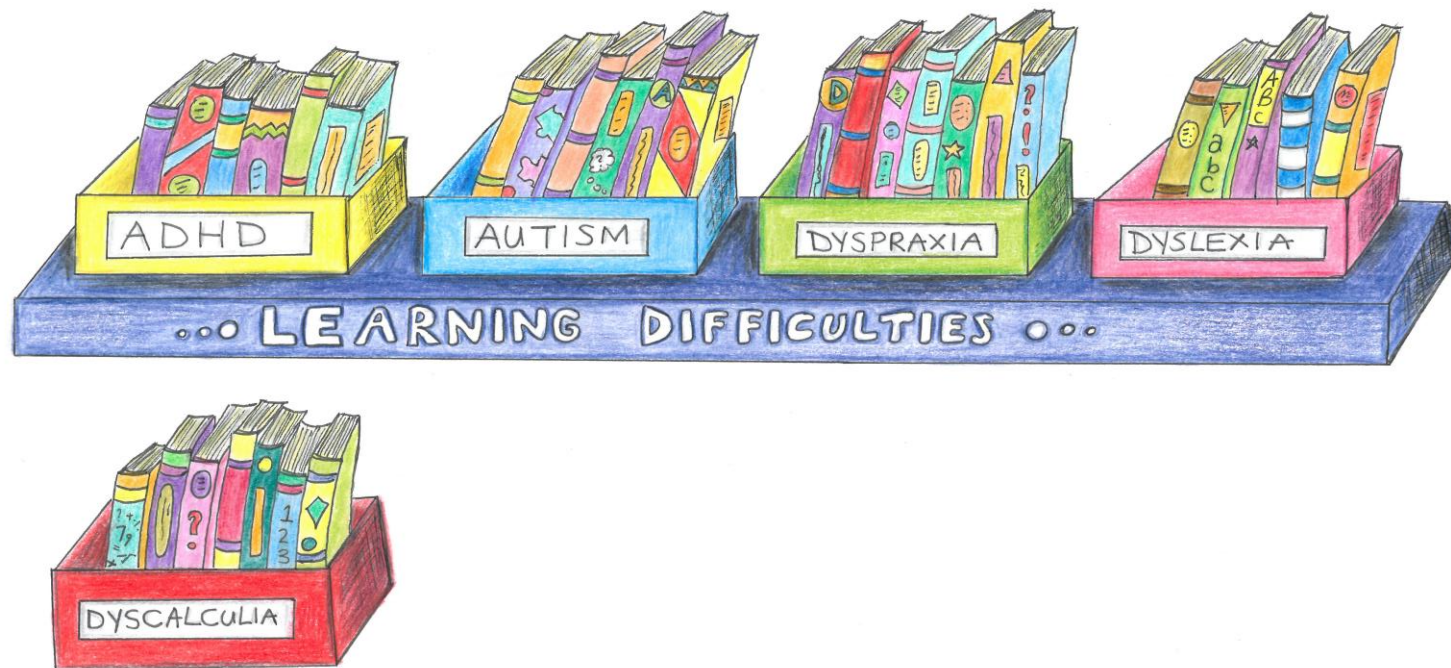


Not ANOTHER Box!!



Gary Sharpe

**The mechanics of math are becoming less important for humans ...
But a deep understanding of mathematical ideas and principles,
and our capacity to think like mathematicians, are becoming more
important.**

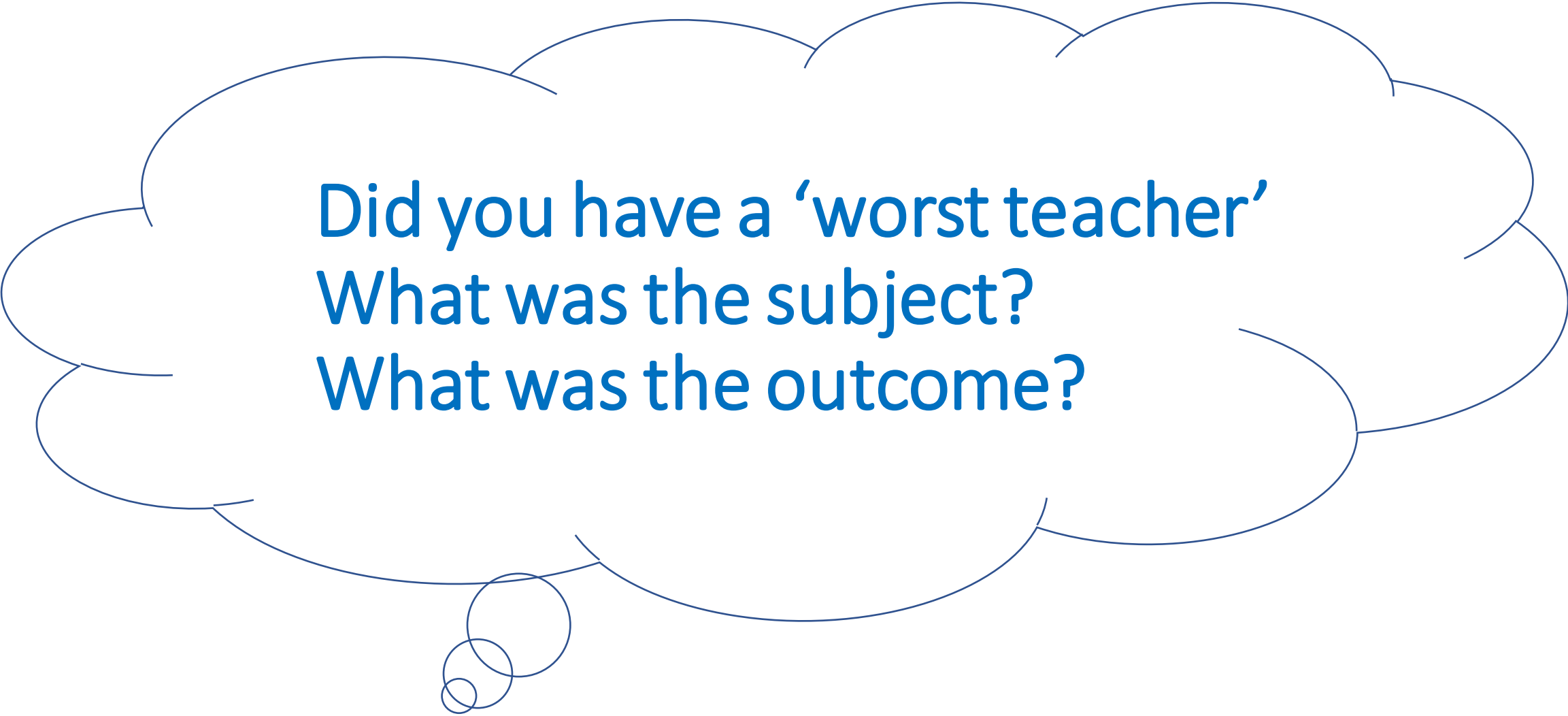
Andreas Schleicher

Director, OECD Directorate for Education and Skills
October 11 2019

Thought or Fact?

A lack of numeracy skills is a greater barrier in daily life than a lack of literacy skills





Did you have a 'worst teacher'
What was the subject?
What was the outcome?

Reasons Why People Can Be Slow To Learn Maths

- Inappropriate Teaching
- Behaviour Problems
- Missing Lessons
- Anxiety – (Diminishes Performance)
- CAN'T DO IT



Question?

How many people have ever been born with maths anxiety?

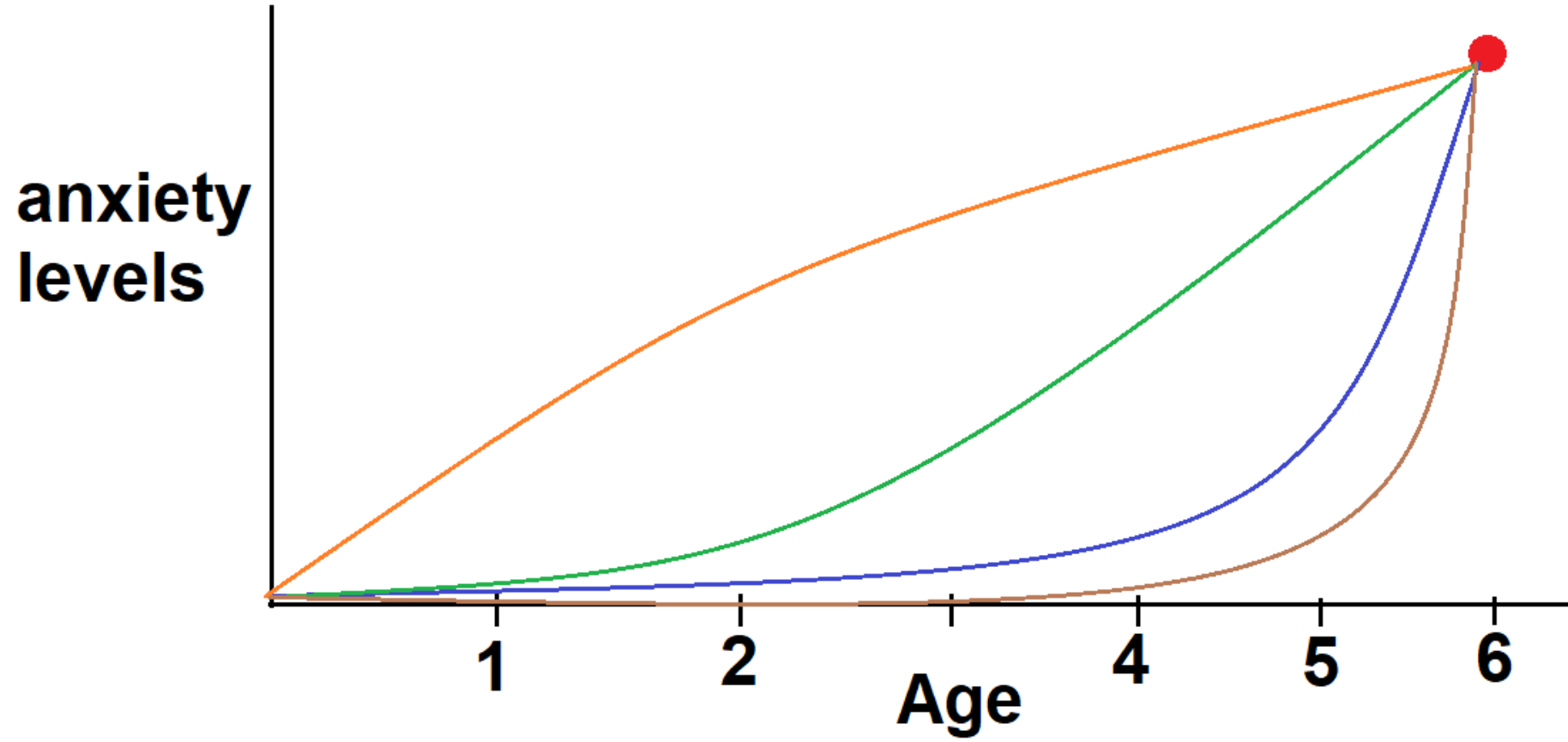
Answer

None



Maths anxiety is less common as age lowers, therefore anxiety builds from negative pressure.

Steve Chinn



[SAVE TO COOKBOOK](#)[+ SHOPPING LIST](#)[+ MY MEAL PLANNER](#)[PRINT RECIPE](#)[EMAIL RECIPE](#)[DOWNLOAD PDF](#)

NOTE: You need to be logged in to use the buttons above. Please [log in](#) or [sign up](#) now.



MAKES 20

1 ½ cup flour

1 tsp baking powder

1 pinch salt

2 Tbsp sugar

1 large egg

1 - 1 ¼ cup milk

1 Tbsp butter, melted

1. Sift the flour, baking powder and salt together into a bowl. Stir in the sugar.
2. In another bowl or a jug, beat the egg with 1 cup of the milk and the melted butter.
3. Make a well in the dry ingredients and add the liquid mixture. Without over-mixing, stir until combined, adding more milk if the mixture is too stiff. The mixture should be able to drop off the end of a spoon.
4. Heat a lightly buttered non-stick pan on a medium heat. Drop dessert spoonfuls of the mixture into the pan, allowing room to turn the pikelets. When the pikelets bubble, turn and cook the other side. Remove from pan and keep warm in a clean tea towel.

$$\int_{-\infty}^{\infty} e^{-x^2} dx = \sqrt{\pi}$$

$$f(x) = a_0 + \sum_{n=1}^{\infty} \left(a_n \cos \frac{n\pi x}{L} + b_n \sin \frac{n\pi x}{L} \right)$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

FIRST REACTION





Dyscalculia

Dis Kal Q Lee A

Dis Kal Q Lik

Acalculia

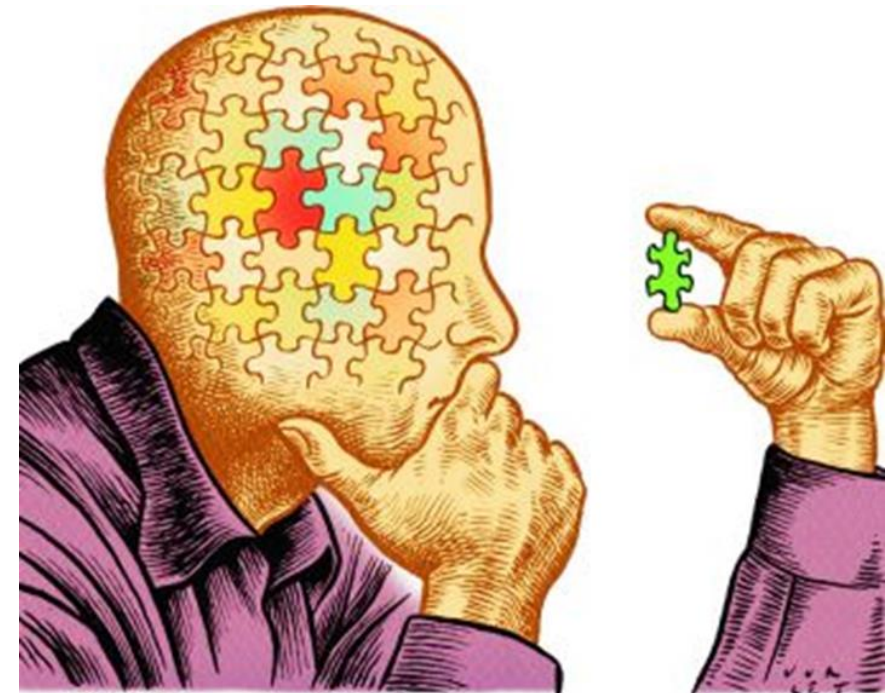


A significantly greater difficulty in learning maths than the majority of peers of the same age.

Brian Butterworth

DYSCALCULIA

- An 'out of character' or unusually poor number sense compared to abilities in other subjects / skills.



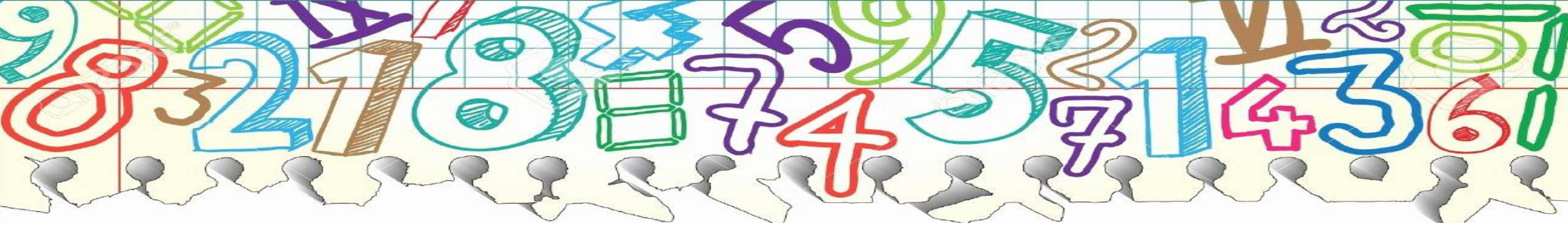


What does someone fighting dyscalculia look like





- Somewhere between 4 and 10% of population
- Not gender biased
- Seems to be hereditary
- High IQ (confidence may have been hammered)



Symptoms established by research:

- Difficulty with the signs. $+$ $-$ \times \div $=$
- Difficulty to understand the words plus, add, add – together.
- Difficulty with times tables.
- Poor mental arithmetic skills.
- May have trouble **even with a calculator** due to difficulties in the process of feeding in variables.
- Difficulty telling time



Maths
Anxiety



Is there a line

Dyscalculia





Maths Anxiety

Dyscalculia

Comorbidity

Dyslexia



Dyscalculia



Being dyscalculic limits my options, particularly for employment, I've trained in healthcare and wanted to get into nursing but found the actual day to day work with recordings and stuff was too hard for me to do. I was scared I would make a mistake.

Julie

WORK HABITS

	Excellent	Very Good	Good	Variable	Poor
Attitude				✓	
Effort				✓	
Personal Organisation				✓	
Punctuality				✓	
Participation				✓	
Ability to Meet Deadlines			✓		

AREAS NEEDING IMPROVEMENT

Must question ideas/concepts

Must complete homework

Needs to supply more detailed work

Must write more legibly

Must manage exam time better

Must interpret test questions more carefully

COMMENTS: Victoria's progress is disappointing. Her mediocre results reflect her casual approach to the course rather than her ability - a real effort would make the course more satisfying.

Taking home the school report was always the worst time, I knew I was in for a hiding because of my maths. I wish I knew then what I know now.

Vicky



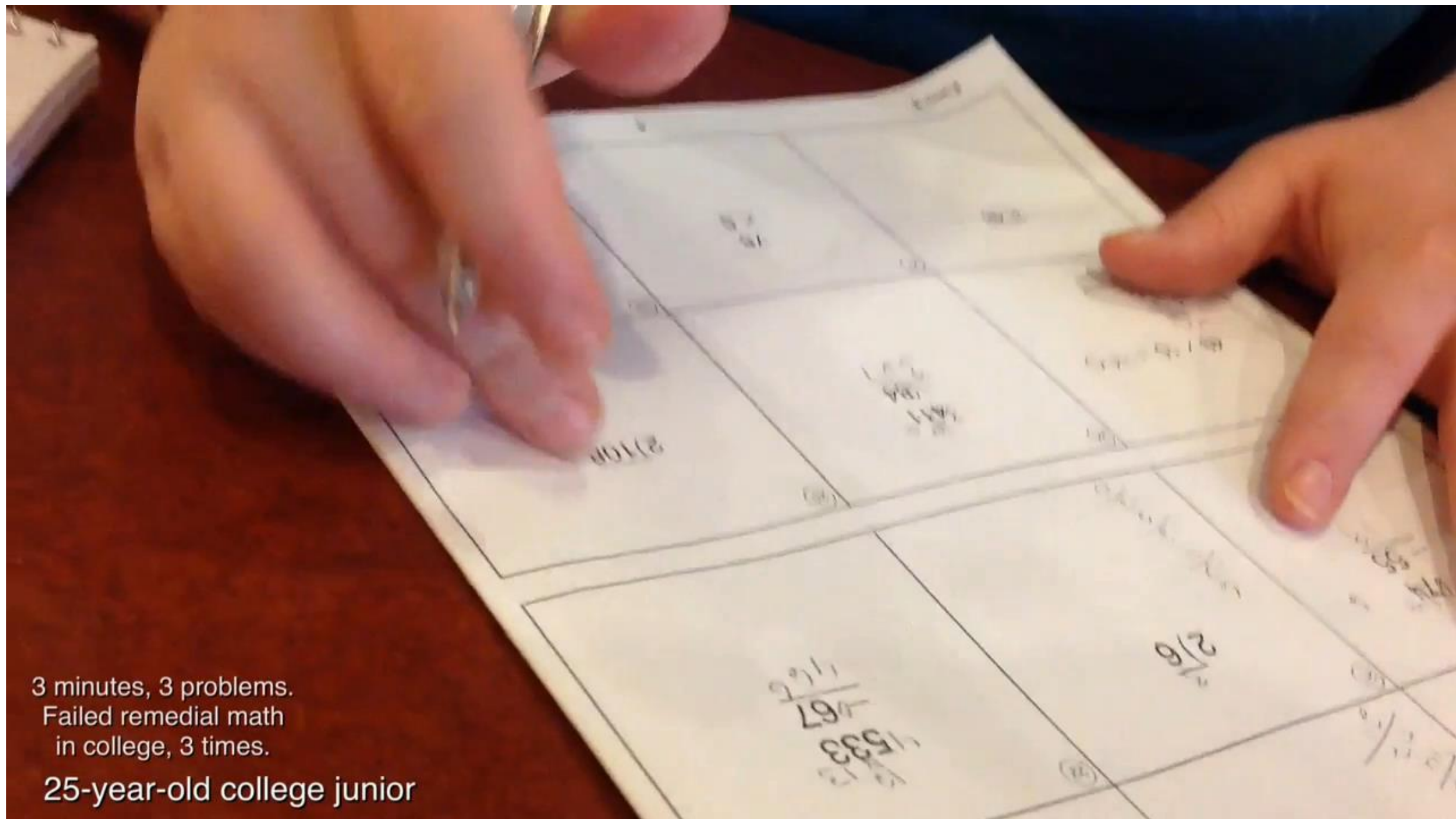
I was kicked out of school at 13, the maths teacher called me
thick and dumb once too often and I decked him

Dylan



My kids are at school now, they ask me number stuff knowing that I can't do it, like they tease me, I feel really 'stink' and its so embarrassing, takes me back to being a school myself

S.M.



3 minutes, 3 problems.
Failed remedial math
in college, 3 times.

25-year-old college junior

Not another box?



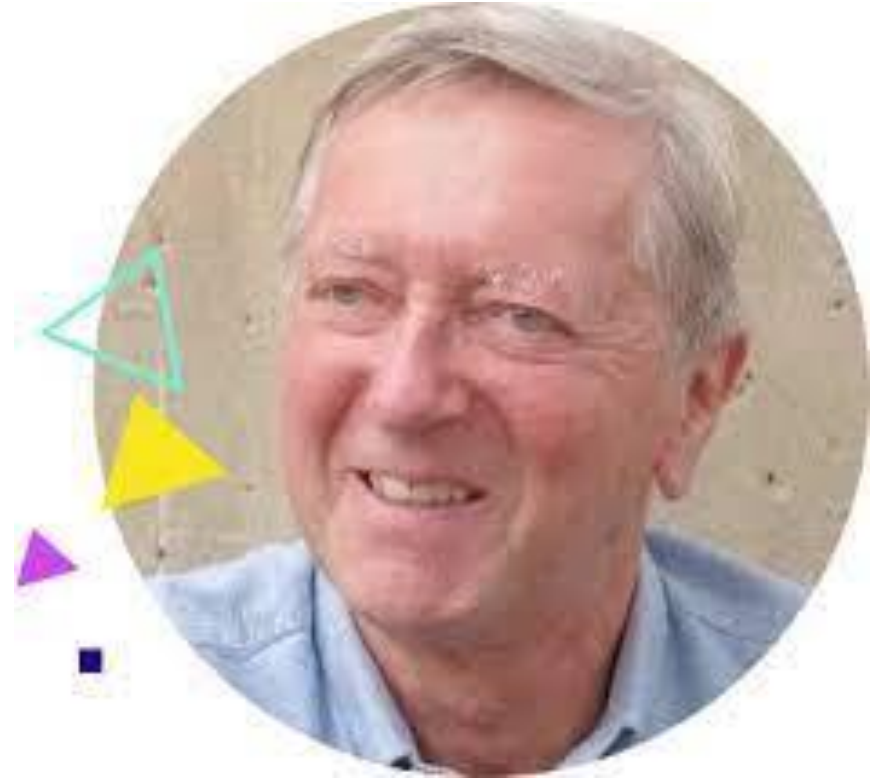
Early id, interventions and resources for learners likely to face challenges with numbers

Ages 5 through Adult

Used Brian Butterworth's screener for some time but....



Dr Kinga Morsanyi
Loughborough Uni, UK



Dr Steve Chinn

NUMERALIS

Your group: WITT2

login

Well done, you've completed all the activities and found a gem!

collect reward



Find the dog ✓	Animal memory (forward) ✓	Object memory (backward) ✓
Grid memory (forward) ✓	Grid memory (backward) ✓	Number line (0–100) ✓
Number line (0–1000) ✓	Month Line ✓	Month ordering ✓
Number ordering ✓	Number ordering (verification) ✓	Fast sums 1 ✓
Fast sums 2 ✓	Maths exercise ✓	

TaskName	Span	TrialNum	Presentec	Participan	Accuracy	ReactionT
GridMem	2	1 3 4		4 3	1	1578
GridMem	2	2 7 2		2 7	1	1020
GridMem	2	3 4 9		9 4	1	1070
GridMem	2	4 5 1		1 5	1	885
GridMem	3	5 2 9 1	1	9 2 1	1	1610
GridMem	3	6 7 1 8	1	8 1 7	1	1649
GridMem	3	7 8 5 3	1	3 5 8	1	1437
GridMem	3	8 4 8 5	1	4 8 5	0	1314
GridMem	4	9 6 1 2 9	1	9 2 1 6	1	2328
GridMem	4	10 5 6 7 2	1	2 7 6 5	1	2071
GridMem	4	11 8 9 4 3	1	3 4 9 8	1	2092
GridMem	4	12 7 2 1 6	1	6 1 2 7	1	2016
GridMem	5	13 1 3 5 7 8	1	8 7 5 3 1	1	2091
GridMem	5	14 2 4 1 8 6	1	6 8 1 4 2	1	2537
GridMem	5	15 3 6 7 9 4	1	4 9 7 6 3	1	2306
GridMem	5	16 8 1 6 5 7	0	7 5 6 8 1	0	2319
GridMem	6	17 5 4 8 2 7 3	0	3 7 5 4 8 2	0	3183
GridMem	6	18 8 7 5 6 3 9	0	9 3 6 7 5 8	0	3525
GridMem	6	19 4 6 3 9 5 7	1	7 5 9 3 6 4	1	2997
GridMem	6	20 9 8 4 2 6 5	0	5 6 2 4 9 8	0	3440

TaskName	Span	TrialNum	Presentec	Participan	Accuracy	ReactionT
GridMem	2	1 3 4		4 3	1	1382
GridMem	2	2 7 2		2 7	1	1592
GridMem	2	3 4 9		4 9	0	1086
GridMem	2	4 5 1		1 5	1	2070
GridMem	3	5 2 9 1	1	9 2 1	0	3161
GridMem	3	6 7 1 8	1	1 7 8	0	1578
GridMem	3	7 8 5 3	1	8 5 3	0	1520
GridMem	3	8 4 8 5	1	8 5 4	0	2283

TaskName	Span	TrialNum	Presentec	Participan	Accuracy	ReactionT
GridMem	2	1 3 4		4 3	1	580
GridMem	2	2 7 2		2 7	1	1991
GridMem	2	3 4 9		9 4	1	731
GridMem	2	4 5 1		1 5	1	1425
GridMem	3	5 2 9 1	1	1 9 2	1	1629
GridMem	3	6 7 1 8	1	8 1 7	1	903
GridMem	3	7 8 5 3	1	3 5 8	1	956
GridMem	3	8 4 8 5	1	5 8 4	1	1269
GridMem	4	9 6 1 2 9	1	9 2 1 6	1	1367
GridMem	4	10 5 6 7 2	1	2 7 6 5	1	1560
GridMem	4	11 8 9 4 3	1	3 4 9 8	1	1485
GridMem	4	12 7 2 1 6	1	6 1 2 7	1	1673
GridMem	5	13 1 3 5 7 8	1	8 7 5 3 1	1	5377
GridMem	5	14 2 4 1 8 6	1	6 8 1 4 2	1	2266
GridMem	5	15 3 6 7 9 4	1	4 9 7 6 3	1	2227
GridMem	5	16 8 1 6 5 7	1	7 5 6 1 8	1	1852
GridMem	6	17 5 4 8 2 7 3	1	3 7 2 8 4 5	1	4132
GridMem	6	18 8 7 5 6 3 9	1	9 3 6 5 7 8	1	1853
GridMem	6	19 4 6 3 9 5 7	0	4 6 3 9 5 7	0	2359
GridMem	6	20 9 8 4 2 6 5	1	5 6 2 4 8 9	1	1807
GridMem	7	21 6 7 9 1 3 8	1	2 8 3 1 9 7	1	2593
GridMem	7	22 3 1 6 9 4 2	1	8 2 4 9 6 1	1	2367
GridMem	7	23 7 4 1 3 2 9	0	7 4 1 3 9 2	0	7764
GridMem	7	24 5 3 4 8 1 2	1	6 2 1 8 4 3	1	2461

STRATEGY
LEARN
TEACH
EDUCATION
INTELLIGENCE
TRAINING
COLLEGE
COMMUNICATION
PLANNING
TARGET
SKILL
DISCOVER
STRATEGY
COACHING
TEACHER
INSTRUCTION
MEDIA
INFORMATION
SCHOOLING
STUDY
STUDENT
UNIVERSITY
SUCCESS
RESOURCES
PLAN
PROJECT
SCHOOL
SUCCESSFUL
TRAINING
TEACH
SKILL
MEDIA
STRATEGY
GOAL
SOLUTION
EDGE

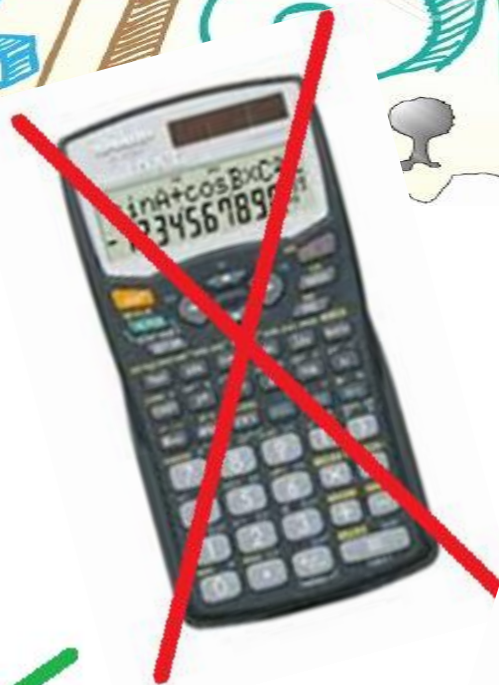
RESOURCES





Limit the working memory demands on the Dyscalculic learner

Brain Butterworth



24 hours
NIGHT



24 hours
DAY



Messages from Dyscalculics

- **P** – I needed teachers to understand I had a problem in Primary School
- **P** – maths classes were always too fast for me.
- **A** – I needed people to believe me when I said I couldn't do it, not just dump me in the special class and ignore me.
- **P** - Help me earlier

- Does it matter how quickly we can answer?
- Research evidence shows that maths should never be associated with speed
- Timed tests cause the early onset of maths anxiety for about 1/3 of the children in the class
- Being fast at maths is not the same as being good at maths
- Most mathematicians think slowly and deeply

• www.judyhornigold.com



Dyscalculia

The hardest part is educating those who don't have a problem !



Any Questions, Comments,
Thoughts or Ideas

ANOTHER BOX?

YES PLEASE

