

This is why math matters

By Esther J. Cepeda
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As a high school algebra teacher, the most common question I got from students was: "Why do we have to learn this? When will it ever matter?"

I had to answer this same question in a "Methods of Teaching Math" class during my teacher-training program in which a declaration of love for math was seen as bizarre.

My answer was the same. Algebra is disciplined training for how to solve concrete problems by thinking in the abstract — a skill every single one of us needs to navigate life.

In her book "The Smartest Kids in the World: And How They Got That Way," author Amanda Ripley puts it much better:

"Why did math matter so much? Some reasons were practical: More and more jobs required familiarity with probability, statistics and geometry. The other reason was that math was not just math.

"Math is a language of logic. It is a disciplined, organized way of thinking. There is a right answer; there are rules that must be followed. More than any other subject, math is rigor distilled. Mastering the language of logic helps to embed higher-order habits in kids' minds: the ability to reason, for example, to detect patterns and to make informed guesses. Those kinds of skills had rising value in a world in which information was cheap and messy."

Not to mention plentiful. What a pity that as a country we do such a terrible job in preparing our kids to learn math. Not only do many parents not understand how important number sense is, society fails to show respect for the discipline. Plus, we don't always provide students — especially the poorest ones — with highly qualified teachers who can bring the subject to life, nor do we provide those teachers with orderly and holistic math curricula.

It starts at home. Highly educated or affluent families — the type who buy the Baby Einstein products to optimize their baby's brain development — generally do a good job of teaching their kids how to group, sort and count as a regular part of playtime. Less well-off families simply don't encourage such stimulation or don't know how crucial it is.

I spent a year as a first-grade teacher, and it was sad how many students came in with very little number sense (this alone is a compelling argument for providing universal pre-kindergarten). And no amount of colorful manipulatives, cutting-edge curricula or passion could quickly close the gap between students who could already add one and one and those who did not know their numbers from one to 10 on the first day of school.

Then there are attitudes toward math. After my few years as a teacher and many more as a parent, I recently

heard the following statement for the first time during a school's parent assembly about supporting kids' learning: "Don't tell your kids you were bad at math."

Hallelujah! If we could just outlaw parental and societal complaints about how "hard," "useless" or "stupid" math is, then we'd really get somewhere.

Another pitfall is teacher quality.

Elementary school teachers with undergraduate degrees in math are virtually unheard of. And, according to the National Center for Education Statistics, about a quarter of high school math teachers don't hold math degrees (I didn't, either), probably in no small part because it's hard to attract mathematicians to the bureaucracy of public school systems.

Finally, there is curriculum.

Ridley profiled an American student in Poland who attended a high-quality geometry class in which the teacher also used trigonometry and calculus, "following the thread of the lesson across disciplines, as though geometry was just one solar system in a larger universe of math. Together, the different disciplines could solve problems in the real world, where mathematics was not boxed into neat categories."

When was the last time anyone took a math class like that?

Math matters. We know this, and Ripley cites research that says math predicts kids' futures: "Teenagers who mastered higher-level math classes were far more likely to graduate from college, even when putting aside other factors like race and income. They also earned more money after college."

We live in a country that is undergoing a science, technology, engineering and math (STEM) craze, but it won't take off until we start making the tough structural fixes necessary so students can master numbers.

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