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The Myth of the Gifted Child

extracts from Mathematical Mindsets

by Jo Boaler

Stanford Professor of Mathematics Education, Online Course Experimenter,
Co-Founder of Youcubed, author of the new book: Mathematical Mindsets.

Mathematics is a beautiful subject, with ideas and connections that can inspire all students. But too often it is taught as a performance subject the role of which, for many, is to separate students into those with the math gene and those without.

> *Disturbingly, mathematics has been pulled into a culture of performance and elitism in the United States, and I believe that to achieve higher and equitable outcomes we need to recognize the elitist role that mathematics often plays in our society.*

For mathematics can, on the one hand, be thought of as an incredible lens through which to view the world; an important knowledge, available to all, that empowers young people to think quantitatively about their work and lives and that is equitably available to all students through study and hard work. On the other hand, mathematics can be thought of a subject that separates children into those who can and those who cannot, and that is a valuable sorting mechanism, allowing people to label some children as smart and others as not.

The Myth of the Mathematically Gifted Child

Some people, including some teachers, have built their identity on the idea they can do well in math because they are special, genetically superior to others. People try hard to hang on to the idea of children who are genetically gifted in math, and the whole "gifted" movement in the United States is built upon such notions. But we have a great deal of evidence that although people are born with brain differences, such differences are eclipsed by the experiences people have during their lives, as every second presents opportunities for incredible brain growth (Thompson, 2014; Woollett & Maguire, 2011).

> *Even the people whom society thinks of as geniuses actually worked really hard and in exceptional ways to achieve their accomplishments.*

Einstein did not learn to read until he was nine and he failed his college entrance examination, but he worked exceptionally hard and had a very positive mindset – he celebrated mistakes and was extremely persistent. Rather than recognizing and celebrating the nature of exceptional work and persistence, the U.S. education system focuses on "gifted" students who are given different opportunities, not because they show great tenacity and persistence but often because they are fast with math facts. The labeling of students as gifted hurts not only the students who are deemed as having no gifts but also the students who are given the gifted label, as it sets them on a fixed mindset pathway, making them vulnerable and less likely to take risks in order to avoid making mistakes and potentially losing their gifted label.

When mathematics is taught with an attitude of elitism and is held up as being harder than other subjects and suitable only for the gifted few, a tiny subset of those who could achieve in mathematics—and the scientific subjects, which require mathematics—do so.

> *When this elitist idea is combined with stereotypical ideas of who has the gift, the results are harsh inequities.*

The national U.S. data on students who take advanced mathematics provides strong evidence of the impact of the elitist culture of mathematics in the United States. In 2013, 73% of math doctorates were male and 94% were white or Asian. The proportion of women pursuing mathematics PhDs between 2004 and 2013 actually fell, from 34% of students to 27% of students (Vélez, Maxwell, & Rose, 2013). These data should be cause for high-level discussions of mathematics inequities, prompting policy makers and others to seriously consider what we are doing in K–12 schooling that contributes to these growing inequities.

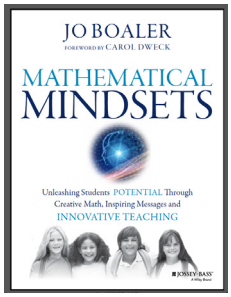
> *The idea of innate talent exists in several fields beyond math, with equally damaging results.*

When researchers looked into the reasons for the demographic representation of those pursuing PhDs across 30 fields, they found something fascinating. They found that the subjects in which professors believed that raw, innate talent is the main requirement for success are exactly those subjects in which women and African American students are underrepresented (Leslie, Cimpian, Meyer, & Freeland, 2015). Mathematics was the STEM subject whose professors were found to hold the most fixed ideas about who could learn. Researchers found that the more a field values giftedness, the fewer female PhDs there were in the field, and this correlation was found to hold across all 30 fields they investigated. These ideas about giftedness cause fewer women and people of color to participate because strong stereotypes persist about who really belongs in math (Steele, 2011). The research showing that when teachers hold ideas of "giftedness" it

hurts women and some students of color is extremely important for K-12 classrooms as well as universities. For if such ideas are harmful for PhD students we know they will be as or more damaging to younger students.

> *It is imperative for our society that we move to a more equitable and informed view of mathematics learning.*

Our conversations and work with students need to reflect the new science of the brain and communicate to all that everyone can learn math well, not only those believed to hold a "gift". This could well be the key to unlocking a different future – one in which math trauma is a thing of the past and students from all backgrounds are given access to high quality mathematics learning opportunities.



This article contains excerpts from Jo Boaler's new book, Mathematical Mindsets: Unleashing Students' Potential Through Creative Math, Inspiring Messages and Innovative Teaching

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