Specialist. She has actively been involved with the Great North Maths Hub since 2014, alongside working across many schools supporting and developing Maths in both primary and secondary schools with a Lead Teacher Role. She is hosted by Wellfield Middle School which is a perfect fusion of the primary and secondary phases and currently teaches in years 7 and 8 embedding a TfM approach. This year, Helen is supporting specialists, advocates and schools in both her Secondary Teaching for Mastery lead and Mastery Specialist role, as well as working with new advocate teachers in developing their TfM approach.

NCETM Updates

This month, the NCETM have published an article showing how a secondary school has been using the PD Materials. Click [here](#) to see how they have been used in the departments' professional development cycle.

A great article on using calculators at A Level has been published [here](#)

The February edition of Primary Round up can be found [here](#) and discusses the question Multiplying by 10: is it ok to just put a zero?



Have Your Say!



We are currently planning the workshops for our Primary Conference. As always, we want to make it useful and beneficial for you all so would love to hear what types of workshops you would like to see. This is your chance to shape your conference! If you have an idea of a workshop you would like to see at the conference, please email laura.tulloch@churchillcc.org

What would you like to see from Work Groups next year? What issues in Maths teaching and learning would you like to explore further? Every year, we plan innovation Work Groups to meet the needs of the region. This year, they include Maths in Science at

Primary and Secondary, Action Research and Developing Pedagogy at Primary. If you have any ideas of Innovation Work Groups you would like to see, please email laura.greener@churchillcc.org