

Highlights from Stanford Professor Jo Boaler who spoke at LGHS Theatre on May 10, 2016

Jo Boaler brings together the latest neuroscience research and math learning. Her findings are a valuable resource for parents and teachers and make us re-think our current approach to learning.

Her research will make you review your perception of intelligence and smartness.

There is no such thing as a math person - with the proper instruction, brain structures can get changed in every child so that they understand math (and any other subject)

Telling a child they are smart is detrimental to their development. They will develop a 'fixed mindset' (Carol Dweck). How do you handle challenges if you think you are smart? Are you not smart because you struggle? Focus on developing a 'growth mindset': praise effort, productive practice and mathematical thinking and reasoning

Visualization is key. The concept, that higher math is abstract thinking, is simply wrong. Let your kids figure out solutions, visualize, discuss, refine and try new approaches. This leads to deeper understanding. Understanding means fully internalizing the concepts, not just applying a formula. Your brain can compress ideas, but not concepts

Never associate math with speed. Forcing kids to work quickly is the best way to start math anxiety, especially with girls. Deep understanding takes time. Some of the brightest math geniuses in history felt tremendously incapable in school as they were always the slowest.

If math wasn't exactly your personal strength, never share this with your kids, especially girls. Researchers found, that when mothers shared that idea with their daughters, their achievements went down

Encourage number sense. This is sense of what numbers mean, understanding their relationship to one another, understanding symbolic representations, and being able to use numbers in real world situations.

Play real board games and math puzzles with your children. Value different approaches. It's not the test sheets that develop skills, it's all the underlying activities that develop confidence and true understanding. Have fun with challenge and collaboration!

Optimal math learning is challenging. If your child does all the problems easily and quickly, their math brain is not growing. The optimal balance lies in a challenge they can solve with effort or a bit of help.

Keep that growth mindset going. If your child is stuck with thinking "I am not creative", they won't try in any area. It will help your child (and you!) in many ways to keep developing a growth mindset!

All kids start excited about math as math is all around us - shapes, distances, counting. Math is derived from nature and life. Keep it alive. Keep it applicable for your kids. Keep their curiosity alive.

Check out www.youcubed.org to find out a lot more than here! It contains a free online class to work on growth mindset with your child in 6 sessions.

A couple of recommended Math online games (touching real stuff is always better!):

<http://www.brainquake.com>

<http://motionmathgames.com>

<https://mathbreakers.com>