

Contrary to popular opinion, teaching has never been as simple as standing in front of a classroom reciting facts and theories to a sea of blank slates, and then heading home.

It has always involved nurturing young minds, breaking through to those with difficulties, creating safe spaces for exploration and learning... and keeping up on the latest research in child development, educational resources, and learning theories. And then going home and doing more prep work.

Some of that latest research revolves around the idea of “fixed” versus “growth” mindsets and involves the “nurture,” “breakthrough,” and “create safe spaces” aspects of teaching. Proposed by Stanford researcher Carol Dweck and others, Growth Mindset theory suggests that a person with a fixed mindset believes that his or her intelligence is static, while **a person with a growth mindset believes that his or her intelligence can be developed.** Believing that you’re not good at math or that you can’t draw are examples of a fixed mindset. And while you will probably never be the next Albert Einstein or Rembrandt, **research shows that you can develop your abilities and improve in those areas by embracing a growth mindset.**

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In her research, Dweck found that developing a growth mindset can create a passion for learning rather than a hunger for approval. Through effort and deliberate practice, intelligence and creativity—even relational and emotional capacities like love and friendship—can be cultivated and deepened through a growth mindset. **People with a growth mindset are not discouraged by failure because they see it all as a part of learning.** In her book *Mindset: The New Psychology of Success*, Dweck writes: *“Why waste time proving over and over how great you are, when you could be getting better? Why look for friends or partners who will just shore up your self-esteem instead of ones who will also challenge you to grow? And why seek out the tried and true, instead of experiences that will stretch you? The passion for stretching yourself and sticking to it, even (or especially) when it’s not going well, is the hallmark of the growth mindset. This is the mindset that allows people to thrive during some of the most challenging times in their lives...”*

Growth Mindset in the Classroom

Developing and cultivating a growth mindset is advantageous at any age. **But a growth mindset, shared between students and teachers in a class, can make a profound difference.** A study of low-achieving 7th graders by Dweck, Lisa S. Blackwell and Kali H. Trzesniewski provided impressive proof. All students participated in eight 25-minute sessions on study skills, the physiology of the brain, etc. But students in the experimental group were taught that intelligence is malleable and can be developed while students in the control group had a lesson on memory and engaged in discussions of academic issues of personal interest to them. Students in the experimental group showed a remarkable improvement in both motivation and math grades, and students in the control group showed no improvement despite all the other interventions.

One teacher said of one of the students in the experimental group: “L., who never puts in any extra effort and doesn’t turn in homework on time, actually stayed up late working for hours to finish an assignment early so I could review it and give him a chance to revise it. He earned a B1 on the assignment [he had been getting C’s and lower].”

Developing a growth mindset classroom requires an understanding of how the brain works, and its capacity to grow and develop. The Project for Education Research That Scales, a research center in the psychology department at Stanford University, states, “It can be tempting to explain what a growth mindset is and what a fixed mindset is and then simply tell students that they ‘should’ have a growth mindset. That approach is sure to backfire—students won’t accept a completely new way of thinking just because someone tells them to, nor should they! Present the scientific evidence and help students come to their own decisions. In other words, ‘show them, don’t tell them.’”

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Kathleen Kaplan, M. Ed., a math teacher in Loudoun County Public Schools in Virginia and a former Regional Manager for Professional Development at ExploreLearning, suggests “Emphasize

learning conceptually and improvement over learning procedurally or memorization. Learning conceptually helps the learning go into long-term memory. Remember, however, that simple effort is not good enough and does not warrant praise by itself. Developing and trying different strategies to solve a problem is what earns praise. Instead of exclaiming, ‘Nice job—good effort!’ say things like, ‘Good perseverance in trying a new strategy. It paid off.’ On the other end of the spectrum, a child who consistently gets good marks on tests should be asked, ‘Did you learn anything new in this unit?’ If the answer is no, then teacher may want to differentiate and offer an opportunity for that student to go deeper with the content.”

What Growth Mindset Isn’t

Like any new theory or research finding, Growth Mindset has seen its share of criticism, particularly that it praises and rewards effort without achievement, like the good old “participation trophy.” According to Dweck, “the most common misconception is simply equating the growth mindset with effort. Students need to try new strategies and seek input from others when they’re stuck. They need this repertoire of approaches—not just sheer effort—to learn and improve. The growth-mindset approach helps children feel good in the short and long terms, by helping them thrive on challenges and setbacks on their way to learning.”

Dweck notes that for many, a growth mindset has become the “in” thing to have, without understanding what it is exactly or how to develop one. “It was as though educators were faced with a choice: Are you an enlightened person who fosters students’ well-being? Or are you an unenlightened person, with a fixed mindset, who undermines them? So, of course, many claimed the growth-mindset identity. But the path to a growth mindset is a journey, not a proclamation.”

Growing Students’ Mindsets with Online Tools and Simulations

Simulations like [ExploreLearning’s Gizmos](#) are a great way to promote a growth mindset in the classroom. **Research shows that simulations allow students to engage in scientific inquiry by overcoming traditional obstacles.** For example, with a science simulation, students don’t have to worry about breaking equipment and can also conduct far more trials than would be possible with physical materials. Students can also pause a simulation, allowing them to engage in analytical thinking and improve their inquiry skills.

Dr. Amanda Gonczi says that *“Teachers need to praise students’ engagement in scientific thinking and behaviors, including productive collaboration... and stress that science is not a matter of ‘getting it’ or ‘not getting it.’ Both understanding and doing science are skills that students can improve at, and simulations like Gizmos are great for developing these skills.”*

[ExploreLearning Reflex](#) helps students develop math fact fluency in a highly adaptive and individualized environment so that students of all ability levels enjoy early and ongoing success. **Giving students math fact fluency sets the stage for a growth mindset and helps build confidence when trying new math tasks.** Students become willing to take risks in class, are able to learn at their own pace and can make mistakes in a safe environment.

And a growth mindset means embracing challenges and mistakes.

Additional Resources

[Implicit Theories of Intelligence Predict Achievement Across an Adolescent Transition: A Longitudinal Study and an Intervention: Lisa S. Blackwell, Kali H. Trzesniewski and Carol Sorich Dweck](#)

[Project for Education Research That Scales Mindset Kit](#)

[Education Week: Carol Dweck Revisits the ‘Growth Mindset’](#)

[ExploreLearning News Expert Corner: If I only had a \[math\] brain](#)

[ExploreLearning News Expert Corner: Grow Students’ Mindset with Gizmos](#)

[ExploreLearning Educator Insights Webinar: Grow Students’ Science Mindset With Gizmos](#)

ExploreLearning® develops online solutions to improve student learning in math and science. ExploreLearning currently has two products: Gizmos®, the world’s largest library of interactive, online simulations for math and science in grades 3–12; and Reflex®, the most powerful solution available for math fact fluency development. Gizmos and Reflex bring research-proven instructional strategies to classrooms around the world. For more information about Gizmos, please visit www.explorelearning.com. For more information about Reflex, please visit www.reflexmath.com.