Dyscalculia - An Introduction For Parents

What is Dyscalculia?

The word "dyscalculia" means difficulty performing math calculations. In other words, it just means "math difficulty". And specifically, it means a learning disability which affects math. Sometimes confusion arises when we start dealing with the term "dyscalculia" as it relates to "special education services".

How do you assess a mathematics disability?

A one-to-one mathematics interview is the best format for noting details. In the interview one focuses as intently on how the child does mathematics as on what or how correctly they do it. It is essential to keep in mind that you are searching for what does work at the same time as you are probing to find what does not work.

A mathematics interview should include the use of manipulatives, i.e. coins, base ten blocks, geoboards, cuisenaire rods, and tangrams. A calculator is an important tool and can be used to uncover the difference between comprehension and computation difficulties.

The interviewer needs to remember to look at the full range of mathematical areas. In addition to computation, one should explore the child's ability to make predictions based on understanding patterns, to sort collections of blocks or objects in a logical way, to organize space with flexibility, and to measure.

To aid in making a diagnosis which will result in useful recommendations, look carefully at strengths and weaknesses. Note whether the child talks to herself, whether she draws a picture to help her understand a situation, or whether she asksyou to repeat. See if the child has a mathematics "proofreading" capacity by asking him to estimate before he computes. This is an important strength.

There are very strict criteria which determine if a student has a learning disability as it is defined by special education rules. When a student's math difficulties are severe enough to meet this criteria, special education services are indicated. On the other hand, "dyscalculia" has no clearly defined criteria. A student with any degree of math difficulty may be considered to have "dyscalculia" by some educational specialists. This frequently occurs when a student receives an educational evaluation outside of the public school system.

So, being identified as having "dyscalculia" may or may not indicate the need for special education services. It should be noted that some learning disabled students experience math difficulty and probably could be considered to have "dyscalculia". However, the term is seldom used within public schools because of the lack of any strict or measurable criteria.

Underlying causes of math difficulties:

Visual Processing Weakness - This appears to be the most common cause of math difficulty. To really be successful in math, you need to be able to visualize numbers and math situations. When a person has a generalized visual processing weakness it is sometimes referred to as a nonverbal learning disability. When this is the cause of a student's math difficulties, spelling and handwriting are often also difficult areas. Reading and general writing skills may be relative strengths.

Sequencing Problems - Students who have difficulty sequencing or organizing detailed information often have difficulty remembering specific facts and formulas for completing math calculations. If this is the underlying cause of a student's math difficulties, there is often also difficulty in other detailed learning areas (including reading decoding, spelling, and anything which requires detailed memorization). Sequencing problems are also frequently seen in people with either dyslexia or dysgraphia.

Math "Phobia" - Some students just develop a "fear" or "phobia" of math either because of negative experiences in their past, inconsistent educational experiences, or lack of self-confidence. Sometimes math phobia can cause as much difficulty as learning disability.

How do you help a child who is having difficulty?

The fundamental principle in helping a child with a disability in mathematics is to work with the child to define his or her strengths. As these strengths are acknowledged, one uses them to reconfigure what is difficult.

When learners have lost (or never had) the connection between mathematics and meaning, it is helpful to encourage them to estimate their answers before they begin computing. When children work together in small groups to solve problems, they often ask more questions, get more answers, and do more quality thinking than when they work quietly, alone.

When children have difficulty organizing their written work on page, they often do better with graph paper. A less expensive solution is to turn line paper sideways so that the lines serve as vertical columns. This is especially helpful for long math division.

The task of learning facts can be transformed into one requiring verbal reasoning. Instead of being asked to memorize 7+8, one boy was asked, "How do you remember that 7+8=15?" His strategies, in this case, that 7+7=14, so 7+8=15, were practiced and reinforced and he became able to retain his facts. A general principle is that through drill and practice children will get faster at whatever they're already doing. This technique of focusing on strategies is one which fosters a healthy sense of self reliance and diminishes the need for meaningless memorization.

When children do not have a strong language base, it is even more important for the language of explanations to be absolutely accurate (concrete) and parsimonious. In other words, elaborations confuse rather than help this type of child. Give the instructions or explanation once and give the child time and the materials to think about what has been said so that he or she can formulate a meaningful question, if necessary. Asking these children to process quickly is unrealistic and not helpful.

By contrast, the group of children who use language as a tool to keep themselves on track and to organize their thinking are often extremely quick to respond. Language is their preferred medium, after all. These children often respond well to the use of metaphor in explanations. These children are often impatient and do not understand that good thinking is not instantaneous. They need reassurance and a relaxed structure so that they go beyond the superficial quickness and do some real thinking.

Finally, those who are afraid to even attempt math are often unaware of their real strengths. This group believes that = computation, when in fact computation is but a small slice of mathematics. The increasing acceptance of calculators refocuses teachers and students on the real issue at hand: problem solving. Math anxious students often will take risks if their fears are acknowledged and support is provided. Students will gradually feel more powerful as they experience themselves as successful thinkers.

Strategies for students with learning difficulties:

1. Work extra hard to visualize" math problems. Maybe even draw yourself a picture to help understand the problem.
2. Take extra time to look at any visual information that may be provided (picture, chart, graph, etc.).
3. Read the problem out loud and listen very carefully. This allows you to use your auditory skills (Which may be a strength).
4. Ask to see an example.
5. Ask for or try to think of a real-life situation that would involve this type of problem.
6. Do math problems on graph paper to keep the numbers in line.
7. Ask for uncluttered worksheets so that you are not overwhelmed by too much visual information.
8. Spend extra time memorizing math facts. Use rhythm or music to help memorize.