### Welcome!



(Duncan et al, 2007, Duncan and Magnuson 2011 cited in Clements and Sarama (2014 p 275 Kindle Edition )

#### **Sue Evans**

**NCETM Accredited PD lead** 

Subject Knowledge Supporting effective transition from Reception to Year 1

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#### Aims of session

- Understand national developments in EY Maths
- Introduce NCETM materials which are supporting EY practitioners
- Examine how materials could be used in your classroom
- Consider appropriate pedagogies for EY and the role of the adult



## Proposed Early Learning Goal - Number

Children at the expected level of development will:

- Have an understanding of number to 10, linking names of numbers, numerals, their value, and their position in the counting order
- Subitise (recognise quantities without counting) up to 5
- Automatically recall number bonds for numbers 0-5 and for 10, including corresponding partitioning facts.
- Automatically recall double facts up to 5+5;
- Compare sets of objects up to 10 in different contexts, considering size and difference;
- Explore patterns of numbers within numbers up to 10, including evens and odds.



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The 5 Big Ideas: what relevance do they have for reception?



#### **NCETM Progression Materials - Six Key Areas**

- Cardinality and Counting
- Comparison
- Composition
- Pattern
- Shape and Space
- Measures



Feacher Enquiry & Research -

Teaching for mostor



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#### Early Years

Key areas of early mathematical thinking explained, plus materials complementing the Numberblocks series.



Last few places for primary teaching for

Working collaboratively to enhance mathematics teaching

Our Secondary Round-up for September mastery Work Groups Apply now to join a Work Group fo

The

NCETM

Maths

NCETM Newsletter - September 2019 2019/20.

Our Primary Round-up for September is 13 Sept 2016

NCETM primary mastery professional development materials now complete

Secondary professional development materials published for KS3 28 Aug 2019

Community

News

is out 27 Sept 2019

20 Sept 2019

Podcast

NCETM nodcasts: CPD



### Quantitative and numerical knowledge

Specific quantitative and numerical knowledge is more predictive of later achievement than are tests of intelligence or memory abilities (Krajewski, 2005). Those with low mathematics knowledge in the earliest years fall farther behind each year.

(Arnold & Doctoroff, 2003; Aunola et al., 2004; Wright et al., 1994 cited in Clements and Sarama 2014)



### **Cardinality and Counting**

• The cardinal value of a number refers to the quantity of things it represents, e.g. the numerosity, 'howmanyness', or 'threeness' of three. When children understand the cardinality of numbers, they know what the numbers mean in terms of knowing how many things they refer to. Counting is one way of establishing how many things are in a group, because the last number you say tells you how many there are. Children enjoy learning the sequence of counting numbers long before they understand the cardinal values of the numbers. Subitising is another way of recognising how many there are, without counting.



# Order the statements, what are the difficulties for each statement?

- Counting saying the number names in sequence
- Counting tagging each object with one number word
- Counting knowing the last number counted gives the total so far
- Subitising: recognising small quantities without needing to count them all
- Numeral meanings
- Conservation knowing that the number does not change if things are rearranged (so long as none have been added or taken away)



#### Compare the images



Pilot ELG: Children have an understanding of number to 10, linking names of numbers, numerals, their value, and their position in the counting order.





# I can count to 20 – a useful episode of the Numberblocks to practice counting to 20

Numberblobs (counters)

A mastery curriculum would aim at children understanding numbers to 10 deeply, but be able to count to 20 and beyond.





### Subitising

- Subitising is "instantly seeing how many." From a latin word meaning suddenly, subitising is the direct perceptual apprehension of the numerosity of a group.
- Research shows that this is one of the main abilities very young children should develop. Children from low-resource communities and those with special needs often lag in subitizing ability, harming their mathematical development.

(Clements and Douglas 1999)

Do we stifle our children's instinct and ability to subitise when we teach counting?



#### Subitising activities





































### Subitising could be...

- Say what you see link the quantity to a number word
- Show what you see link the quantity to another physical representation of the quantity, e.g. on your fingers
- Match what you see with another pictorial representation

or numeral







#### Number experts!

- Compare whole class subitising and small group 'rich' activity
- Consider 'big ideas' variation
- Observe how areas of mathematics overlap



### Pedagogy - consider the adult role in...

- Planning Maths sessions which allow for progression in the development of the six areas
- **Providing routines** which offer opportunities for discussion, problem solving and mathematical thinking
- Providing an environment which supports continued mathematical thinking in child initiated activities

# Routines

Taking opportunities for mathematical learning in:

- Registration
- Lining up
- Timetable
- Snack
- Tidy up time







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#### Snack









#### http://www.emwest.co.uk/wpcontent/uploads/doc/Mathematical%20Snack%20Times.pdf

#### Mathematical Snack Time

#### in the Early Years

#### Introduction

Think of snack time in the Early Years setting and you may not necessarily think maths. Snack time is a daily routine in many early years settings, offering many wonderful opportunities for learning including personal, social and emotional development. Snack times can also be a manageable and effective means of offering a range of rich opportunities for mathematical learning.

## Tidy up



#### Tidy up time

NRICH Early years **Davenall, J**. (2015) <u>http://nrich.maths.org/11528</u>









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## Voting station

• <u>https://nrich.maths.org/13894</u>





#### 4 more people to vote: what might happen?



#### Composition - see display

• Knowing numbers are made up of two or more other smaller numbers involves 'part-whole' understanding. Learning to 'see' a whole number and its parts at the same time is a key development in children's number understanding. Partitioning numbers into other numbers and putting them back together again underpins understanding of addition and subtraction as inverse operations.





- Is there something you can change in your classroom straightaway?
- What discussions will you have with your fellow practitioners?
- When can you plan some time for your own PD? What can you do?
- Will you need a discussion with your SLT?