

A parent's guide to... measurement

There are many interesting ways in which you can introduce your child to this important skill. *Penny Tassoni* explains



Understanding measurement and being able to measure accurately is an important mathematical skill. It is also a practical one, as we use measurement in many aspects of our lives. If you drive, for example, you should be watching the speedometer – the device that measures speed, or when listening to the weather forecast you may listen out for the prediction of temperature in Celsius – a way of measuring heat.

FIVE THINGS YOU NEED TO KNOW ABOUT MEASURING

1. Children tend to be natural measurers

It would seem that many children are primed to be able to compare quantities. A good example of this is the way that by three years old, most children notice if another child has a larger slice of cake than theirs or when their cup is nearly empty.

2. Children learn best through practical experiences

To learn about an object, children need to consider various measurements. These include weight, height, volume and length, as well as overall size. Learning for children is always easier if it is done through practical experiences, as this way they can understand the concepts (height, weight) and the language (heavy, deep, wide) of measurement much more easily.

3. Time is hard for children to understand

Time, of course, can also be measured, but it is not something that is given much attention in children's early learning. This is because it is much harder for children to explore, and understand – you can't touch or see the passing of a minute or an hour in the same way that you can touch two objects and feel which is the heavier.

4. Children learn by using 'non-standard units' first

While eventually children will learn about 'standard units' such as centimetres, grams and litres, children begin to learn about measurement by using more familiar 'non-standard units' – such as the length of their hand – to help them to make comparisons. For example, is the book longer or shorter than their hand?

5. The next step is to link counting and measuring

Once children are starting to use the language of counting ('there are three cups on the table'), and can make comparisons using measure ('this bucket is much heavier'), the next step is for them to learn to quantify these differences. This is where their knowledge of counting and number come in. So, children may count how many cups of water it takes to fill up a large bucket as opposed to a small one.

LEARNING THE LINGO

One of the main ways in which you can help your child learn about measurement is to help them learn some of the specific words that are associated with it.

This doesn't mean sitting down and teaching your child, but instead just using words linked to measuring when the opportunity arises. This way, your child can make the connection between the concept and the word. Here are some suggestions.

Weight Specific words: heavy, light, heavier, lighter, heaviest, lightest, equal/same weight. For example, 'This bag is the heaviest. I wonder which is the lightest?'

Height Specific words: tall, short, taller, shorter, tallest, shortest, high,

low, higher, lower, highest, lowest, equal/same height. For example, 'Who in the family is the tallest? Who is the nearly the same height as you?'

Length Specific words: long, short, longer, shorter, longest, shortest, equal length. For example, 'Which is the longest piece of string?', 'These socks are shorter than yours.'

Width Specific words: wide, thick, narrow, thin, wider, narrower, thinner, thicker, widest, narrowest, thinnest, equal width. For example, 'Which ribbon should we use to wrap this present – the thick one or the thinner one?', 'Is the blanket wide enough to cover your bed?'

Volume and capacity Specific words: full, empty, fuller, emptier, deep, shallow, deeper, shallower, deepest, shallowest, fits, contain, hold. For example, 'The jug is nearly empty. Do you want to fill it?'

Distance Specific words: near, close, far, nearer, closer, farther, nearest, closest, farthest, side by side, alongside. For example, 'How far do you think this toy car will roll?', 'Grandma's house is near the school.'

General Words often associated with measuring activities: compare, guess, estimate, medium, equal, exactly, nearly, almost, too (too heavy, long), most, least, amount. For example, 'Let's compare these toy cars. Which one is the heaviest?', 'This train track is too short.'

LEARNING TO ESTIMATE

One of the skills you can practise with your child is estimation; this is about making an informed guess. The skill is often linked to children's confidence, as children who find it hard are often worried they won't get the answer right.



You can help your child develop confidence when estimating or 'guessing' by routinely using opportunities to estimate – for example, 'Guess how many steps it will take to get to our front door' or 'I wonder whether we can guess which box will be big enough for these toys?'

Don't worry, or indeed laugh, if quite often your child's guesses are rather random and possibly illogical. This is normal for young children, who are still learning about the world. Instead, take their guesses at face value and show that you value their thinking.

Also try to make it clear that guessing is for fun and that it doesn't matter if their estimate is not accurate. As your child develops and they gain in experience, you may start to notice that their estimates become more realistic.

FIVE TIPS FOR LEARNING ABOUT MEASUREMENT

1. Shoes

Putting on shoes is a great way of helping your child compare sizes. See if your child can make the link between the length of their feet and the size of their shoe. You could

also talk about who has the biggest shoes in the family and who has the smallest shoes.

2. Cups and jugs

Pouring a drink is a good skill for your child to master, but it is also a way for them to experience measuring. Using a small jug, point out the difference in water level before and after they have poured water into their cup. You could also ask your child to pour you half a cup or glass of water.

3. Cooking

Children can learn a wide range of skills and concepts from being involved in preparing food. For a simple start, see if your child can pass things based on length and weight – for example, a couple of the heaviest potatoes or three of the shortest carrots. You could also show your child a set of measuring spoons, or spoons of different sizes, or show how scales are used to measure ingredients precisely.

4. On a walk

Every time you leave your home, there are endless opportunities for measurement. You could, for example, see who can spot the smallest car in the road, the largest building, or the tallest person. You could also guess how many strides it will take to reach a certain point or have a 'slow race' in which the person who walks the slowest wins!

5. Shower and bath time

Children are usually fascinated by playing with water. Having containers for your child to fill up and empty is a great way for them to learn about volume and capacity. Once your child has finished just enjoying this process, ask a few questions, such as 'Which one holds the most?' or 'How many

spongefuls of water do you need to fill up the cup?’

COMMON QUESTIONS

Q. We speak Polish at home. I am worried that our child will not know any of the English words for measuring.

A. Your child is one of those lucky children who will have access to two languages. Research suggests that there are many learning benefits for children who are able to speak more than one language.

When it comes to learning the language of measurement, use Polish equivalent words with your child. This is because to begin with your child just needs to understand the concepts and be able to label them in their own mind.

A strong start in your home language will mean that your child will then easily be able to pick up the equivalent words in English. It will also be worth talking to your child’s nursery or childminder, as you may find that your child is already getting plenty of opportunities to learn about measuring and its associated vocabulary.

Q. What is the right age to show a child how to use a ruler?

A. There is no ‘right’ age as such, but your child will need to be able to recognise and understand numbers before they start to use rulers or measuring tapes accurately.

Having said this, children can learn a lot by copying adults, so you might like to involve them next time you use a measuring tape or ruler. If it is safe to leave out this equipment, you may then find that your child will copy your actions in their play.

ACTIVITIES

The following suggestions for simple activities can help to



develop your child’s awareness of measurement.

Wrapping presents

The simple act of wrapping a present is full of mathematical opportunities as well as practical skills. You could begin by encouraging your child to look at the present to be wrapped and to compare it to the amount of paper you have available.

You could talk about how the paper will need to be larger than the actual present, for example. If you have several pieces of paper, your child could select the paper of the best size. Your child could also be involved with putting the sticky tape on the package and see that a longer strip of tape is needed for longer edges than for shorter ones.

If you have decorative ribbon, your child could also estimate how much ribbon will be needed to go around the package. Afterwards, they may want to continue with this; it is worth leaving out some newspaper, ribbon and sticky tape so they can pretend to be wrapping up presents.

Ordering

Any activities that involve putting things in order will be helpful

for your child. This is because ordering involves comparing attributes. There are many ways in which your child might be able to order objects.

For example, as part of their play, you might draw their attention to dinosaurs or farm animals that are of different sizes and then put them in order.

If you have a range of spoons in your kitchen, you could put one of each size out for your child to play with. Some everyday objects also come in different sizes, such as cookie cutters, gift boxes and saucepans.

Which hand?

If you want to play a traditional game with your child, you could put two items of different lengths – for example, drinking straws – into each of your hands. Then put your hands out in front of your child, and ask your child to guess which hand is holding the shorter item.

After your child has chosen, open your other hand so that you can now compare the lengths. Afterwards, your child might like to be the one who holds the items and who asks you to choose! ■