

RONIT BIRD'S TOP TEN TIPS FOR PARENTS OF DYSCALCULIC CHILDREN

1. Use concrete manipulative materials

Invest in the right kinds of concrete materials and let your child play around with them, experimenting and having fun with them. Most useful and versatile of all the resources that I use with dyscalculic learners is a set of Cuisenaire rods. [Cuisenaire rods are cuboid rods of wood or plastic, in ten fixed colours, ranging in length from 1 cm to 10 cm to represent the numbers from 1 to 10.] Other helpful materials are chunky counters, Dienes blocks or other base-10 blocks, dice and dominoes.

2. Play with dice and dominoes to improve recognition of spot patterns

Play any games that incorporate the use of dice. Teach your child to recognise the number patterns on the dice rather than having to rely on counting the spots one by one after each new throw of the dice. Play domino games, too. Point out the similarities between the dice patterns and the domino patterns. Encourage your child to look for patterns inside patterns. For example, inside the traditional spot pattern for the number 6 one can see two 3s, or three 2s, or the patterns of 4 and 2.

3. Beware the 'counting trap'

Take care your child does not fall into the 'counting trap'. This is a self-perpetuating situation in which a child solves every fresh calculation by counting up or down in ones because they know so few numeracy facts for certain. Meanwhile, they cannot increase their store of known facts because the process of finding the answer to a computation takes so much time and effort that, a) they can never be sure that the answer is correct, and b) because by the time a solution is reached, the child no longer connects the answer to the question. To help a child out of this vicious cycle, focus on composing and decomposing small quantities into chunks, not into a succession of single units. Play games and activities that highlight numbers being built out of component chunks, not ones. Introduce as large a variety of games as possible, in order to provide enough practice with components.

4. Focus on games and activities, not worksheets

It is not difficult to find, or invent, simple activities and games that target particular misconceptions or points of difficulty. [See both my books for details. See also my website ronit@bensoftware.com on which some of my

teaching games are freely available.] Activities present mathematics as a challenge or a puzzle that needs to be solved in a practical manner. They allow children to focus on one aspect at a time and to construct mathematical meaning for themselves at their own rate of understanding. Games encourage children to revisit important topics regularly, thereby developing some degree of automaticity, whilst maintaining a high level of interest and enjoyment.

5. Highlight the repeating decimal structure of the number system

Help your child construct an accurate mental model of the decimal number system. One way is by exploring number tracks. Another is by using base-ten blocks on place value mats to build 2- and 3-digit numbers and to support step counting in 1s and 10s. Don't always start a count at zero and switch back and forth between the step sizes at random intervals. Try a short run of backward steps from time to time. Extend the concrete step counting beyond 100, paying special attention to the difficult boundaries between decades and hundreds.

6. Take a step-by-step approach

Break down each learning topic into the smallest possible incremental steps. Be prepared to explore, repeat and rehearse each step many times before the child can be expected to understand it well enough to use it as a foundation for the next step.

7. Help children to construct visual mental models

Encourage your child to use the concrete materials as a basis for creating pictures in the mind. Discourage any attempt to use the resources mechanically, just to find an answer. All work with sketches and diagrams should also be seen as a route to learning or practising visualisation techniques.

8. Explore the language of maths

Explain mathematical terms carefully. Encourage your child to articulate their thinking at every stage of any maths task. Broaden your child's mathematical vocabulary as much as possible, using a wide variety of common synonyms for basic arithmetic operations. For example, synonyms for 'subtract' might include 'minus', 'take away', 'less than', 'fewer than', 'decrease(d)', 'take(n) from', 'reduce(d)', 'difference', etc.

9. Don't rush into abstract and written work

Allow your child to spend plenty of time manipulating concrete materials before anything is written down. Use

mathematical notation to record only what your child already fully understands. Use diagrams and sketches to support a gradual transition between concrete and abstract work.

10. Teach for understanding

Memory problems are often associated with specific learning difficulties and can have a severe impact on maths performance. For instance, a common phenomenon amongst both dyscalculic and dyslexic learners is an inability to memorise multiplication tables. Take care, therefore, to minimise the number of facts that your child is expected to commit to memory. Take care also to restrict the number of strategies your child is expected to master. Limit them to only those key strategies with the widest applications. Instead of relying on rote-learning, teach children how to use logic and reasoning to derive new facts and methods from those that they already know and understand.