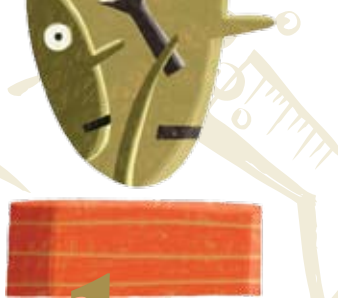


Mind-Sets *and.* Equitable Education



Much talk about equity in education is about bricks and mortar—about having equal facilities and equal resources. Those factors, although extremely important, are relatively easy to quantify. What may be harder to capture are the beliefs that administrators, teachers, and students hold—beliefs that can have a striking impact on students' achievement.

In my research, I have identified two sets of beliefs that people can have about students' intelligence (and that students can have about their own intelligence). They may have a fixed mind-set, in which they believe that intelligence is a static trait: some students are smart and some are not, and that's that. Or they may have a growth mind-set, in which they believe that intelligence can be developed by various means—for example, through effort and instruction. A growth mind-set doesn't imply that everyone is the same or that anyone could be Einstein, but it does imply that everyone's intellectual ability can grow—and that even Einstein wasn't Einstein before he put in years of passionate, relentless effort.

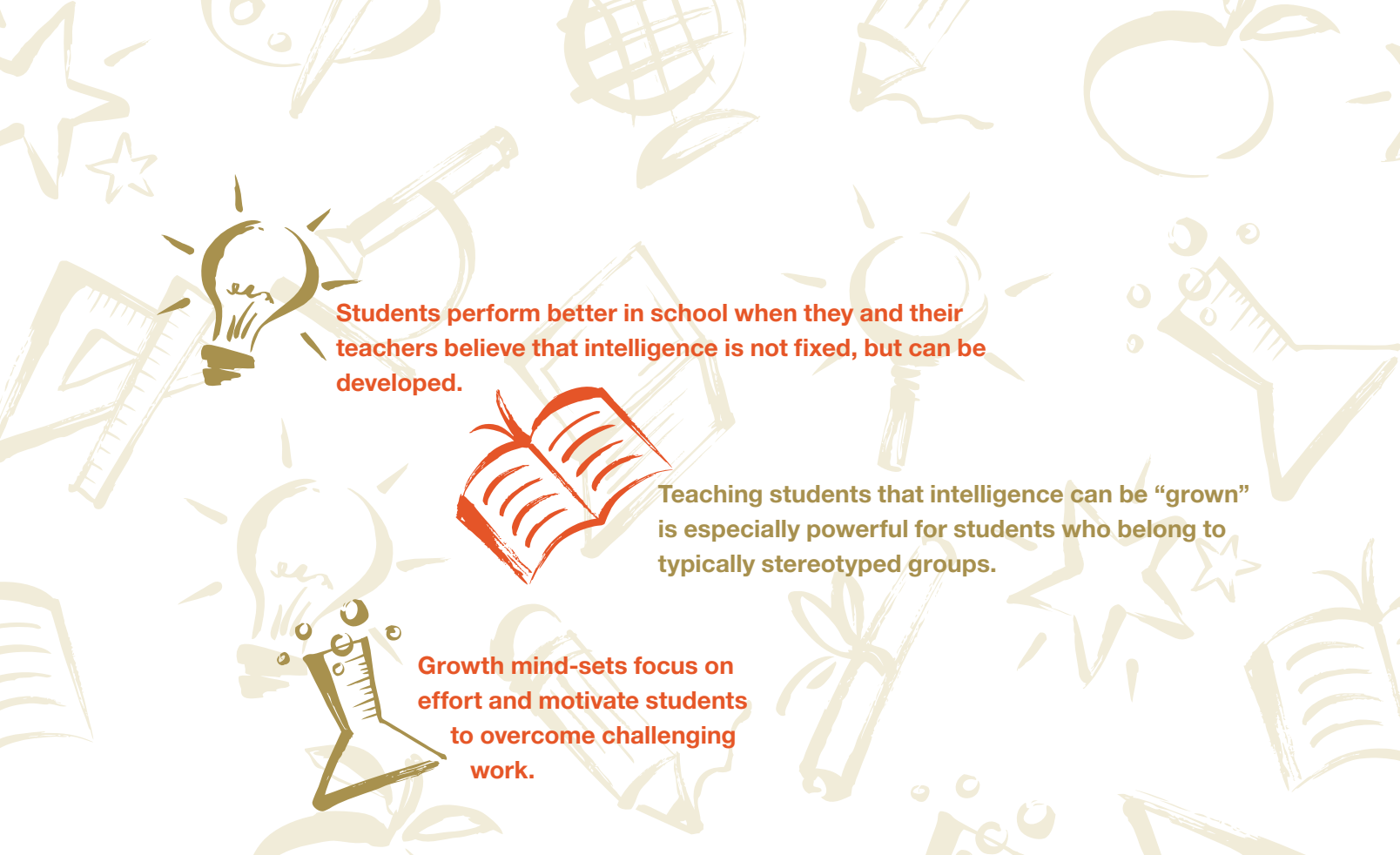
Recent research has shown that students' mind-sets have a direct influence on their grades and that teaching students to have a growth mind-set raises their grades and achievement test scores significantly (Blackwell, Trzesniewski, & Dweck, 2007; Good, Aronson, & Inzlicht, 2003). In addition, studies demonstrate that having a growth mind-set is especially important for students who are laboring under a negative stereotype about their abilities, such as Black or Latino students or girls in mathematics or science classes (Blackwell

et al., 2007; Good et al., 2003; Aronson, Fried, & Good, 2002). Adopting a growth mind-set helps those students remain engaged and achieve well, even in the face of stereotypes.

Students' Mind-Sets

To see the effect of mind-sets, my collaborators, Lisa Blackwell and Kali Trzesniewski, and I followed several hundred students in New York City during their difficult transition to seventh grade. We measured their mind-sets at the beginning of the school year and monitored their grades over the next two years to see how they had coped with the challenge. Despite their differing mind-sets, students entered seventh grade with similar mathematics achievement, but their grades jumped apart in their first term and continued to diverge over the next two years. The students with the growth mind-set (those who believed that intelligence could be developed) significantly outperformed their classmates who held a fixed mind-set. Why did this happen?

Because they believed that their intellect could be developed, students with a growth mind-set focused on learning, believed in effort, and were resilient in the face of setbacks. Students with



Students perform better in school when they and their teachers believe that intelligence is not fixed, but can be developed.

Teaching students that intelligence can be “grown” is especially powerful for students who belong to typically stereotyped groups.

Growth mind-sets focus on effort and motivate students to overcome challenging work.

a fixed mind-set, however, worried more about looking smart and not making mistakes, thought that needing to make an effort to learn meant that their intelligence was deficient, and became discouraged or defensive in the face of setbacks because they believed that setbacks reflected limitations in their intelligence. After receiving a poor grade on a test, they said that they would consider cheating on the next test. In other words, their logic was that if you don't have ability, you have to find another way to succeed. It is no wonder that having a growth mind-set, with its emphasis on hard work in the service of learning, led to higher grades than having a fixed mind-set, with all of the worries and defenses that deflect students from applying themselves.

On the basis of those findings, we designed a workshop to teach students a growth mind-set. We took a group of seventh graders who were earning declining mathematics grades. Half of them attended eight sessions of a workshop that taught them great study skills. This was the control group. The other half attended eight sessions of a workshop that taught both study skills and training in the growth mind-set. These students learned that their brain was like a muscle: the

more they used it, the stronger it became. They also learned that every time they stretched themselves to learn something new, their brain formed new connections and that over time they could become smarter.

Students were galvanized by the idea that the growth of their minds was under their own control. We will never forget one boy who had always cut up with his friends. Upon hearing the growth mind-set message, he chased his friends away, looked up at us, and asked with great emotion, “You mean I don't have to be dumb?”

We found that the students who had gotten training in study skills alone continued to show declining grades. They did not gain the motivation to put their skills into practice. But the students in the growth mind-set workshop showed a marked improvement in their grades. And teachers noticed the difference too. Although the teachers did not know which students had attended which workshop, they singled out three times as many students from the growth mind-set group as from the control group for having shown clear changes in their motivation to learn—and they wrote extensively about the changes they saw in homework, class attention, study habits, and grades.

Other researchers, too, were finding that teaching a growth mind-set raised achievement test scores, as well as students' investment in and enjoyment of school (Aronson et al., 2002; Good et al., 2003). All of those findings made us eager to reach more students. How could we bottle the growth mind-set and disseminate it more widely? For this purpose, we developed a software program called

Messages That Promote a Growth Mind-Set

- We believe in your potential and are committed to helping everyone get smarter.
- We value (and praise) taking on challenges, exerting effort, and surmounting obstacles more than we value (and praise) “natural” talent and easy success.
- Working hard to learn new things makes you smarter—it makes your brain grow new connections.
- School is not a place that judges you. It is a place where people help your brain grow new connections.

Brainology (www.brainology.us) to teach students about their brains and the things they can do to make them work better. Students perform all kinds of experiments to see how stretching themselves to learn makes neurons in their brains form the new connections that make them smarter.

We tested Brainology in 20 New York City schools and virtually every student (anonymously) reported changing his or her ideas about learning and study habits. Most exciting, many reported using the image of their neurons making new connections to motivate themselves in school, saying that they pictured their neurons forming new connections when they paid attention in class and that when tempted to not study, they rejected that idea on the grounds that new connections would not be formed.

Educators' Mind-Sets

Rheinberg (as cited in Dweck, 2007), a researcher in Germany, measured teachers' mind-sets at the beginning of the school year. Some teachers believed that students had fixed intelligence and that they, as educators, had no influence on their students' basic intellectual capabilities. Other teachers believed that they could mold and enhance their students' intellectual skills. Rheinberg then monitored the students' achievement over the school year. He found that when teachers had a fixed mind-set, the students who had entered their class as low achievers left as low achievers at the end of the year. When teachers had a growth mind-set, however, many of the students who had started the year as low achievers moved up and became moderate or even high achievers. Teachers with a growth mind-set don't just mouth the belief that every student can learn; they are committed to finding a way to make that happen.

People with a growth mind-set don't put people in categories and expect them to stay there, but people with a fixed mind-set do. They

not only believe in fixed traits, but they also believe that they can quickly and accurately judge those traits. This means that once they have decided that someone is or is not capable, they are not very open to new information to the contrary. And they may not mentor people who they have decided are not capable.

When teachers decide that certain students are not capable (or when principals decide that certain teachers are not capable), they may not take steps to help them develop their potential. In a recent study, we took people who had a fixed or growth mind-set and we asked them to respond to a seventh-grade student who had received a poor grade on the first mathematics test of the year. Those who had a fixed mind-set comforted the student and told the student that not everyone could be good in mathematics.

In sharp contrast, those who had a growth mind-set said that they knew that the student could do better, encouraged the student to try harder, and gave the student specific suggestions for study and learning strategies. For the educator with a fixed mind-set, learning is the students' responsibility. If students don't have what it takes, so be it. But for the educator in a growth mind-set, learning is a collaboration in which the teacher has great responsibility.

It is essential for educators to communicate that they hold a growth mind-set. Recently, we studied college sports teams. At the beginning of the year, we asked athletes to tell us how much they thought their coaches believed success came from natural talent and how much they thought their coaches believed success came from practice and hard work. The more that athletes thought their coaches believed in hard work over natural talent, the better the athletes did that year. Students know what educators value—they pick up their messages and act on them.

In fact, adults are always sending messages that shape students' mind-sets. For more than a decade, my collaborators and I have studied the effects of praising students' intelligence as opposed to praising their effort (Mueller & Dweck, 1998). When adults praise students' intelligence after a student performs well, they send a fixed mind-set message: you're intelligent and that's what I value in you. When adults praise effort (or strategies), however, they send a growth mind-set message: you can build your abilities through effort.

What happens when students have been praised for their intelligence or their effort and then they encounter difficulty? The differences are remarkable. Those who are praised for intelligence lose their confidence and motivation, their performance plummets, and they are ashamed of their difficulty (almost 40% of them lie about their score). But those who are praised for effort remain undaunted and their performance continues to improve. In fact, many of them enjoy the challenge.

Mind-Set and Stereotyping

Teaching a growth mind-set seems to decrease or even close achievement gaps. When Black and Latino students adopt a growth mind-

set, their grades and achievement test scores look more similar to those of their non-stereotyped peers. When female students adopt a growth mind-set, their grades and achievement test scores in mathematics become similar to those of their male classmates. In these studies, every group seemed to benefit from holding a growth mind-set, but the stereotyped groups gained the most (Aronson et al., 2002; Blackwell et al., 2007; Good et al., 2003).

This makes sense. A negative stereotype is a fixed mind-set belief that certain abilities are inherent and that your group doesn't have them. If negatively stereotyped students have a fixed mind-set and find themselves struggling, that stereotype may haunt and discourage them. But if stereotyped students have a growth mind-set—even if they grant that their group may have underperformed historically—they believe that through their effort and the support of educators they can develop their abilities. In that case, students may expect to struggle and not experience difficulty as insurmountable.

Teachers and administrators should send messages that intelligence is fluid, and they need to hear such messages too. They need to keep growing, especially in these challenging and changing times. Thus, they, too, need permission to learn—the freedom to stretch themselves, make mistakes, and try again. Only in growth mind-set cultures, where teachers and administrators are encouraged to fulfill their potential, will they be able to help their students fulfill *their* potential in schools that are free of bias. **PL**

REFERENCES

- 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, 113–125.
- Blackwell, L., Trzesniewski, K., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and intervention. *Child Development*, 78, 246–263.
- Dweck, C. S. (2007). *Mindset: The new psychology of success*. New York: Ballantine Books.
- Good, C., Aronson, J., & Inzlicht, M. (2003). Improving adolescents' standardized test performance: An intervention to reduce the effects of stereotype threat. *Applied Developmental Psychology*, 24, 645–662.
- Mueller, C. M., & Dweck, C. S. (1998). Intelligence praise can undermine motivation and performance. *Journal of Personality and Social Psychology*, 75, 33–52.

Carol S. Dweck is the Lewis and Virginia Eaton Professor of Psychology at Stanford University. She has recently won the Klingenstein Award for Leadership in Education, the Ann Brown Award for contributions to developmental psychology, the Donald Campbell Award in social psychology, and the E. L. Thorndike Career Achievement Award in educational psychology. She is the author of *Mindset: The New Psychology of Success* (2007, Ballantine Books).