

Dyscalculia – Barriers to learning

External Barriers to learning:

Society

- It is culturally acceptable in the UK to say that you are 'bad at maths' - whereas it would not be acceptable to admit reading difficulties. In other countries, often ones that perform highly in maths, this is not the case.
- If we come across maths problems that we can't work out in our heads quickly, we often say 'I can't do maths!'
- Many people have bad memories of school maths that influence how they feel about it now. People also remember aspects of mathematics which they found difficult at school e.g. algebra and don't think about the maths they use everyday.
- More than half of the adult population is functioning at a level below the level required to function in society *Chinn 2011- 2012 Skills for life survey 2011* found 22% of adults functioning at a level above GCSE pass (A-C or above)

Teaching issues

Language

- A lot of Maths language is often ambiguous e.g. take away, times tables etc. Time needs to be given to specifically teach Maths vocabulary with the meaning clearly explained.
- Maths teaching often involves long complex explanations which children often struggle to follow.

Teaching styles

- Top Down teaching – where the teaching style is to explain how to do a procedure rather than building up the child's understanding of the concepts.
- The requirement to remember methods, facts and rules without an understanding of underlying concepts, without being secure with earlier learning and an ability to make connections to earlier learning.
- Giving learners time to understand and practise to become secure in a concept. Maths is a structured sequential subject; concepts' topics need to be built up sequentially. It is vital simple concepts are understood before moving on. According to Professor Sharma ([www.berkshire mathematics](http://www.berkshiremathematics.com)) there are 3

elements of mathematical learning: Concepts, Procedure and Language. Do we focus too much on procedure rather than understanding the concept and developing the language?

- Grouping of pupils, always assigning a teaching assistant to be 'velcro'd' to a pupil, making them feel different or 'stupid'
- Access to the qualified teacher for maths activities
- Constant withdrawal from whole class activities
- Giving homework out at the end of the lesson when there is no time to understand or record it properly

Teacher talk

- A learner with dyscalculia may have limited concentration skills and poor listening skills – giving too much information quickly can overwhelm pupils and makes it hard to process and pick out key information.
- Asking questions and wanting immediate answers – pupils need time to process what has been said.
- Too many instructions presented not in the correct order - pupil may be unable to remember and/or follow instructions.
- Not checking understanding.
- Give time to process or allow paired talk

Personal characteristics

- Loud, sarcastic impatient teachers who are not prepared to repeat instructions or explain again and give sufficient time for a task

Learning styles

- Teachers may have poor understanding of different learning styles in maths. Bath et al (1986) introduced the term grasshopper and inchworm
- Inchworms rely on knowing a procedure (i.e. maths is a collection of tricks and methods. But what happens if the procedure is forgotten?)
- Grasshoppers consider procedure, concept and language and have an understanding of all. If you forget the procedure you can work it out from the language and the concept
- Children need to develop both strategies but the teacher needs to be aware of a pupil's learning style and cater for both styles.

Self-esteem

- Regular opportunities to 'fail' impacts on self-esteem and confidence of dyscalculic pupils

Time

- Children need sufficient time to consolidate their understanding of concepts, practise skills and learn number facts. Do children have time to practise?