

Improving Math Success for Students with Disabilities: A Round Table Discussion

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2:00 – 3:30

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Definitions of Math and Other Disabilities

Acalculia – inability to read or write numbers in that individuals can not perform calculations or having impaired spatial organization.

Dyscalculia – failure to develop math (arithmetic) competences that is not due to a brain injury or mental impairment.

Dysalgebra – students with average to above average IQ can master calculations but can not master algebra (Nolting, 2000).

SLD- Mathematics DSM-V 315.1- Impairment in number sense, memorization of arithmetic facts, accurate/fluent calculation, accurate reasoning. Mild, Moderate & Severe - No test scores.

Dyslexia – is not a math learning disability but may cause math learning problems due to misreading or miscopying numbers and letters.

Dysgraphia – is not a math disability but may cause math learning problems due to poor handwriting and copying from the board.



Cognitive Processing Skills Significantly Impacting Math Learning – WAIS-IV

Verbal Comprehension Index – Some subtests

Vocabulary & Information - Long-term memory – **Yes**

Perceptual Reasoning Index- Some Subtests

Block Design, Matrix Reasoning & Visual Puzzles – Fluid/Abstract reasoning – **Yes**

Working Memory Index - All Subtests

Digit Span & **Arithmetic** – Working Memory - **Yes**

Processing Speed Index – All Subtests

Symbol Search & Coding – Visual processing speed – **Yes**



Cognitive Processing Skills Significantly Impacting Math Learning – WJ-IV-COG

Auditory Processing – No

Cognitive Processing Speed – **Yes**

Visual Processing – Maybe

Short-term Working Memory – **Yes**

Long-term Storage and Retrieval – Maybe

Comprehension-Knowledge (Long – term Memory) – **Yes**

Fluid Reasoning (Abstract) – Yes- **Most serious problem**



Resources

Math and Disability Handbook: A Guide to Helping Students with LD, ADHD, TBI, PTS, ASD, SLI and ID Second edition (Nolting, 2022). AHEAD has this product.

Winning at Math: Your Guide to Learning Mathematics Through Successful Study Skills, Nolting sixth edition. AHEAD has this product.

My Math Success Plan (Nolting, 2013) which is a student workbook demonstrating how disabilities affect math learning and teaches math study skills (eBook or print).

Teach students to become Self-Directed Learners:

<https://my.amatyc.org/blogs/paul-nolting1/2020/08/25/self-directed-learning-through-student-and-faculty>

Additional research on math study skills by Dr. Paul Nolting and others

<http://www.academicssuccess.com>



Apps- Student Have Appendix A

Recording/Note-taking apps

- Smart Voice Recorder – Recorder and label recording
- Evernote – Type in notes, take photo of notes, record notes, attach a file, hand write and sync with computer.
- Voice Recorder - can record information on your smart phone.
- Photos - Can show photos of problems from the board or any written material to your tutor or instructor.
- Video Recorded - Can video record lectures or tutoring.

Smart Pens - records exactly what you hear and stores it.

Sonocent – can record lectures, turns audio into visual blocks; colored highlighting, and combined photos and text notes.



Homework Apps

Learning Math and Checking Answers:

- Algebra Tutor- solves arithmetic and algebra problems.
- Algeo – squares, sin, cos, graphing solutions, and $f(x)$.
- Photomath – take pictures of equations and solves them on your phone.
- Wolfram Algebra app - Algebra for college
- Modmath - Math writing app that assists users with dyslexia and dysgraphia by allowing them to input a wide variety of math notation onto a clearly defined grid template.
- Microsoft Math -Microsoft Math solver app provides help with a variety of problems including arithmetic, algebra, trigonometry, calculus, statistics, and other topics using an advanced AI-powered math solver.
- Any.do: This is a to-do app, planner, agenda, set of reminders and goals.



Alternative Math Course Sequence

- Elementary Algebra → Statistics
- Elementary Algebra → Liberal Arts Math
- Elementary Algebra → Topics in Math
- **Co-requisite redesigns now bypass DE courses so make it an accommodation**
- **Student should not be repeating algebra**



Math/Science Course Substitutions

- Introduction to Computers
- Accounting I
- Macro-economics
- Philosophy
- Earth/Space Science
- Math Courses-Lower
- Environmental Science

- Business math
 - Astronomy
 - Oceanography
 - Physical Science
 - Major Course
 - Not a math course
- Virtual or ID student does not matter**



Office of Civil Rights & Student Cases

Court cases on applying for course sub or not allowing accommodations – Apply for course sub when accepted (due process), extended homework time, recording, formula sheets, brail text, committee make and Director as expert.

ADHD documentation - Students only need DMS code and clinical interview – No test scores- Forsyth Technical Community College

Extended assessment time – Cannot just say no – Need to review each case individually – DRO Director makes the decision -ADHD, TBI, LD- Surry College

Course substitution – When to apply for sub —Cannot make repeat or fail, 3 areas: 1. **Insurmountable** to pass math, 2. **Gray area**-can not predict with accommodations can pass, 3. **Disability processing deficits not correlated with math SLD**), reasonable accommodations not preclude success in a particular math course with accommodations. Cannot give student a “F”. - San Antonio College:



Presenter's Contact Information

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