

# PLuS Perspectives

## Information about College Students with LD

Supported by a grant from the US Office of Education grant # P333A050044

### Meeting the Challenge:

### Mathematics & Learning Disabilities

Success in college-level math involves a wide variety of mental abilities: acquiring a large technical vocabulary, remembering and following complex, multi-step procedures, visualizing patterns, and keeping large amounts of information in mind simultaneously while using nonverbal reasoning skills to solve a problem.

College students with a math learning disability (sometimes called dyscalculia) often have difficulty processing nonverbal information. They may have difficulty representing mathematical concepts spatially or understanding the relationship between spatial representations and their mathematical symbols. Students with ADHD may have difficulty calculating accurately and catching errors.

*A Letter to My Math Teacher...  
I am not trying to "get out of" doing what is required of the rest of the class. I am not making excuses for not "pulling my load." I am willing to put WAY more into this class than is required of the average or better student. I am not lazy, and I feel really smart in everything but math. That is what frustrates me the most! Everything else is easy for me to learn, but Math makes me feel stupid! Why is this one subject so hard? Most importantly, never forget that I WANT to learn this and retain it! But realize that for me, math is traumatic! The slightest misunderstanding or break in logic overwhelms me. Even trying harder and studying more is futile. But I wish to apply myself as fervently as necessary to achieve an above average grade in this class. Thanks, in advance, for all your help along the way.*

Adapted from: A Letter to My Math Teacher by Renee Newman <http://www.dyscalculia.org/teacher.html>

Not all college students with LD or ADHD have math disabilities. There is very little data that accurately indicates the prevalence of math disabilities, but we know that more students with LD have difficulty with reading and writing than with math. While some students seek waivers from college math courses, many students with LD and ADHD recognize the importance of math, learn strategies to cope with their specific difficulties and are successfully completing college-level math requirements.

#### Characteristics of Students with Math Disabilities:

Students often exhibit the following behaviors and difficulties related to math:

- Inconsistent memory for math facts and procedures
- Trouble following sequential procedures with multiple steps
- Spatial orientation and left/right confusion
- Transposition of numbers (e.g., 36,584 and 36,854)
- Difficulty with mental math calculations and estimation
- Poor memory for the "layout" of things.
- Gets lost or disoriented easily. May have a poor sense of direction, loose things often, and seem absent minded.
- Difficulty with daily uses of math (managing money, balancing a checkbook, calculating price discounts quickly)
- Difficulty conceptualizing time and space



# PLuS Perspectives Continued

## Special Considerations for Math Disorders

Students with a documented diagnosis of a math disorder or with severe deficits in elements of a language-based disability (e.g., dyslexia) may be recommended for a waiver/course substitution in math. PLuS does not 'issue' math waivers; however, they may 'recommend' a waiver/course substitution to the student's academic major department.

PLuS reviews all documentation on an individual basis. Some students do receive a waiver/course substitution recommendation because certain aspects of their documentation and academic attempts in math support it. In some cases, a student is encouraged to take particular math courses and a waiver/course substitution is recommended for other kinds of math courses, depending on how the specific disability impacts his/her success. In some situations, an overall math waiver/course substitution may be recommended if the disability is severe across all related processing functions needed to understand math.

Math waivers are typically not recommended immediately when students begin their studies at DePaul. The PLuS Director meets with the student, monitors the student during the term, and usually with consultation from the student's math professor determines what impact, if any, the disability is having on success in the course. After thorough assessment during and at the conclusion of the term, a further course of action is determined including, but not limited to, a math waiver/course substitution recommendation. It must be noted that these recommendations are rare.

### Suggestions for Math Tutors

- ◆ Demonstrate problems on lined paper in an uncluttered way.
- ◆ Watch as the student works each problem and correct mistakes as they happen.
- ◆ Meet with the student as soon after class as possible to reinforce new material.
- ◆ Provide extra problems for practice.
- ◆ Encourage the student to write everything down and talk it through until they understand it well enough to teach it back to you.
- ◆ Select problems to work that are "pure" examples of the concept, not ones that have unnecessary, distracting calculations.
- ◆ Understand that the student has attempted and failed many times and math is a highly emotional subject. The slightest misunderstanding or break in logic overwhelms them. Be patient!

Adapted from : <http://www.dyscalculia.org/teacher.html>

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### Types of Math Disability

Math disabilities can be grouped into two types:

Students with Type I math problems have cognitive processing problems that interfere with learning in general, indirectly interfering with math:

- Auditory processing problems interfere with acquisition of technical math vocabulary as well as listening and taking notes in math class.
- Visual/Spatial processing problems interfere with transposition of numbers, copying problems neatly, aligning numbers in columns
- Memory problems make it difficult to remember facts and procedures
- Reading Problems make it difficult to learn from math texts, and to understand "word problems."
- Metacognitive problems interfere with problem solving and error-monitoring.

Students with Type II math problems usually have strong verbal skills but difficulty with nonverbal processing that directly affect math:

- Nonverbal spatial processing difficulties interfere with understanding math concepts, recognizing patterns, representing math concepts spatially, interpreting graphs and tables, and working with geometric figures
- Poor nonverbal thinking skills interfere with conceptualizing math problems, devising problem solving strategies, seeing alternative paths to a solution.

Strawser, S., & Miller, S. P. (2001). Math failure and learning disabilities in the postsecondary student population. *Topics in Language Disorders, 21* (2), 68-84.

