MATHEMATICAL MINDSETS - Jo Boaler

Jo Boaler – Stanford Professor – author of Mathematical Mindsets

IMMOOC session link

<https://bhi61nm2cr3mkdgk1dtaov18-wpengine.netdna-ssl.com/wp-content/uploads/2017/06/Day-1-Mindset-8.mp4>

6:14 min: How we view mistakes is important

* Brain science shows that making mistakes is good for the brain – more synapsis
* Best time for brain growth is when students are struggling or making mistakes
* Students who realize mistakes help them grow are more willing to struggle, try harder and keep going
* More brain activity when people had a growth mindset vs fixed mindset
* Celebrate risk taking, create mistake ‘friendly’ environments

11:18 min: Debunk some myths:

* Everybody can be a ‘math person’. It is a myth that some people are born with a math brain and some aren’t, that some can do it and others can’t – everyone’s brain can grow and learn math – short, closed Qs reinforce message of right/wrong – can or can’t do – try to open up math questions to give space for thinking – celebrate the different ways people ‘see’ things
* To be good at math you have to be fast - otherwise, not a good math person – not true. Some top mathematicians were not fast. They were slow and thought deeply about math.
* Math is just about facts and numbers – math calculations are only a small part of math. Patterns, visualization and ideas are equally important. When we practice math in ways that include more than numbers, we use different parts of the brain – some brain pathways light up when we think about symbols, other part lights up when we are visualizing and drawing numbers – most powerful to connect across areas of the brain

Not good enough to just tell kids that they can do it, that mistakes are okay. Need to model it (show them it is okay for teacher to make a mistake) and give them opportunity to experience, be creative, explore and think in math

13 min: Thoughts about homework

* Biggest cause of inequity (access and resources to do)
* Doesn’t affect student achievement
* Time to correct or mark – might be better spent working with kids
* Need to help educate parents

19:24 min: What makes a math genius?

* More connectivity between different areas of the brain – multimodal knowledge and opportunities
* Brain crossing across domains is most powerful – thinking about numbers as symbols and drawing and visualizing

37:22 min: Why is innovation in Education critical?

* Math for shopkeepers (obsolete). We are training kids for something they don’t need. Our phones and calculators can do this.
* We need kids who can think flexibly, can set up models, can change methods, can adapt

45 min: Grading and math

* Doesn’t increase or decrease learning
* Reinforces fixed mindset – I’m a C student – that is who I am
* Better to focus on intrinsic motivation
* Better ways – diagnostic feedback

Other resources: <https://www.youcubed.org/>

* Week of inspirational math – lessons and videos to use with your class, organized by grade level – (tasks and more link)
* math posters – (tasks and more link)
* brain research (ideas and more link)

More of Jo Boaler: TedX <https://m.youtube.com/watch?v=3icoSeGqQtY>

Alice Keeler and Jo Boaler: <http://www.alicekeeler.com/2017/07/03/alice-keeler-jo-boaler-iste17-talk-google-apps-youcubed-org-math-activities/>