



For children, so much of the world they hear people talk about is abstract. We speak using a plethora of words and phrases, all of which they need to understand.

I once heard a 5-year-old ask her mother,

“Mummy, what does *wait* mean?”

The mother was horrified. She realised that she uttered ‘*wait*’ all the time as she busily managed her young family’s needs. She suddenly realised that ‘*wait*’ is an **abstract concept**, and her youngest daughter had not yet been able to work out its meaning for 5 years!

When we can hold, explore, manipulate something real, it helps us make sense of the abstract words we use. Even as adults, we find it easier to understand a new idea if we have experienced it in some way.

Materialised Abstractions

For children, making the abstract something tangible (a materialised abstraction) is simply another ‘building block’ to numeracy and maths. We know from (*Delving a Little Deeper Set 1; Getting to Know You*), children absorb *everything*. This includes the objects they handle. Their hands connect directly with their brain.

“He’s got eyeballs on the end of his fingers!”

Foundations matter

Even tinies absorb important features of the objects they handle. (*Turning Little Stones Podcasts - Season 1; episodes 4, 6, 23*).

As children manipulate a whisk in a treasure basket, they will be absorbing its qualities. These play-explorations find children focussed, attentive, drawn to something, a sure indication that these concepts are being assimilated as blueprints in their mind – their ‘Mathematical Mind’.

For young children, the visual sense is a *supporting sense*, not their prime sense. They primarily explore through touch, taste, movement... their visual sense only evolves as the dominant sense as children mature.

And so, *baskets of treasure* and *heuristic play* are give young babies and toddlers rich experiences which are foundational, preparing them for all things mathematical - ‘materialised abstractions’.



SET 2 Delving *a little* Deeper
Get Ready, Set, GO for Maths! –
Audio 2 – Get Set... Materialised
Abstractions

Companion Notes
Set 3 Audio 3
with Sarah Rowledge

Consider a little...

What resources do we have for our children to simply touch and manipulate?

Can you find more everyday objects of interest to fill a basket for heuristic play?

What is needed to '*Get in SHAPE!*'

Materialised abstractions can refer to any concept (weight, temperature, time, distance, volume, dimension...). In this audio, our focus is on how children can be supported to absorb the properties of SHAPE and fractions. And these are principles that are transferable to other abstract concepts. They are all solid foundations for learning maths.

Max and his 3-year-old friends (loved playing with the indoor wooden blocks. Over time, they created more complex structures and created stories in their play as they introduced cars, trucks, play people...

Staff could see how rich this play was for Max and his friends. They socialised, negotiated, found ways to balance blocks to make tall towers, rockets, bridges, and multistorey car parks... As they played, they were clearly absorbing the features of the 3-dimensional shapes (blocks) they handled.

His key person, knew that knowing (understanding, using, and naming) 3-dimensional shapes was an important mathematical learning goal (in the long term). She understood that as the children played, they were absorbing the properties of the solid shapes. She decided to focus on shape and introduce a few names as they handled them.

She knew she had to do this subtly, so the play continued and was not turned into a 'lesson'.

As Max handled a *cube*, she named it,

"Oh, Max, you've got a *cube*. I wonder where you'll put the *cube*".

She then narrated where he had positioned it,

"Ah, you've put the *cube* onto the wall, the *cube* looks good there."

As a different shape was placed as a turret, the children heard her say,

"That *cone* looks good there. I wonder if we can find another *cone* for the other side of the wall".

This example shows how we can easily slip in the name of whatever they are using as children manipulate something physical in play.. The word becomes real and relevant.

Max continued to enjoy the construction den at nursery and has heard relevant language whilst playing. In time, his key person wanted to check out whether Max had absorbed the language, so one day, she picked up a couple of blocks and asked,

"Which would you like next, the square based prism or the cube?"



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His choices showed her how much of the language had been assimilated and she realised that he had grasped the names of a few favourite solid shapes that she named.

Now she wanted to see if Max could recall the names of some favourite 3-D shapes without prompting. She asked him,

“Tell me which you would you like to use next?” When he said the name confidently, she knew that their learning was fully assimilated and could now be used in everyday activities.

At school, children will be expected to understand, use, and reiterate the names of the 3-dimensional shapes as part of the maths curriculum. Typically, this is taught in a maths lesson using 2-dimensional tools (whiteboards, worksheets etc.)

For children, such as Max and friends, who have experienced block play with support from a knowledgeable adult, they will be confident to understand, use and explain the solid shapes at school. They have genuinely been learning-through-play, supported by a skilled, informed adult. They will no longer need the experience of manipulating the shapes because they have a thorough understanding through using ‘materialised abstractions’.

Fractions, it's a piece of cake!

Sarah uses toast to introduce children to fractions at Breakfast Club.

The youngest children hear her use the words ‘half’ and ‘quarter’ as they select their toast.

“You’ve chosen a *half*; you’ve chosen a *quarter*.”

After several months, she asks children to make choices as she cuts the toast.

“How would you like your toast cut? Would you like it in *quarters* or in *halves*?”

After a few more months, she encourages children to ask her which one they want,

“I’d like the *quarter* please, Sarah.”

These children are hearing the language of fractions, they make connections, and she is waiting for the moment when they can verbalise the language of fractions correctly. The wow moment!

These examples are essentially a de-constructed ‘3-period lesson’ that some childcare approaches use. The joy of presenting such language over a length of time is how easy and graceful children absorb their learning.



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Resisting the pressure

The important thing is to recognise and resist any feeling of pressure to get our children to a certain standard by a certain age.

Pressure kills the joy, the ease, the playfulness of learning for our children – and ourselves!

Before next time...

Spend some time deciding where you might need to plug some gaps in your mathematical knowledge before developing any anxiety around maths.

Stick to an area you are more comfortable with (as a staff team or parent partnership)

Practise using some of these examples. No special equipment is needed!

Consider accessing one of the courses below.

Further information, practical guidance and advice are available through,

Turning Little Stones

Delving a little Deeper

www.turninglittlestones.co.uk

and Sarah Rowledge

(early years trainer & consultant, senior lecturer, nursery manager and owner)

www.sarahrowledge.com