

Let's talk about maths

Take every opportunity to encourage your children's use of mathematical language, says **Judith Stevens...**

All effective early years practitioners realise that talk is at the heart of maths learning. Quite simply, most of children's understanding about number, shapes and measures comes from talking about number, shapes and measures, and exploring them through everyday play indoors and outdoors. In this article, we will explore the essential nature of talk and the role of practitioners in supporting children's mathematical vocabulary.

As all those working to support children's communication and language development through the Every Child a Talker programme know, the interactions children have with their families play a major role in their early language use. This applies to all of the vocabulary children use, so if families are using lots of descriptive and comparative mathematical vocabulary as part of everyday talk, then children are likely to be using that vocabulary too. They'll join early years settings talking about 'big, bigger and biggest' and using number names with confidence – although not necessarily in the right order!

But huge differences have been found in both the receptive vocabulary (understanding) and expressive vocabulary (talk) for children. By the age of three, those in the families who



For **children** to be able to **access** the **KS1** maths curriculum **fully**, they need to be **familiar** with over **400** mathematical words and **phrases**

JUDITH STEVENS

talk the most are likely to have a vocabulary in excess of 1,100 words, while children in the lowest talking families have less than 400, and in some cases significantly less. As we know that children often find naming words (nouns) easiest to learn, it stands to reason that children with the smallest vocabularies are less likely to be using descriptive, comparative or positional language.

It has been estimated that for children to be able to access the KS1 maths curriculum fully, they need to be familiar with over 400 mathematical words and phrases (National Strategies, 2000). So what can practitioners do to ensure that children have opportunities

FREE song download from Out of the Ark Music!

DON'T JUST GET YOUR CHILDREN TALKING ABOUT MATHS, GET THEM SINGING ABOUT IT TOO!

To access your free download of *I Love Maths* (taken from the book and CD *I Love Maths*) simply head to outoftheark.co.uk/mathstndownload.html, add it to your basket and check out before April 10th – you'll need to register to complete the process and receive your emailed link to the song, its score and a lyrics sheet.

Out of the Ark is also offering a 15% discount on the *I Love Maths* set – just quote TNMATHS on the phone or enter it in the discount code box during checkout (offer valid from 10/03/12 to 10/04/12). Visit outoftheark.co.uk or call 020 8481 7200.



Reflective learning

Children will be absorbed with TTS's smooth, reflective Mirror Pebbles collection. There are four different sizes, so the Pebbles have great mathematical properties for sorting, sequencing and counting. They're also great for developing concentration skills, hand-eye coordination and for stacking and construction. Visit tts-shopping.com or call 0800 318 686



to develop such an extensive expressive vocabulary? A lot of this depends on careful, reflective planning which builds on what children know and can do and is informed by children's enthusiasms and passions.

Practitioners need to consider very carefully the environment they provide, including ways in which to enrich continuous provision; specific activities planned to support children's understanding of elements of maths; the vocabulary they introduce and model the use of; and the enabling statements and open-ended questions they ask.

Talking about number

Recent research about the home environment has shown that parents can impact on their child's cardinal-number knowledge – for example, knowing that the word 'three' refers to sets (groups) of three entities, such as cars, dinosaurs or apples. It seems that parents' number talk which involves counting or labelling sets of visible 'real' objects in the 'here and now' is related to children's later knowledge of this critical area of mathematical development. When parents talk about groups of between four and 10 objects, this is

findoutmore

Judith Stevens is an author, consultant and trainer specialising in communication and language and mathematics. Her latest book, written with Carole Skinner, *Foundations of Mathematics – An active approach to number, shape and measures in the Early Years* (Continuum) will be published this autumn. Visit earlylearningconsultancy.co.uk

TRY

Make a word cloud with the children – if a word is included four times, it isn't repeated four times in the word cloud but is shown four times bigger. So, if lots of children use words like 'big', 'huge' and 'giant' then these words will be bigger in the word cloud, and unique words like 'humongous' or 'mammoth' would be smaller.

introduce new descriptive vocabulary about size through a book which is very similar to the beloved traditional tale of *The Enormous Turnip*: Brenda Parkes and Judith Smith's *The Enormous Watermelon*.

The class teacher began by sharing the big book with two groups of children, including a group of children due to move into the Reception class at the end of the term, and a group of three-year-olds. The children were excited and engaged by the story, joining in animatedly with the telling. Unsurprisingly, when the youngest children were asked to share words which mean the same as, or are similar to 'enormous', the words included just 'big' and 'giant'. More surprisingly, the older children didn't really use many more descriptive words, suggesting 'big' and 'giant' and also 'gigantic', 'massive' and 'fat' – a total of just five descriptive words.

A short while after sharing the book, the children went home, each clutching a speech bubble. Every family was asked to talk about 'size' words with their child, and to bring back one word, written in the bubble. Over the following week, more than 50 words were identified, with children and families engaging enthusiastically with the task.

Practitioners used the words gathered to form a word cloud – these can be created very easily online at worditout.com or wordle.net. The resulting cloud was shared with families and displayed in the maths workshop, so that all practitioners could use the words for the rest of the term. Soon children were using wider descriptive vocabulary for things that are 'enormous', and this impacted on use of descriptive vocabulary in general too.

Finally...

When you are developing your planning, remember to include mathematical vocabulary at all stages. In your long-term overview, have some idea of the breadth of vocabulary you want to include. Ensure that you use your observations of children and their interests to inform your short-term plans. Be sure to display the vocabulary, and possible enabling statements and questions so that all adults can use them – and share the words with families too. One good idea is to laminate individual words and phrases and hang them on folding sock dryers above the sand, water or small world play areas, so that everyone remembers to focus on maths talk.

Extend their vocabulary!

WHEN WE ARE SUPPORTING CHILDREN'S DEVELOPING KNOWLEDGE AND UNDERSTANDING OF SHAPE, SPACE AND MEASURES, WE CAN INTRODUCE SPECIFIC VOCABULARY AND USE QUESTIONS WHICH EXTEND LEARNING AND ENABLING STATEMENTS WHICH WILL SUPPORT CHILDREN'S THINKING.

Try the following:

- What can you say about the weight of this car?
- I wonder if anything weighs more than the red car.
- Which bag feels the heaviest?
- I can't see out of the window from here.
- Can you explain how you know they weigh the same amount?
- Gosh, if you lay on the floor, your model looks different.
- How many shells do you think it takes to balance the box?
- How strange that you can make a cylinder shape by rolling that flat piece of paper.

even more effective than talk about smaller sets – so playing with farm animals or cars and a garage and using number names will make a difference. So what are the implications of this? I think, firstly, that we need to be working closely in partnership with families to support all aspects of children's learning and development. Parents want to know what they can do to support their child's learning, and we can give them practical, doable fun suggestions. Secondly, we need to ensure that we model effective behaviour too – talking with children about numbers to 10 (and beyond, where appropriate) when acting as co-players in children's imaginative small world play.

When we are supporting children's developing knowledge and understanding of number, we can introduce specific vocabulary and use questions which extend learning and enabling statements which will support children's thinking:

- What can you tell me about your favourite number?
- I wonder if anyone can guess the number of bugs Mrs Frog has eaten.
- How could we record the number of beans in the box?
- I can only see nine Wellington boots.
- Why is that number so important?

- I'm wondering why Mr Puppet has said there are four apples, and I can see five.
- How many blocks can we build up before they all topple over?

We need to remember that, sometimes, making a statement will promote more discussion than asking a direct question, which can be quite daunting for some children.

Shape, space and measures

When children are confident in their use of number names, we sometimes assume that they have a wide vocabulary for all elements of maths too, but this isn't always the case. Practitioners in an outstanding nursery class in London decided to focus on children's mathematical vocabulary development as part of a small-scale action research project (Kent and Stevens, 2011). The nursery offers a stimulating, rich environment and the children are all very familiar with 'number rhymes' and explore these through props and experiences.

The nursery team knew that many of the children were engaged in current play themes around monsters, dinosaurs and aeroplanes. They loved to talk about 'big' things, and often clambered into a climbing tree in the outdoor area – 'I'm bigger than you, I am'. So, an obvious 'way in to learning' was to