Math Learning Disabilities

http://www.ldonline.org/article/Math_Learning_Disabilities
Author: Kate Garnett (1998)

It seems evident that students do experience not only differing intensities of math difficulties, but also different types, which require diverse classroom emphases, adaptations and sometimes even divergent methods. Most common are difficulties with efficient recall of basic arithmetic facts and reliability in written computation. When these problems are accompanied by a strong conceptual grasp of mathematical and spatial relations, it is important not to bog the student down by focusing only on remediating computation. While important to work on, such efforts should not deny a full math education to otherwise capable students.

Instructional strategies are presented for helping students master basic number facts, improve computational weaknesses, address visual-spatial challenges, and understand the procedures, language, and symbolic notation of math.

Mathematics Strategy Instruction (SI) for Middle School Students with Learning Disabilities

Authors: Paula Maccini and Joseph Gagnon (2006)

http://www.ldonline.org/article/Mathematics_Strategy_Instruction_%28SI%29_for_Middle_School_Students_with_Learning_Disabilities

Students with learning disabilities in mathematics often have difficulties deciding how to approach math word problems, making effective procedural decisions, and carrying out specific plans. Strategy instruction is an effective method for assisting middle school students with learning disabilities as they complete challenging mathematical problems. To support teacher use of math strategies, this brief defines strategy instruction, and provides key features of effective strategies and instructing youth in the use of a strategy. The practical examples presented illustrate how strategies such as STAR can be applied to a variety of math concepts and can provide the support necessary to ensure student success.

Teaching Mathematics to Students with Learning Disabilities: A Review of Literature

http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/00000019b/80/3d/11/80.pdf
Author: Francis Obudo (2008)

The purpose of this study was to review and synthesize available literature to draw a comprehensive picture of what is necessary to teach mathematics to students with learning disabilities. This review of literature found that there are five important factors in determining success in mathematics for students with learning disabilities (LD). They are: teacher training, teacher attitudes/perceptions, use of effective strategies, use of assistive technologies, and the application of an effective curriculum.

Teaching Mathematics to Middle School Students with Learning Disabilities

Authors: Montague, Marjorie, Ed.; Jitendra, Asha K., Ed.

Source: Guilford Publications

Publication Date: 2006

http://www.amazon.com/Teaching-Mathematics-Students-Difficulties-Special-Needs/dp/1593853068/ref=sr_1_1?ie=UTF8&s=books&qid=1260553886&sr=1-1#noop

A highly practical resource for special educators and classroom teachers, this book provides specific instructional guidance illustrated with vignettes, examples, and sample lesson plans. Every chapter is grounded in research and addresses the nuts and bolts of teaching math to students who are not adequately prepared for the challenging middle school curriculum. Presented are a range of methods for helping struggling learners build their understanding of foundational concepts, master basic skills, and develop self-directed problem-solving strategies. While focusing on classroom instruction, the book also includes guidelines for developing high-quality middle school mathematics programs and evaluating their effectiveness.

Teaching Mathematics to Gifted Students in a Mixed-Ability Classroom

http://www.teachervision.fen.com/gifted-education/teaching-methods/3778.html
From: The ERIC Clearinghouse on Disabilities and Gifted Education
ERIC EC Digest #E594
Author: Dana T. Johnson
April 2000

Historically there has been debate about the role of acceleration versus enrichment as the differentiation mode for mathematics. Most experts recommend a combination. This articles provides suggestions for differentiating for the mathematically gifted by using (1) assessment, (2) curriculum materials, (2) instructional techniques, and (4) grouping models. Regular mathematics classrooms that offer sufficiently challenging and broad experiences for gifted students have the potential to enrich the learning community.
Mathematically Gifted Students: How Can We Meet Their Needs?

**Authors:** Rotigel, Jennifer V.; Fello, Susan

**Source:** Gifted Child Today, v27 n4 p46-51, 65 Fall 2004

Whether math problems require computation skills, problem solving strategies, inferential thinking skills, or deductive reasoning, mathematically talented students are often able to discern answers with unusual speed and accuracy. Mathematically gifted students are able to see relationships among topics, concepts, and ideas without the intervention of formal instruction specifically geared to that particular content (Heid, 1983). Due to their intuitive understanding of mathematical function and processes, they may skip over steps and be unable to explain how they arrived at the correct answer to a problem (Greenes, 1981). Unfortunately, many programs for gifted children are inadequate and poorly designed (Heid, 1983), leaving classroom teachers to struggle to meet the needs of gifted children effectively. What resources are available for these students? What assessment tools are appropriate? Do these children need acceleration or enrichment? How can we meet their needs when there are so many other demands on teachers’ time? This article will address these and other questions in an attempt to shed some light on the difficult issues of challenging and nurturing children who demonstrate talent in the field of mathematics. Contains a list of web sites designed for student use that are easily accessible, and provide information on math topics, problem solving, and mathematical applications.

**BOOK REVIEW**


An accomplished mathematician possesses a wide range of abilities. Dyslexics may be very capable in certain areas, such as spatial reasoning, yet have specific difficulties in other areas. Basic mechanical learning, such as with multiplication tables, the organization of their work, short-term memory weaknesses, and language-learning weaknesses are often challenges for dyslexics; however, these need not prevent them from becoming distinguished mathematicians. Employing a variety of teaching methods is very important in reaching these students. Of course, any classroom has diverse learners, so all students benefit from such an approach. Universally designed instruction should always be one’s goal as a teacher. Particularly helpful to dyslexics are multisensory aids, verbalization of their problem-solving processes, and pointing out the important concepts within a topic. These are all strategies which could certainly benefit other learners as well.

Multisensory aids are especially important to dyslexics because of their difficulty with rote learning. Because symbols and algorithms cannot be easily memorized, students must be taught the
reasoning in the system and processes. Again, this should be a central goal of a math teacher, and all students will benefit from this approach to learning. Naturally, individual needs of dyslexics will certainly vary based on their learning styles, so it is important to know which sensory approach will be most stimulating for each student, particularly when working one-on-one.

A list of specific skills with which dyslexic students may have difficulty is found in Chapter 1 of the book. Teachers can use this to record various points where a student needs help. A learning approach which puts the student at ease is most important, even if the student’s method is not the most efficient. It is better to allow the student to continue that method until he or she decides it needs to be changed.

Successful strategies are outlined in the book to help dyslexic students with a wide range of basic mathematical concepts, including number sense, estimation, operations, symbols, calculators, money, time, fractions, decimals, percentages, probability, ratios and proportions. One can also refer to a list of materials, book, and computer software which may be helpful. By employing the principles of universally designed instruction and being knowledgeable about additional strategies for helping dyslexic students, teachers can respond appropriately to tackle specific problems, reduce anxiety and improve achievement.