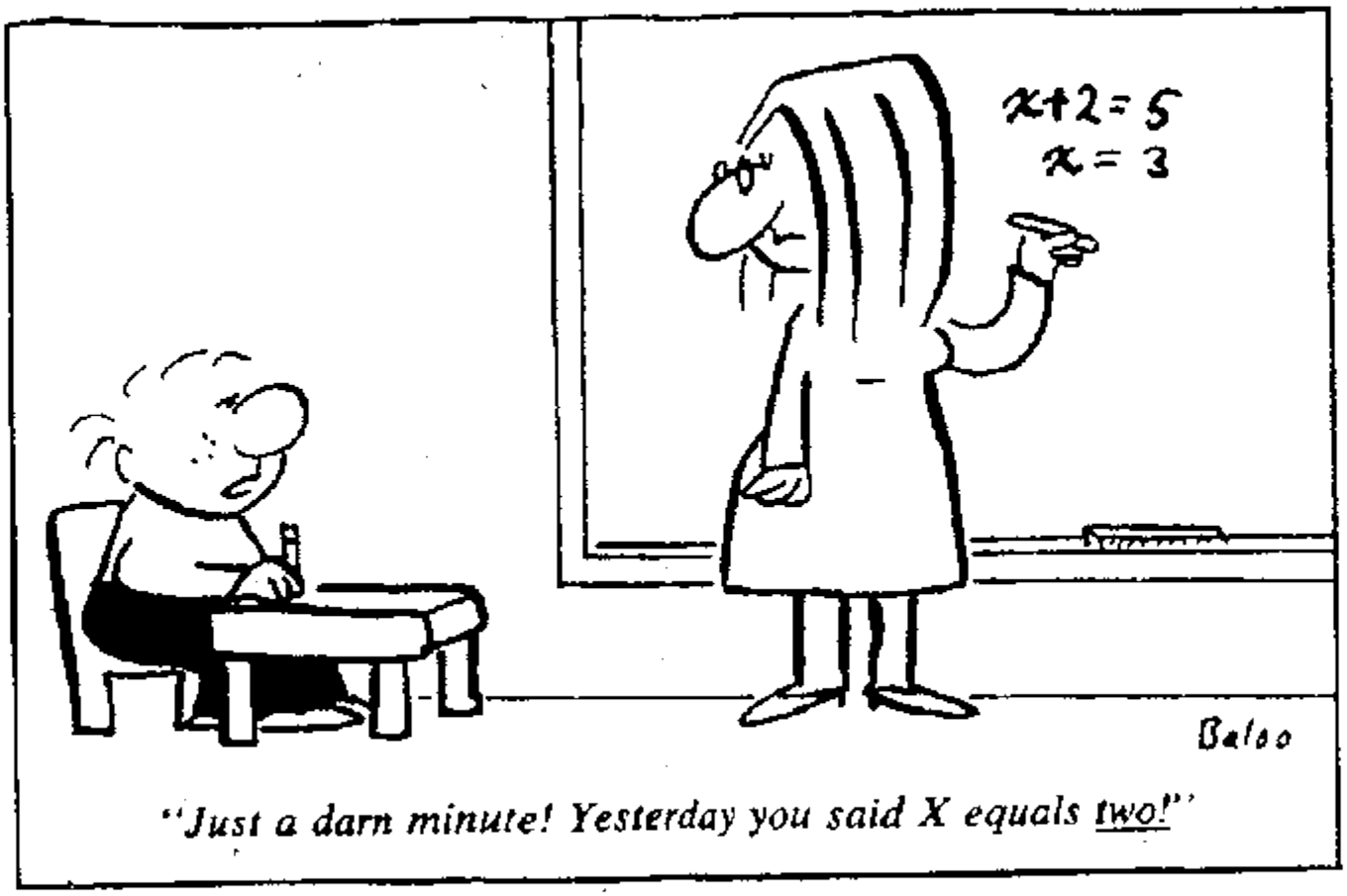

Math & LBLD

What's going on here?

As your understanding of the way LBLD students look at things increases, you discover not only that there is a reasonable explanation for what they do, but there are effective strategies for addressing their issues.

LD & MATH

What kind of difficulties does an LD student face when doing math?

- **the same troubles any "normal" student could have**

- **language comprehension and auditory processing difficulties**
  remembering, organizing, processing things they hear.
  Words alone often don't make sense... models and visual examples are required

- **sequencing trouble**
  so much of doing math depends on proper order. Remembering the sequence is sometimes more difficult than remembering individual steps

- **difficulty with organization of written work**
  they may be able to explain how, but have difficulty putting it on paper, finding it, presenting it clearly, writing numbers, drawing shapes

- **difficulty with organization of ideas**
  concepts are understood in isolation but are not transferred to a larger framework of ideas

- **visual confusions**
  much of math is remembered visually, but many visually similar problems are solved differently

- **difficulty with directionality**
  sometimes we solve algebraic problems from left to right, sometimes we solve them up and down

- **difficulty with spatial relationships**
  what is the difference between $100.00 , $10000, and $10.000? estimation can only be done if there is a basis for comparison. Is it unreasonable to build a dog pen of 50 sq ft with 14 ft of fencing?

- **the "dyslexic dilemma"**
  the process is in the head and the student knows how to use it, but he confuses it with another skill. It's an either/or situation ("was it this or that?")
  one day it is there the other day it is not.

VISUALLY SIMILAR PROBLEMS

Fractions

(a) $2\frac{1}{2} + 1\frac{1}{2} =$

(b) $2\frac{1}{2} \cdot 1\frac{1}{2} =$

Integers

(a) (-3) (-4)

(b) (-3) + (-4)

Exponents

(a) $(a^2)(a^3)$

(b) $(a^2)^3$

(c) $(2x^2)(3x^4)$

(d) $2(3x^4)^2$

Percents

(a) _____ is 40% of 50

(b) _____ % is 40 of 50

(c) 40 is 50% of _____

(d) 40% of 50 is _____

Proportions

(a) $\frac{2}{3}$ x $\frac{3}{7}$ =

(b) $\frac{2}{3} = \frac{3}{x}$

Trigonometry

(a) sin 3x

(b) $\sin^3 x$

(c) 3sin x

LANDMARK TEACHING PRINCIPLES

Provide opportunities for success

- make directions for all assignments clear
- make sure students write assignments down
- provide positive feedback

Use multiple modalities

- involve as many senses as you can in the learning process
- accompany verbal explanations with visual representations
- have students reverbalize important directions or procedures
- have students write what they hear
- use analogies to establish a visual connection

Micro-unit and structure tasks

- use the structure of math to build comprehension
- analyze the task, determine its components
- break steps down to manageable ones
- be systematic, emphasize step-by-step methodology

Insure automatization through practice and review

- there is no substitute; to master a procedure, do it a lot
- be careful not to lose comprehension here

Provide models

- words take on meaning when we attach examples to them
- following models is often more instructive than written or oral directions
- verbalize your thought process

Include the students in the learning process

- help them become aware of their individual strengths and weaknesses
- work to develop independence instead of teacher dependence
- When possible involve students in decision making about their math program (sequence of topics, depth, math history)

Teach diagnostically

- students write out all steps (so you can see what's going on)
- try to see it as they see it (then check with them to see if you do)
- have students verbalize their thought process