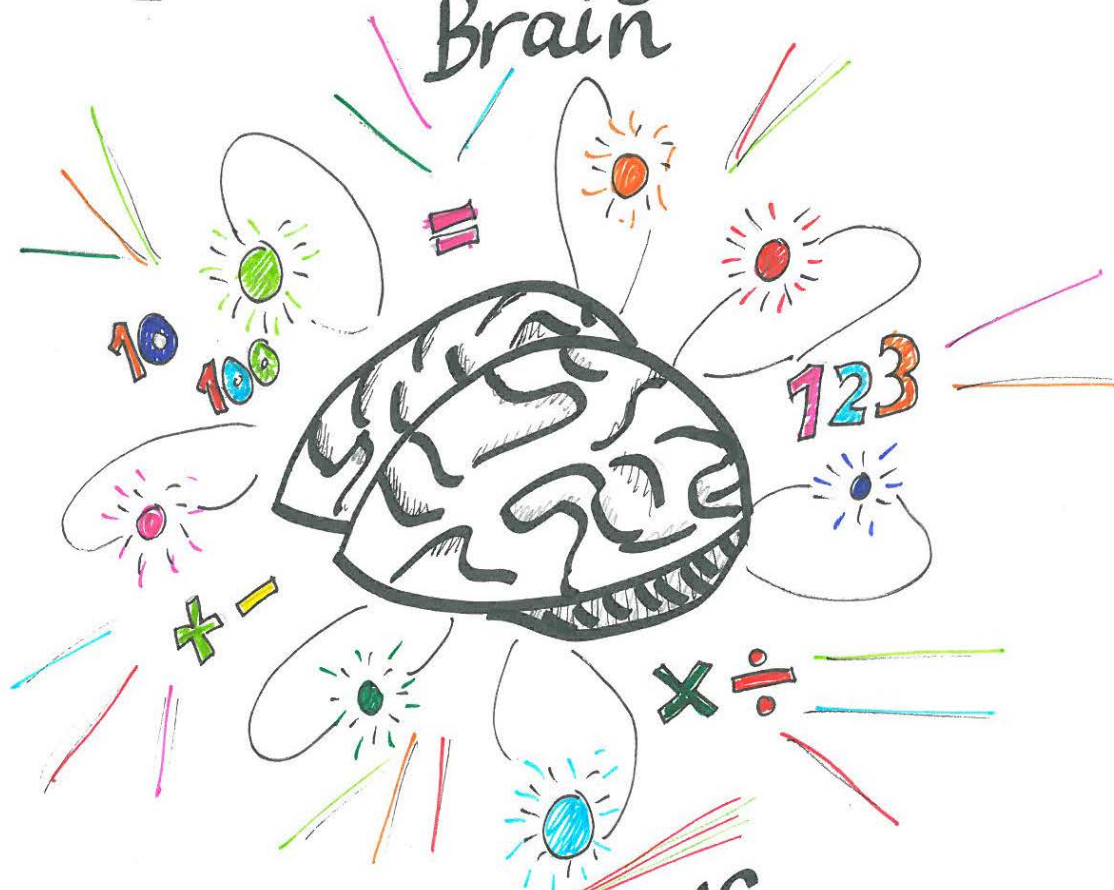


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I Can Grow My Maths Brain



My brain gROWS when
I make mistakes...
I keep trying...

We ♥ mistakes! They are our
FRIEND

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GROWING THE BRAIN

**“Every time children make a mistake in maths they grow a new synapse”
(Carol Dweck)**

- ❖ The brain and intelligence are not fixed - they both change when you learn
- ❖ The brain grows more new cells and connections when you learn
- ❖ You get smarter by exercising your brain, much the same way that you get stronger by exercising your muscles
- ❖ **How can you exercise the brain?**
 - by exploring new information, learning new concepts, and practicing skills.
 - practice is the key to learning - only by practicing can you grow new connections in that area of your brain responsible for learning that thing
 - the more connections you make, the easier it gets to make new ones
- ❖ Different environments can influence brain growth- active learning is the key
- ❖ You are never too old to learn and develop your brain!

How do we know that a new synapse grows?

- ❖ Researchers gave subjects a simple test - identifying the letter in the middle of a five-letter sequence. This is an easy task, but when done over and over eventually people make mistakes. The research focused on how people react when such mistakes occur.
- ❖ Some individuals seemed to learn from their mistakes, increase their effort, and improve later performance. Others did not recover from the mistake and improve their later performance.
- ❖ The researchers looked at brain function with EEG mapping during the task. After the mistake was made, every subject had a specific spike in activity - the recognition of the error. But those who learned from their mistake had a **prominent second** reaction (spike in activity in a specific brain region) while those who did not learn from their mistake had less of a second reaction.

Many believe that people's abilities are primarily based on innate talent: some people are "smart", some people are "bad at maths", some people are "good with languages", etc. Others believe that people's abilities are primarily based on experience and practice: athletes are obviously good at what they do because they spend a lot of time working out, musicians spend a lot of time practicing etc., and anyone could become quite good (maybe not world-class, but definitely "not bad") at anything just by putting in a lot of practice or **effort**.

These are the two "mindsets": The "fixed" mindset feels that talent is innate, while the "growth" mindset feels that the brain is like a muscle and that its capabilities come from exercise and practice and experience and perseverance.

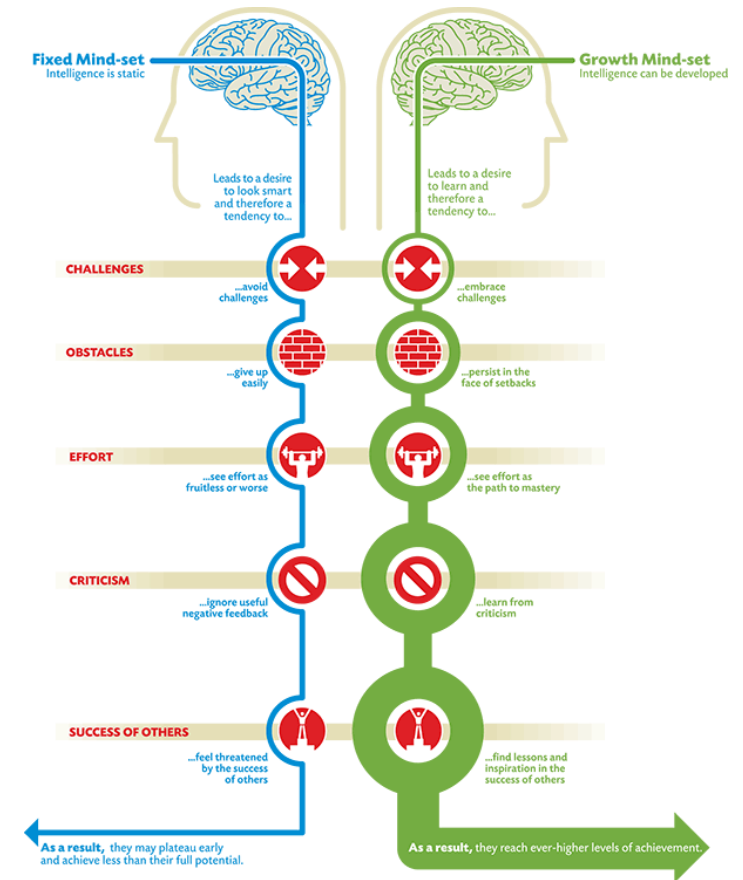


Image source: http://qedfoundation.org/fixed-vs-growth-mindsets/dweck_mindset/