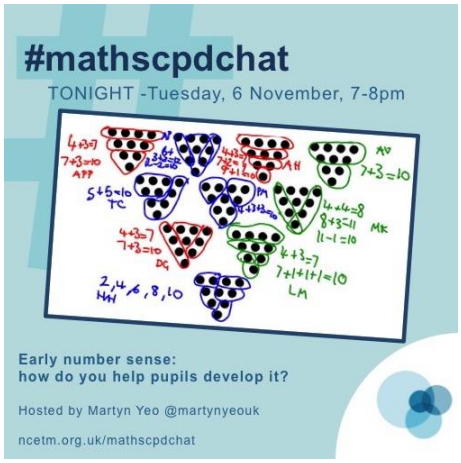
National Centre for Excellence in the Teaching of Mathematics

#mathscpdchat 6 November 2018

Early number sense: how do you help pupils develop it?

Hosted by @martynyeouk

This is a brief summary of the discussion – to see all the tweets, follow the hashtag ***#mathscpdchat*** *in Twitter*



Some of the areas where discussion focused were:

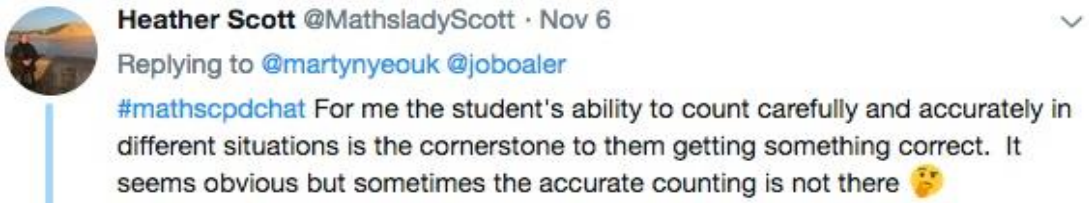
- research into the development of number sense is concerned with either the **acquisition of number sense by young children** or with the **number sense that people require to function well** in the world;
- hard to define 'number sense'; the **human competences and abilities indicating the existence of number sense** that have been revealed by research;
- pupils' number sense can become impaired when they are introduced to **calculation-algorithms** … ways of addressing that;
- ability to **count carefully and accurately** in different situations;
- providing opportunities for pupils to **count in different ways, forwards and backwards** … counting circles …;

- **counting errors** … eg counting the moves from one object to another instead of counting the objects;
- **using fingers** to support counting … 'hands-on-the-table' policy to see which pupils are using fingers … 'using fingers' as a strategy to move on from … using fingers to develop an early sense of composition of numbers;
- ability to **'see-at-a-glance' what the number of things is (to 'subitise')**;
- using **dot images** and other visual prompts to build up **'conceptual subitising'**;
- **different ways of expressing** the same number;
- the imagery of **'Number Blocks'**;
- using **Cuisenaire rods** … focusing on number relationships;
- using **classroom displays** to support the development of number sense … e.g. 'Christmas countdown' done with different images (representations of numbers);
- **variety of resources** that can be used to help develop number sense … e.g. pegs-and-pegboards, Numicon, NRICH tasks, 'snakes-and-ladders', games from the Erikson Institute, hopscotch in the playground, 100-square in the playground …

An interesting 'conversation' of tweets, about some ways of trying to develop pupils' number sense (including if/when 'using fingers' is helpful), followed from this tweet by Martyn Yeo:

including this one from Simon Gregg:

this from Heather Scott:



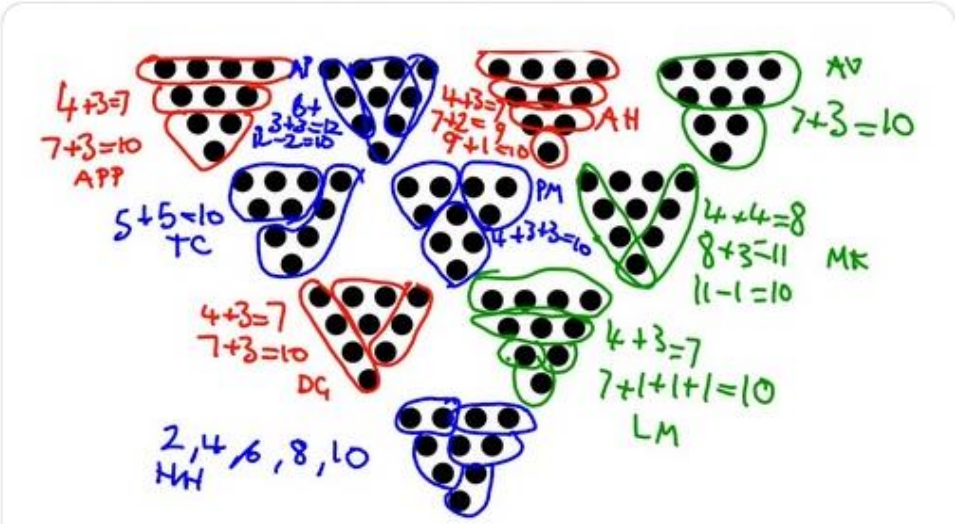
this from Simon Gregg:

Simon Gregg @Simon_Gregg · Nov 6

Dot images and other visual prompts are great for building up 'conceptual subitising' where we use arrangements to build up from smaller arrangements that we visually recognise. #mathscpdchat

A recent post on this, when you have time:

followinglearning.blogspot.com/2018/10/a-hund…



and this one from Alison Hopper:

Alison Hopper @AlisonHopper68 · Nov 6

Finger perception is key as well - bunny ears and growing/throwing numbers with your fingers. I sat with a Y7 who didn't 'know' that he had 10 fingers ...

this from Martyn Yeo:

Martyn @martynyeouk · Nov 6

Replying to @AlisonHopper68 @PardoeMary and 2 others

Oh wow! Do you think using fingers is a good thing? I heard of a school who banned children from using their fingers!!! #mathscpdchat

this from Oliver Mills:

Oliver Mills @OliverRMills · Nov 6

Replying to @martynyeouk @PardoeMary and 3 others

It's a strategy to move on from. For a calculation like 87 + 8 I wouldn't want any members of my class (8 and 9 year olds) using fingers. I'd want them to either bridge (87+3+5) or adjust (87+10-2)

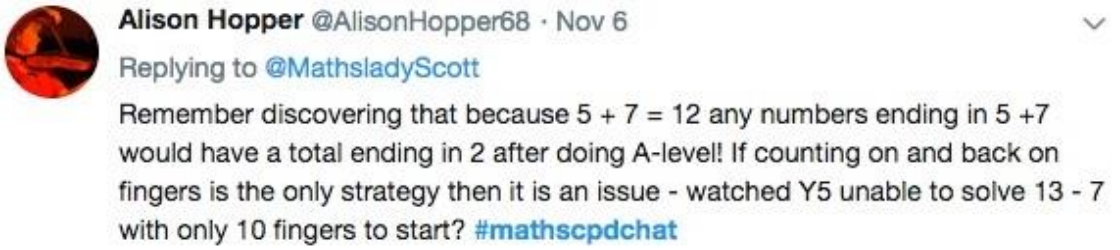
this from Alison Hopper:

Alison Hopper @AlisonHopper68 · Nov 6

Not using them to calculate and count on but to develop a sense of composition of numbers early on it is key. I had a strict hands-on-the-table policy so that I could address the persistent counters-on-in-1s and work on strategies and fluency #mathscpdchat

this from Heather Scott:

this from Alison Hopper:



and this one from Alison Hopper:

(to read the discussion-sequence generated by any tweet look at the 'replies' to that tweet)

Among the links shared were:

'Subitising': developing a sense of number in Early Years which is an article in the NCETM Primary and Early Years Magazine 104; the article explains what is meant by 'perceptual subitising' and 'conceptual subitising' and gives links to useful information and examples, shared by Martyn Yeo

A hundred pattern which is an illustrated blog by Simon Gregg about using dot-images (and other images) to help Y4 students develop, refine and learn from, their subitising abilities, shared by Simon Gregg

Counting Circles in Year 4 which is an illustrated blog by Simon Gregg; he describes lessons in which a particular teaching strategy is used to support pupils' in counting in order to develop their number sense, shared by Simon Gregg

Number Sense and Place Value which is an NRICH resource. It aims to support teachers in developing children's number sense and their understanding of place value. Shared by Mary Pardoe