

Resources on how to teach math to struggling learners

Marilyn Zecher. Multisensory Math <http://multisensorymath.com/> Youtube: http://www.youtube.com/channel/UCesc-68xTXm_iO6fVI_YWwQ

ASDEC: Atlantic Seaboard Dyslexia Education Center. Multisensory math course distance learning: http://asdec.org/multisensory_math_1_distance
Youtube: <http://www.youtube.com/user/ASDECorg>

Christopher Woodin, teacher at Landmark School in Massachusetts.

Free worksheets and ideas here: <http://www.woodinmath.com>

Fractions:

<https://sites.google.com/a/woodinmath.com/main/courses/course-e/>

His newest book, *Multiplication and Division Facts for the Whole-to-Part, Visual Learner*, <http://www.landmarkschool.org/resources/woodinmath>

Youtube: <http://www.youtube.com/user/woodinmath>

Woodin shares “How to Help Dyslexic Kids with Math” on The Dyslexia Quest Podcast hosted by Elisheva Schwartz

<http://www.elishevaschwartz.com/podcast/how-to-help-dyslexic-kids-with-math-with-christopher-woodin/>

Denise Gaskins, *Let's Play Math*, and many other books, DeniseGaskins.com, Very practical and fun. **Great for gifted learners and everyone.**

Patterns are so important that American mathematician Lynn Arthur Steen defined mathematics as the science of patterns. “As biology is the science of life and physics the science of energy and matter, so mathematics is the science of patterns,” Steen wrote. “We live in an environment steeped in patterns — patterns of numbers and space, of science and art, of computation and imagination. Patterns permeate the learning of mathematics, beginning when children learn the rhythm of counting and continuing through times tables all the way to fractals and binomial coefficients. ~Gaskins, Denise. *Let's Play Math: How Families Can Learn Math Together—and Enjoy It* (Kindle Locations 705-709). Tabletop Academy Press. (also in paperback.)

Ronit Bird, a brilliant British teacher, specializes in teaching students who struggle in math, and writes practical materials <http://www.ronitbird.com/>

Teaching Tools

- Games: At LearnDifferently.com, under talks, see handouts for Fraction Circles games, Sieve of Eratosthenes, Fraction Squares game.

- Flexible fraction bars from NASCO, ideal for games outlined on my website. “Fraction Bar Component Parts”
<https://www.enasco.com/product/TB09497T>

Multisensory Structured Language Math (MS Math)

- Not a curriculum. A method that can be applied to adapt any curriculum.
- Based on methods to teach reading to dyslexics developed by Sam Orton and Lillian Gillingham, aka Orton-Gillingham or Multisensory Structured Language approach.
- Based on research by Penny Chiappe Collins and Stanislas DeHeane.

Basic practices of Multisensory Structured Language Math (MS Math)

- Multisensory: “Make it, draw it, write it.”
- Structured language: memorable, pattern, rhythm, rhyme, repeated.
- Teach the language of math explicitly, repeatedly, and slowly. Use word roots, similar words (denominator, “nom,” “denomination;” common factor)
- Instruct explicitly, tiny steps. Move slowly from simple to complex.
- Use graphic organizers.
- Coding: Use color, parentheses & acronyms to track and recall processes.
- Build on familiar concepts.

Teaching tips:

- Keep it simple: use simple calculations for new concepts, 2’s and 5’s.
- If your curriculum doesn’t provide sufficient review, build your own daily review using cards as described on my blog:
<http://www.learndifferently.com/2015/04/01/filling-in-the-math-gaps/>
- Incorporate movement. Teach math in different parts of the house.
- Every students write their own math manual in their own words. (Dysgraphic students can dictate.)
- Never teach a concept with a problem you haven’t already solved.
- Note sources of confusion: $\frac{1}{2} = 1/2$, which is not one-two-th.
 $0.8 = .8$. Leading zero emphasizes decimal point. Say “8-10ths” AND “zero point eight.”

Take time to drill and play games to build proficiency:

- Name the quantity
- More or less than one-half?
- “If that’s, show me” game by Marilyn Zecher. (“If that’s one-third, show me two thirds.” “Good. If that’s two-thirds, show me two-fourths.” “Good. If that’s....”)
- Make One Games (building one whole with squares, or with circles—see my site)
- Use fraction circles, bars, and squares.