



CENTER FOR RESEARCH ON GIRLS
AT LAUREL SCHOOL

GROWTH MINDSET

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CRG | PUTTING THE WORLD'S BEST RESEARCH TO WORK FOR GIRLS

by Lisa Damour, Ph.D.

TEACHING GIRLS TO ADOPT A **GROWTH MINDSET**

Fixed and *growth* mindset—terms developed by Carol Dweck, Ph.D.—describe two categories of belief about ability. Students with a *fixed* mindset believe that their mental abilities are static and that their intelligence and abilities cannot be altered with effort. In contrast, **students with a *growth* mindset believe that their intelligence and abilities can be expanded with effort.** Research evidence demonstrates that **students with a *growth* mindset academically outperform their *fixed* mindset peers.**¹

Some research evidence indicates that **girls are more likely than boys to have a *fixed* mindset**, especially in mathematics.² Despite actually performing as well as boys in math courses, girls doubt their ability to develop their math skills when faced with difficult material; this *fixed* mindset in female mathematics students appears to contribute to the substantial gender gap in mathematics engagement that emerges during and after middle school.³

Growth mindset is based on the belief that your basic qualities are things you can cultivate through your efforts... research evidence indicates that students can be taught to adopt a growth mindset.

WHY STUDENTS WITH A **GROWTH MINDSET** OUTPERFORM THEIR **FIXED MINDSET PEERS**

According to Carol Dweck, having a *fixed* mindset “creates an urgency to prove yourself over and over. If you only have a certain amount of intelligence, a certain personality, and a certain moral character – well, then you had better prove you have a healthy dose of them. It simply wouldn’t do to look or feel deficient in these most basic characteristics.”⁴ On the other hand, students with a *growth* mindset believe that “the hand you’re dealt is just the starting point for development. This *growth mindset* is based on the belief that your basic qualities are things you can cultivate through your efforts. Although people may differ in every which way – in their initial talents and aptitudes, interests, or temperaments – everyone can change and grow through application and experience.”⁵ The differences between these two mindsets have profound implications for how students approach academic challenges and academic setbacks – two arenas that essentially dictate a student’s ultimate academic achievement. The chart on the next page, based on Dweck’s work, summarizes how *fixed* and *growth* mindset students approach a wide variety of factors they confront at school.⁶ The presence of a *growth* or *fixed* mindset seems to be especially crucial during the middle school years, a time when the work becomes more demanding, grades take on greater salience, and teachers can be

perceived as less supportive. Indeed, research demonstrates that seventh graders with a *growth* mindset see their grades improve over a two-year period of middle school, while students with a *fixed* mindset see no such improvement.⁷

TEACHING STUDENTS TO ADOPT A **GROWTH MINDSET** ✨

Thankfully, research evidence indicates that students can be taught to adopt a *growth* mindset and that doing so results in increased motivation, as well as higher grades and test scores.⁸ One study tested the effects of giving a group of seventh grade students eight 25-minute lessons aimed at promoting a *growth* mindset. During these lessons “the key message was that learning changes the brain by forming new connections, and that students are in charge of this process.”⁹ The researchers found that the students who were taught about the malleability of intelligence went on to demonstrate higher levels of academic motivation and achievement than peers who did not learn about the malleability of intelligence. Programs to help students develop a *growth* mindset have also found that college students who are taught about neural plasticity and the malleability of human intelligence reported increased enjoyment of the academic process, greater academic engagement, and higher grade point averages than college students who did not receive these lessons.¹⁰

	FIXED MINDSET THINKING	GROWTH MINDSET THINKING *
ACHIEVEMENT...	means proving you're smart.	means that you're learning and stretching.
BEING SMART...	means that you're making no mistakes.	means that you're confronting a challenge and making progress.
A SETBACK OR MISTAKE...	leads to loss of confidence.	indicates an area for growth.
FAILURE...	leads to humiliation.	means that you're not yet fulfilling potential.
EFFORT...	shouldn't be required if you're smart and takes away excuses for failure.	is the path to mastery that makes you smarter. You get out what you put in.
SUCCESS...	is defined as being the best and is based on talent.	is defined as working hard to become your best and is based on motivation.
A BAD GRADE...	means it's time to give up.	means it's time to work harder.
FEEDBACK...	is threatening, as it provides good or bad news about precious traits.	is welcomed, as it provides useful direction toward areas to work on.
THE NEED TO ASK FOR HELP...	indicates a weakness or deficiency which should not be admitted.	is a useful strategy for growth.
STEREOTYPE THREAT...	is high due to fears of confirming negative stereotype.	is low; a stereotype is simply someone else's inaccurate view of their abilities.
TALENTED PEERS...	become grounds for feeling threatened and jealous.	are a source of inspiration.

TEACHING GIRLS TO ADOPT A GROWTH MINDSET [ENDNOTES]

- 1 Henderson, V., & Dweck, C. S. (1991). Adolescence and achievement. In S. Feldman & G. Elliott (Eds.), *At the threshold: Adolescent development* (pp. 197-216). Cambridge, MA: Harvard University Press.
Hong, Y., Chiu, C., Dweck, C. S., Lin, D. M., & Wan, W. (1999). Implicit theories, attributions, and coping: A meaning system approach. *Journal of Personality and Social Psychology*, 77(3), 588-599.
- 2 Lloyd, J. E. V., Walsh, J., & Yailagh, M. S. (2005). Sex differences in performance attributions, self-efficacy, and achievement in mathematics: If I'm so smart, why don't I know it?. *Canadian Journal of Education*, 28(3), 384-408.
- 3 Dweck, C. S. (2006a). Is math a gift? Beliefs that put females at risk. In S. J. Ceci & W. Williams (Eds.), *Why aren't more women in science? Top researchers debate the evidence* (pp. 47-55). Washington, DC: American Psychological Association.
- 4 Dweck, C.S. (2006b). *Mindset: The new psychology of success*. New York: Ballantine Books, 6.
- 5 Dweck (2006b), 7.
- 6 Dweck (2006b).
- 7 Blackwell, L. S., Trzesniewski, K. & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child Development*, 78, 246-263.
- 8 Utman, C. H. (1997). Performance effects of motivational state: A meta-analysis. *Personality and Social Psychology Review*, 1(2), 170-182.
- 9 Blackwell (2007), 254.
- 10 Aronson, J., Fried, C. B., & Good, C. (2002). Reducing the effects of stereotype threat on African American college students by shaping theories of intelligence. *Journal of Experimental Social Psychology* 38(2), 113-125.
Good, C., Aronson, J., & Inzlicht, M. (2003). Improving adolescents' standardized test performance: An intervention to reduce the effects of stereotype threat. *Journal of Applied Developmental Psychology*, 24(6), 645-662.
- 11 Dweck (2006b).

RESOURCES FOR TEACHERS



ONLINE ARTICLES

BOOSTING ACHIEVEMENT WITH MESSAGES THAT MOTIVATE

This brief, highly-readable article by Carol Dweck, the leading researcher on mindsets and academic achievement, provides an engaging and accessible introduction to the research on *growth* and *fixed* mindsets.

<http://www.cea-ace.ca/education-canada/article/boosting-achievement-messages-motivate>

IMPLICIT THEORIES OF INTELLIGENCE PREDICT ACHIEVEMENT ACROSS AN ADOLESCENT TRANSITION: A LONGITUDINAL STUDY AND AN INTERVENTION

This academic article summarizes a research study demonstrating that teaching students about neural plasticity (the brain's capacity to change over time) boosts their motivation, presumably by shifting students from a *fixed* to a *growth* mindset.

www.mrmont.com/teachers/self-Theoriesofintelligence-achievement.pdf.



DOWNLOADABLE POWERPOINT

BRAIN TRAINING

Teach students about neural plasticity using this engaging PowerPoint presentation developed by the Center for Research on Girls (CRG).

<http://www.laurelschool.org/about/CRGResource-Center.cfm>



DOWNLOADABLE DOCUMENTS

BRAIN BOWL

Host a **Brain Bowl** to reinforce the content of CRG's **Brain Training** lesson (PowerPoint available as noted above). Use these quiz questions, also developed by CRG, to engage students in a "Jeopardy" style game a few weeks after the **Brain Training** lesson. Instructors can create a "Jeopardy" game using a chalk board, poster-board, note cards, or any other of a wide variety of materials. The quiz questions can also be loaded into an online "Jeopardy" game available at www.coderedsupport.com/jeopardy.

<http://www.laurelschool.org/about/CRGResource-Center.cfm>

TEACHING TO PROMOTE A GROWTH MINDSET

This one-page document developed by CRG provides several examples of how teachers' feedback, attitude, and orientation toward student behavior can promote a *growth* mindset.

<http://www.laurelschool.org/about/CRGResource-Center.cfm>



MERCHANDISE

GROWTH MINDSET POSTER

Reinforce the messages delivered during the **Brain Training** lesson and the **Brain Bowl** and enhance any classroom with CRG's **Growth Mindset Poster**. This poster can be purchased from the Center for Research on Girls at

<http://www.laurelschool.org/about/CRGStore.cfm>

RESOURCES FOR PARENTS



BOOK:

MINDSET: THE NEW PSYCHOLOGY OF SUCCESS

Parents will enjoy Carol Dweck's book *Mindset: The new psychology of success*¹¹ about how children can be taught to develop a *growth* mindset. *Mindset* provides parents with a variety of tools to foster their children's motivation, love of challenges, and resilience.

