

Does Everyone Have the ‘Math Gene?’

Hopefully that question has you wondering, “Math gene?” Even though there is no such thing, people often say things that make children believe that intelligence and ability are something they are born with. As a community, we need to break away from the ‘mindset’ that we have a certain amount of intelligence and we can’t do much to change it.

‘Mindset’ is a simple idea discovered by Carol Dweck in her years of research on achievement and success. She found that everyone holds ideas about their own potential. Some people have a **‘fixed mindset’** and believe that their intelligence and talent are more or less unchangeable. The phrase, “I’ll never get fractions,” indicates the belief that math ability cannot be changed, no matter how the person tries. Other people have a **‘growth mindset’** and believe that they can improve their intelligence and skills with dedication and hard work. The phrase, “Fractions were confusing at first, but the more I work with them the better I get,” shows the understanding that it sometimes takes hard work and patience to learn.

Why Is a ‘Growth Mindset’ Important?

Children who have a growth mindset persist when they are challenged and are more willing to take risks because they realize that making mistakes is part of learning. Thomas Edison tried over 900 light bulbs before one worked, but he didn’t look at those experiments as failures because he learned from them. The author of the Harry Potter series, J.K. Rowling, sent her manuscript to a dozen publishers and was told “Not to quit her day job,” but she didn’t let frustration defeat her! When children are taught that they can develop their abilities through hard work and dedication, goals seem more attainable and challenges become less intimidating.

Fixed Mindset Traits	Growth Mindset Traits
<ul style="list-style-type: none">❖ Uncomfortable with unknown tasks❖ Give up easily❖ Want to be given the operation or formula to solve problems❖ I am good at it, or I’m not❖ Threatened by another person’s success❖ Abilities determine everything❖ Unwilling to take risks and make mistakes	<ul style="list-style-type: none">❖ More willing to try new tasks❖ Show perseverance when challenged❖ Look for a meaningful strategies to work through problems❖ I can learn anything I want to❖ Inspired by another person’s success❖ Effort and attitude determine everything❖ Look at mistakes as opportunities to learn from

How Do We Foster a ‘Growth Mindset’ in Our Children?

Children need to hear a consistent message from adults in their lives that will significantly contribute to developing and maintaining an ‘I can do this’ attitude. We need to encourage them to understand that with effort and persistence they can learn and become smarter.

Talk about the brain: Scientists have learned a lot about brain growth recently. Did you know that the connections between the neurons in your brain are not just strengthened with learning, practice and mastery, but new neural connections are actually created! Just like muscles, brains need exercise to grow. The more we use it and challenge it with ‘heavy work’, the stronger it gets. When children learn that their brains physically change with effort, it leads to increased motivation and achievement.

Role model a growth mindset: Sometimes we say things like, “I’m a terrible artist,” or “I can’t cook.” Focus on saying things that show you believe you can improve your abilities. Try saying, “Let’s pick out a couple of recipes so I can practice my cooking skills.” If children are struggling with a particular sport skill, like shooting a puck, have a conversation with your child about their plan to improve her/his shooting technique.

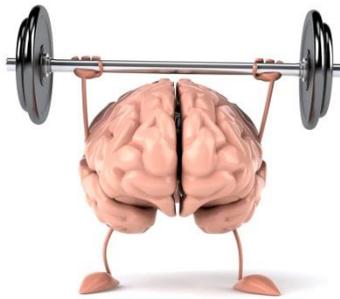
Use language that promotes a growth mindset: The most important thing we can do to help children develop a growth mindset is to praise them for effort rather than for talent. The following is a list of samples that can promote or stifle a growth mindset and how children interpret what is said.

Phrases that Promote a Growth Mindset	Phrases that Stifle a Growth Mindset
Adult: <i>“I can see you worked so hard on this!”</i> Child: My effort is valued	Adult: <i>“You are so smart!”</i> Child: My intelligence is a fixed quality
Adult: <i>“It looks like that was too easy for you. Let’s find something challenging so your brain can grow!”</i> Child: Learning should be challenging	Adult: <i>“That’s right! You did that so quickly and easily; great job!”</i> Child: It must be right when it takes no time or effort
Adult: <i>“It seems like it’s time to try a new strategy!”</i> Child: I control outcomes by making choices	Adult: <i>“It’s okay, maybe you’re just not cut out for this!”</i> Child: I don’t have the ability to improve
Adult: <i>“I like watching you do that!”</i> Child: I have your approval, regardless of the outcome	Adult: <i>“You’re a natural at that!”</i> Child: When I fail or make a mistake, I don’t have talent

The language parents and teachers use and the actions we take have a powerful impact on childrens' mindsets. When raised in a growth mindset culture, children take charge of their own learning; they develop the ability to handle failures as setbacks and gain the confidence to face and overcome challenges.

“If parents want to give their children a gift, the best thing they can do is to teach them to love challenges, be intrigued by mistakes, enjoy effort and keep on learning. That way, their children don't have to be slaves of praise. They will have a lifelong way to build and repair their own confidence.” – Carol S. Dweck

Are we willing to do what it takes to be great?



If you have questions or would like more information,
contact Michelle George at
email: migeorge@tncdsb.on.ca
phone: 737-1121 xt. 1761

For more information go to: <https://www.youcubed.org/resource/growth-mindset/>

References:

Ricci, M. C. (2013). *Mindsets in the Classroom*. Waco, Texas: Prufrock Press Inc.
youcubed at Stanford University; <https://www.youcubed.org/resource/growth-mindset/>
mindset works; <https://www.mindsetkit.org/>