

Fixed Mindset

Intelligence and talent are fixed at birth.

Growth Mindset

Intelligence and talent can go up or down.

“Alone we can do so little; together we can do so much”

Helen Keller

Saturday - Sep 8, 2012(3:50 pm)

JO BOALER

FOREWORD BY CAROL DWECK

MATHEMATICAL MINDSETS



Unleashing Students **POTENTIAL** Through
Creative Math, Inspiring Messages and
INNOVATIVE TEACHING



JOSSEY-BASS
A Wiley Brand

WELCOME &

Thank you for coming tonight!

Purpose

- Share some key points from our research on math learning
- Build understanding of Growth Mindset
- Engage in two rich mathematical tasks
- Compare procedural model to mathematical problem-based model

Fixed vs Growth Mindset

The Brain and Math Learning

<https://www.youtube.com/watch?v=2zrtHt3bBmQ>

Teaching in Cluster Groups

Open-ended tasks—Low floor/high ceiling

Choice tasks—different tasks/diff levels/extra challenge

Balance in mathematical practice



2 Book ideas to Ponder:

1. Fixed mindsets affect high achieving students most (p.7).
2. The more a field values giftedness, the fewer female PhDs there were in the field (p. 5).

The Power of Mistakes/Struggle

<https://www.youtube.com/watch?v=bycrqTvgclk>

1:42 video about mistakes-

<https://www.youtube.com/watch?v=exmCR28kmZk>

Flexibility w/Numbers

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2÷	3÷	
	1-	

Ken Ken Puzzles- Google them!
They are really fun!



What is one of the best things we can do for our students ? (p.47)

Ask students to demonstrate multiple paths to a solution, analyze a mistake, identify the big idea, and make connections.

It is not about speed, memorization, or simply getting answer.

Questions you might ask your child about math at home...

- What was the main concept today?
- How did you think about the problems?
- Did anyone share a different way of thinking or solving that was interesting or different?
- What learning did you take away?
- Do you have hmwk or a test to study for?

Rich Mathematical Tasks

Red Hawk Math Instruction

Is

high expectations

Collaborative

About sharing thinking

Analyzing mistakes

Multiple solutions

Balanced

Supported online

Is Not

Elitist

All independent work

Judging incorrect thinking

Worrying about mistakes

One way to solve

All skill and drill

Lacking a textbook

6 Ways to Open a task

- 1** Use Tasks with Mult. Solutions
- 2** Add an Element of Inquiry
- 3** Intro Problem b4 teaching Method
- 4** Require a Visual Component
- 5** Lower Floor, high ceiling
- 6** Ss must convince & reason out loud, sharing thinking

Stations-Math Talk & Four 4's

We will break into two
groups and head to the
classrooms for some
rich mathematical tasks

Four 4's



Collaborative Challenge

Your task is to use four 4's and any operations you can think of to get each number 0-20.

$$4/4=1$$

$$[4+4]/4=2$$

$$[(4+4)/4] + (4/4) = 3$$

$$=4$$

$$=5$$

$$=6$$

$$=7$$

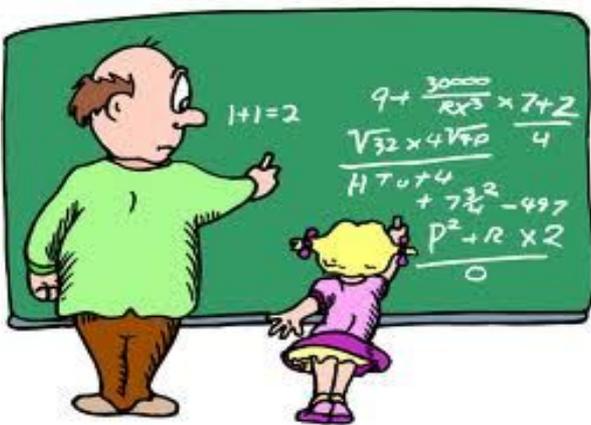
Keep going to at least 20



Closing- Growth Mindset Grouping

<https://www.youtube.com/watch?v=R4iAwShVIBE>

1. High achieving students should explore math in depth rather than rush on to higher levels. p. 100
2. The most successful countries ability group the latest and the least p. 112. Korea is highest achievement in math with the least tracking. Finland and China also at the top and both reject ability grouping.



Closing Feedback

Please reflect over our time tonight. **On your exit card, please share a new learning, question, excitement, or wonder.**

If you would like us to call or respond, please put your name on the exit card.

Thank you so much for coming and learning with us!

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