

Case Study – Dyscalculia

Tom - Impact on Number Sense

Independent Case Study – Dyscalculia Specialist Tutor, London

Background:

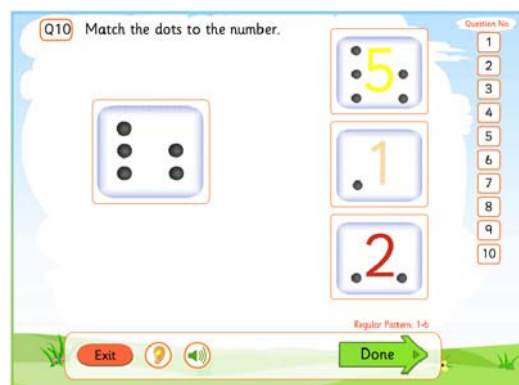
This is a case study about Tom aged 6 years and 4 months, who is a young learner who presented with co-occurring difficulties - auditory, visual-sequential and working memory. An assessment immediately identified that Tom experienced difficulties with perceptual and conceptual subitising. Perceptual subitising involves recognising a quantity without using other mathematical processes. This important skill helps children to look at a collection of objects and associate them with a number word and symbol. Tom's working memory and auditory processing weaknesses further impacted his learning of maths as he was also losing track of instructions given to him and found it difficult to hold visual images. These co-occurring difficulties mean that this happy, chatty little boy finds numbers very confusing.

Tuition:

Tom began specialist maths tuition aged 6 years 4 months. Tom's specialist learning support teacher began working with him using concrete resources, glass nuggets and dice for number patterns to develop number shapes and numerical relationships. Tom enjoyed using the materials and quickly began to understand what individual numbers 'looked' like. He began to instantly recognise their 'shapes', such as the pattern of 5 on a dice. If nuggets could be placed to make this pattern then he knew that there would be 5 of them. He went on to learn how each number shape could be combined with other number shapes to make a larger number, and what they would become if they were made one larger or one smaller.

Practice:

Tom then began to work with Dynamo Maths for ten minutes every day before school. This helped enormously as it provided him with the extended practice that he needed to overcome his memory weakness. As Dynamo Maths is visual and uses the same number shapes as he was used to manipulating physically, it worked alongside, and reinforced, the work that he was doing in class. It helped strengthen Tom's memory of the patterns and their relationship to other numbers and this helped with his recognition of number bonds, i.e. $4 + 3 = 7$.



Tom then moved on to learn his Bonds of 10. This is essential knowledge as without it, it is impossible to manipulate numbers mentally. Again, these pairs of numbers that go together to make 10 were introduced in a concrete mode, practised in a games mode and then reinforced on a daily basis using Dynamo Maths. Dynamo Maths also proved extremely valuable for practising the addition and subtraction of 10 to first a single-digit, and then double-digit numbers.

Outcomes:

The continual revisiting of his number shapes and number bonds, in a mode that he enjoyed, enabled Tom to store this knowledge in his long-term memory. The daily practice that Dynamo Maths provides also meant that the pathways to this knowledge was continually revisited and so strengthened. He gained not only an understanding of numbers and their relationship to each other, but also an automated recall of essential number facts. With this in place Tom was able to move on to answering maths questions asked in prose. Because he didn't have to stop and think about his number bonds, he was able to concentrate on decoding the questions and able to rapidly come to an accurate answer.

Not only does Dynamo Maths provide the resources to tackle co-occurring difficulties: auditory, visual-sequencing and working memory; the colourful images, engaging screens and encouraging language used meant Tom grew in confidence: a happy, chatty child who finally conquered his maths problems.

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