

Dyscalculia or Low Numeracy?

Workshop presented by Jane Emerson. www.emersonhouse.co.uk

Background Information.

A. Counting:

Counting forms the basis of all mathematics and all children need to develop flexible counting skills. Some children fall into a counting trap, and do not develop other strategies; they calculate by counting, without using knowledge or strategies such as place value, bridging, partitioning for example.

3 useful activities for developing early counting skills:

- Linear counting on caterpillar tracks and structured number lines
- Staircase Model using concrete models: Stern blocks/ Cuisenaire rods
- Dot pattern model to develop early number sense: Emerson House

B. Place Value

Place value knowledge forms the basis of understanding the Number System and can be introduced for numbers over 9 on Place Value mats. These numbers can be concretely built on the mats using base ten materials. The units can be built using dice patterns and the tens and hundreds can be built using base ten materials. The orange tens rods from Cuisenaire could also be used together with Cuisenaire units if children are familiar with them.

Advanced Counting and Place Value: Numbers involving up to 9 digits can be demonstrated into the thousands and millions using digit cards on the Thousands and Millions mats after concrete understanding has been grasped for Hundred, Tens and Units.

C. Calculations:

The main aim of early work is to help children to move on from counting in ones, to calculating using number facts knowledge involving number components, that is, number bond knowledge for each of the counting numbers up to 10, which can then be applied through the decades.

This can be demonstrated through using the dot patterns and counters on the caterpillar tracks to show that if 9 needs 1 to make 10, then 19 needs 1 to make the next tens number or multiple and so would 29 etc.

Advanced Calculations: The main aim is to help children to use their place value knowledge and universal strategies such as bridging and partitioning to calculate quickly and efficiently. Methods of recording their thinking can be explicitly taught, such as number lines and grid recording methods for advanced multiplication.

Note: Emerson House Maths has been developed from the work of the late Dorian Yeo, Maths Director at Emerson House to 2005.

References:

- The Dyscalculia Screener by Brian Butterworth published by nferNelson (6 to 14 yrs)
- Dyslexia, Dyspraxia and Mathematics by Dorian Yeo published by Wiley, 2003, for full theoretical descriptions.
- Dyscalculia Guidance by Butterworth and Yeo published by NFER for practical guidance, counting tracks, dot patterns and place value templates.
- Dyslexia and Maths by Kay and Yeo published by David Fulton, 2003 for a concise and practical summary.
- The Dyscalculia Toolkit by Ronit Bird published by Paul Chapman, 2007 for activities and games to promote skills and understanding.

Other useful reading:

- The Mathematical Brain by Brian Butterworth (Professor, University College, London.) for general reading.
- See www.mathematicalbrain.com
- Elementary Mathematics and Language Difficulties by Eva Grauberg published by Whurr, 1998 for teaching younger children with oral language difficulties.
- Teaching Maths to Pupils with Different Learning Styles by Tandi Clauson-May published by Paul Chapman, 2005.
- Mathematics Explained for Primary teachers by Derek Haylock published by Sage Publications.
- CAP IT All – By Fil Came & Gavin Reid , from Learning Works – for a useful section of informal Maths probes.
- Working with Dyscalculia – By Anne Henderson and Fil Came, from Learning Works – for practical ideas and a useful checklist for Maths learning difficulties.
- Base Ten materials: ‘Dienes’: www.nesarnold.co.uk
- Cuisenaire Rods from Berkshire Mathematics for Sharma information: www.berkshiremathematics.com and www.etacuisenaire.com
- Stern Materials, see www.mathsextra.com ref. Vikki Horner
- See www.dystalk.com for information and videos on dyslexia, dyscalculia, and dyspraxia.
- British Dyslexia Association: www.bdadyslexia.org.uk/dyscalculia.html
- See www.Dynamomaths.co.uk for maths software for dyscalculia.
- See www.smartkids.co.uk for useful maths equipment and games.

jane@emersonhouse.co.uk

www.dystalk.com for general information as well as on dyscalculia.