

On the go

In this second part of our new series on age-appropriate maths, *Judith Dancer* explores the needs of younger and older toddlers

To support the early maths learning of younger and older toddlers (up to age two), we need to start by thinking about what toddlers are like, what they do and what they are interested in. Like babies, young children are exploring, investigating and developing their understanding of the world around them. But they are also more mobile – if they want something, they can generally get it.

They may still crawl or bottom shuffle, but more often are cruising, walking, running and climbing, in, on and through everything and anything. This peak in activity, coupled with most young toddlers' seemingly endless energy and overwhelming curiosity, means that this is a key time to explore shape, space and position with these enthusiastic young learners.

The children's fine motor skills are developing too – they are often picking up small (and sometimes inappropriate) objects with a thumb and index finger, they are beginning to build up, or more often, knock down, blocks. Many toddlers love to fill, and empty, containers – this is the time they may post a set of keys or a credit card into the strangest places, if they get the opportunity.

They enjoy filling jugs with water and emptying the water onto the floor, and may do the same with their food. Balls can be the source of endless fascination, and rhymes and songs, particularly those with gestures and actions, can be a great source of amusement. In addition to this, toddlers are also beginning to associate sequences of events with daily routines – for example, water running and a familiar adult picking up a towel.

SUPPORTING TODDLERS: WHAT CAN WE DO?

Much of the good practice that applies to working with babies can also be applied to our work with tod-

dlers – for that information, see Part 1 of the series, 'That figures'.

Practitioners working with toddlers need to observe what individual children are interested in and offer lots of opportunities to investigate and explore appropriate resources indoors and outdoors. It is important to build on children's early understanding of routines, talking explicitly about what is happening and what is going to happen next. Toddlers respond well to cues – talk to them about what you are doing and they will link the arrival of bowls and trays to lunch time.

If most toddlers are moving around a lot and exploring, how can practitioners build on this?

Look carefully at the room provision for toddlers. Of course, the children need to be safe, but they also need challenge and opportunities to do the things they want, and need, to do – to run, climb, jump and make lots of noise. Children can find out a lot about space and position if they have time, space and support to:

- be underneath things – under attached fabric pieces, camouflage netting, blankets or covers
- move over things – cushions or bean bags
- move up and down shallow slopes unaided
- move to a slightly higher level – for example, on a wooden platform, to view things from a different angle
- lie on the floor, roll around and look up
- be inside things – huge empty cardboard boxes, hollow wooden cubes, tents or dens
- walk up and down steps, holding hands
- use small wheeled ride-along toys and push-along toys.

Exploratory experiences for toddlers

Within this secure environment, which offers children challenge, practitioners can support toddlers' exploratory tendencies by providing



MORE INFORMATION

- Mathematics: Part 1, 'That figures', www.nurseryworld.co.uk/nursery-world/feature/1155658/learning-development-mathematics-part-1-that-figures
- For our maths series by Carole Skinner and Sheila Ebbutt, visit: www.nurseryworld.co.uk/mathematics-in-eyfs
- Bennett, E and Weidener, J (2011). *Everyday Maths Through Everyday Provision*. Routledge
- Dancer, J (2015). *Mathematics in the Early Years: A handy guide to supporting the development of children's mathematical skills*. PACEY
- Dancer, J and Skinner, C (2015). *The Little Book of Shape and Space*. Featherstone
- Skinner, C and Stevens, J (2013). *Foundations of Mathematics: An active approach to number, shape and measures in the early years*. Featherstone
- Stevens, J (2013). *Development Wheel: A Guide to Mathematics*. KMMD Publishing



stimulating resources that offer first-hand opportunities to find out more about shapes. At this stage, it is really important that children have time to find out about things which are 'the same' and things which are 'different'. Practitioners need to model the use of language appropriately.

Ball games

- With younger toddlers, roll the ball along the floor to the child's grasp. Remember, at this stage, children have single-channelled attention, so they will either focus on the ball, or on you talking – they can't do both at once. Children will find out more about the spheres through repeated experiences such as these than looking at pictures of spherical objects, which is inappropriate.
- With older toddlers, roll balls down slopes together, throw, bounce and kick balls and support children as they begin to catch balls. Children find out about spherical objects by exploring them and playing with them. Practitioners can model the language of the things balls can do



Putting items inside receptacles and then removing some of them is an ideal activity for younger toddlers

may spend more time knocking the blocks down than building them up, and many will need lots of support when they begin to stack as this can be a difficult and frustrating process for young toddlers.

As older toddlers become more confident, show them how they can make a simple 'bridge' with three blocks, balancing one on two other blocks.

Posting games

With younger toddlers, post items into a box together, then empty out some of the contents, or all of the contents. Introduce 'posting box' shape activities and take turns posting the shapes together.

Emptying and filling

Children need lots of time to empty and fill a variety of containers with water, sand and other natural materials and play resources. This is the time to make collections of assorted bottles, bowls, boxes, bags, trays, baskets, jugs and kitchen receptacles for toddlers to explore. Use words such as 'fill', 'full' and 'empty' as children are playing, but don't expect them to repeat the words. They need to hear these lots of times, in meaningful situations.

Remember, when you are supporting toddlers' understanding of space, shape and size, the focus is on hands-on, active, fun activities. This is not a time to expect children to repeat shape names or colour names. Children learn by doing and, like ➤

Remember, the focus is on hands-on, active, fun activities

– for example, roll or bounce – and the descriptive vocabulary of size ('it's a big ball') as part of everyday language, but not expect children to use the words themselves yet.

Building with blocks

Children need access to different sorts of blocks, including hollow wooden blocks, solid wooden blocks and empty boxes. Younger children

EYFS MATHS AT A GLANCE

Numbers

- Numbers in order
- Counting
- Recognising numerals
- Adding and subtracting

Shapes

- 3D shapes
- 2D shapes
- Position, direction and movement
- Pattern and symmetry

Measures

- Length
- Weight
- Capacity
- Time

Throughout this series, these elements will be explored

alongside lots of practical ideas for appropriate experiences for babies, toddlers and young children.

Aspects and early learning goals

Practitioners need to remember that the early learning goals for Mathematics are expectations for the end of the Reception year. Babies and very young children need environments and experiences that are appropriate to their current needs and interests.

Numbers

Children count reliably with numbers from one to 20,

place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.

Shape, space and measures

Children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. They recognise, create and describe patterns. They explore

characteristics of everyday objects and shapes and use mathematical language to describe them.

Development Matters

The EYFS non-statutory guidance states it is important to remember that: 'Children develop at their own rates, and in their own ways. The development statements and their order should not be taken as necessary steps for individual children. They should not be used as checklists. The age/stage bands overlap because these are not fixed age boundaries but suggest a typical range of development.'

babies, toddlers need lots of time to explore:

- things that are 'the same' and things that are 'different'
- things that are different sizes – some that are big and some that are smaller
- things that are different shapes, with different properties – some that are spheres (like a ball) and roll, some that are cuboids (like a die) and don't roll, and some that are irregular 3D shapes (like a boat or a teapot).

Numbers

The EYFS identifies two aspects in Mathematics: Numbers and Shape, and Space and Measures. Most appropriate experiences for toddlers support both aspects of mathematics, as well as other Prime and Specific areas of learning.

Children's understanding of number starts from birth and develops gradually. Very young children develop an awareness of number names and, with the right support, use these in their speech as they begin to talk. As well as hearing cardinal numbers, 'one, two, three, four, five...', children need opportunities to hear ordinal numbers, which show order or rank – 'first, second, third...'

One obvious use for ordinal numbers is in a sequence of events – for example, 'First we need to turn on the tap.' If practitioners use numbers as part of everyday talk in real-life situations, children are likely to begin to use them too, without differentiating between 'maths talk' and 'all talk'. Alongside the use of number names in meaningful contexts, such as 'Oh, you've got two cars', children need to hear the wider vocabulary of quantity. At this stage, talking about 'lots', 'more' and 'all gone' is really important.

Some experiences that support toddlers' understanding of number and quantity include joining in with simple finger rhymes, such as:

Two Little Dicky Birds, sitting on a wall

*One named Peter, one named Paul.
Fly away Peter, fly away Paul,
Come back Peter, come back Paul.*

Remember to include all the actions as you chant together and, when the children know the rhyme, change the words to use the children's own names. It doesn't matter if it doesn't rhyme.

Other experiences include:

- playing with collections of things



that interest and fascinate together – for example, exploring large plastic animals, lining them up, putting them into boxes, sharing them out... 'One for you, and one for me', 'Oh wow, you've got more than me', 'What a lot of elephants'. Spend time sorting out things together – put the animals in one basket and the cars in another.

- building up blocks together – taking turns to add a block to the tower... 'You do one, I'll do one', 'Can we do one more?', 'Lots and lots of blocks...' and knocking them down, 'Crash, all fall down.'
- engaging in 'domestic play' together – pouring pretend cups of tea into cups and 'drinking' them... 'One for you and one for me', 'The biscuits have all gone', 'Do you want more bananas?', 'You have got more biscuits than me.'
- making marks together – using sticks to make marks in damp sand or mud, or fingers to make marks in cornflour, hypoallergenic shaving foam or finger paint.

Key points to remember

The experiences that a toddler has are absolutely crucial for future development and life. When we are supporting toddlers' mathematical development, we need to remember that 'All areas of learning and development are important and inter-connected' (EYFS Statutory Framework, paragraph 1.4) and not try to 'teach' maths in isolation or by rote.

We need to ensure that we are interacting appropriately with toddlers at all times – talking about what we are doing and why, using mathematical vocabulary for toddlers to hear, but not expecting them to use the words themselves. When older toddlers do begin to use words such

'Domestic play', such as having tea, develops children's understanding of number and quantity

as 'more' and 'lots', show that you are listening by repeating back what they have said. If they say 'dor' instead of 'more', model the word 'more', but don't expect them to repeat it.

All mathematical experiences need to be pleasurable, enjoyable and positive for toddlers. They need time and space and enthusiastic adults to share practical, hands-on early mathematical experiences with them – moving around, through, under and over things, building blocks up and knocking them down, posting objects into boxes and posting boxes, filling and emptying containers, making lots of noise with percussion instruments and everyday objects, joining in finger rhymes, making marks in damp sand and mud and with paint and markers, exploring indoors and outdoors and looking at things and talking about them together.

These quality experiences will continue to provide firm foundations for all later mathematical experiences. ■

Practitioners should not try to 'teach' maths in isolation or by rote

MATHS IN OUR DAILY LIVES

Although we may not see ourselves as mathematicians, we are interacting with numbers, shape, space and measures all the time. Think about how you use one part of space, shape and measure – space:

- Is there enough room in the freezer for another carton of ice-cream?
- Will the car fit into the parking space?
- How many more jumpers will fit in the suitcase?
- Can you squeeze the three-seater sofa in along the shorter wall?
- Can all the Christmas decorations fit back into the box?
- How much more will fit in the rubbish bin?

We all use measures, including time, every day. But sometimes we don't realise how much maths we understand and use.