**Math Proficiency: A Matter**

**Of Hard Work, not Genes**

 “President Obama’s top technology adviser cringes when she hears highly educated adults say how bad they are at science and math,” begins a New York Times profile on Megan J. Smith, America’s chief technology officer. The MIT-trained former Google engineer last year traded in her Silicon Valley digs for an office in the White House.

 Continuing on the topic of math, for which she has a burning passion, Smith says she’s particularly uncomfortable when adults say such things in front of children.

 “That has to change,” she said during a talk to teachers at the White House. “We would never say that about reading.”

 So true. And yet many parents are convinced that there is some sort of mysterious genetic gift that predetermines math ability. You either have it or you don’t. And to take that notion further, some parents conclude that because they were stumped by math as a student, it’s only natural that their child will have trouble, too.

 Personally, I can’t tell you how many times a day I hear that from parents. The narrative typically goes: ‘My son or daughter is an outstanding student. But when it comes to math, they just have a really difficult time. They probably inherited it from me. I’m really bad with numbers.’

 Fortunately, though, there’s hope for everyone.

 “There is no such thing as a math gene,” says Mark Baucum, Director of Tutoring for Boost Academy, a math tutoring platform delivered through the iPad. “But I won’t sugarcoat it. Math is hard. It takes a lot of work, focus, practice and dedication to master. It’s not something that comes naturally to anyone. Humans aren’t born with the inherent ability to solve quadratic equations or trigonometric functions. The thing that almost always separates the mathematically proficient from those who are ‘bad with numbers’ is the amount of work they put into learning the subject.”

There are reams of scientific research that shows math is an acquired skill rather than an inherent one passed through the genes.

 One such recent study was conducted in 2013 by psychologists and neuroscientists and involved 70 Norwegian fifth graders.

 The bottom line?

 “We found (that) you become good at exactly what you practice,” said Professor Hermundur Sigmundsson of the Norwegian University of Science and Technology, one of the three researchers involved with the project. “Our study shows little correlation between (being good at) the nine different mathematical skills (that we measured.)”

 In other words, all math takes practice. And just because you’re good in geometry, doesn’t mean that you’ll excel in calculus without study.

 To that point, Baucum – a former high school math teacher – claims that a good math tutor is nearly essential in today’s modern high school curricula, which places such a heavy emphasis on math and science. A tutor can help keep a student focused and excited about math. They can guide the student through the rigors required for mathematical mastery. And ultimately, they can help the student avoid becoming discouraged with a subject that can certainly be difficult.

 “The whole world has shifted in just one generation,” Baucum says. “The deep knowledge of algebra, geometry, trigonometry and calculus are not just nice-to-haves, but must-haves. Nearly all of the very best jobs, careers and colleges require this deep mathematical knowledge. It’s no longer OK to simply shrug one’s shoulders and declare, ‘Meh. I’m just bad at math.’ ”

Links:

<http://www.sciencedaily.com/releases/2013/12/131216102844.htm>

<http://www.nytimes.com/2015/01/04/us/politics/her-task-weaning-the-white-house-off-floppy-disks.html?_r=0>