The Chaos in U.S. Elementary Math Education

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In this article, I want to share my observations and reflections on elementary math education in the United States over the past 20 years. I hope it serves as a reminder to parents whose children are currently attending primary or secondary schools in the U.S. (or Canada, which is quite similar), as well as to those considering sending their children to the U.S. for middle or high school.

The main takeaway is this: **learning math solely within public schools (and most private schools, too) is simply not enough.**
To be blunt—**even if your child has no interest in math competitions, they still need math tutoring.**

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1. Most Elementary Schools Do Not Have Dedicated Math Teachers

I often joke that, from the perspective of math education, the U.S. is a "developing country." Most elementary schools do not have full-time math teachers. The idea that "your math teacher is actually your P.E. teacher" is, unfortunately, not always a joke—it's often a frightening reality.

In major metropolitan areas like those on the East and West Coasts, or in college towns, the situation is slightly better. Due to the presence of immigrants and highly educated parents, schools might not have good math teachers, but smart students help elevate the academic environment, so math education doesn't collapse entirely.

But in many other parts of the country, elementary math education is a serious problem. One of the most striking issues is that **many students in grades 4 and 5 still have not memorized the multiplication table up to 9×9.**
Subtraction and operations involving fractions are also deeply problematic. As described in Dr. Ma Liping's books, **many elementary teachers who teach math cannot correctly compute**:

$$1\frac{3}{4} \div \frac{1}{2}!$$

2. Middle School Math: Tracking Begins and Gaps Widen

Because many students fall behind in elementary school, U.S. middle schools offer Grade 6, 7, and 8 math as separate courses designed to "clean up the mess" left behind.

Students who have done well in elementary math may be able to "accelerate" or skip grades. During middle school (grades 6–8), they can also participate in **MathCounts**—a national competition organized by volunteers and the National Society of Professional Engineers. This is one of the math competitions I personally appreciate and recommend for capable students.

That said, grade-skipping is not easy. It often involves district resources, and most schools are not enthusiastic about it. Typically, a student must score above 90% on an exam to be considered for acceleration.

Starting in sixth grade, **gaps in students' math proficiency become increasingly pronounced and visible**:

- Strong students begin to accelerate and participate in competitions.
- Struggling students remain stuck on basic arithmetic and memorizing the multiplication table.

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3. High School Math: The Illusion of Common Core

By ninth grade (freshman year of high school), the Common Core curriculum recommends students begin **Algebra I**, followed by Geometry in tenth grade, **Algebra II** in eleventh grade, and **Precalculus** in twelfth grade—leading to **Calculus** in college.

This structure seems seamless at first glance: students finish high school and head straight into college-level calculus.

However, **"Precalculus" is simply a set of foundational topics like trigonometry, functions, and basic algebraic structures**. It's called "precalculus" so that it flows into a course titled "calculus," just like how U.S. Grade 7–8 math is labeled "pre-algebra." These are **marketing terms designed to paper over weak foundations.**

But let's stop and think:
Earlier we said that most students fall behind in middle school math. So how is it that, by the end of high school, they're somehow "caught up" and ready for college calculus?

Let me share two observations based on my university teaching experience:

1. **In my calculus classes, at least 50%, possibly 80% of students, would not pass if held to rigorous standards.**
   Ask around: 90% of my students do not know that

$$\sqrt{n+1}-\sqrt{n}=\frac{1}{\sqrt{n+1}+\sqrt{n}}$$

Thus can not derive $\lim_{n\to\infty}(\sqrt{n+1}-\sqrt{n})=0$ in the right way. Rather, they believe

$\lim_{n\to\infty}(\sqrt{n+1}-\sqrt{n})=\infty-\infty=0$， and stubbornly reject any explanation, even if they get the right answer by coincidence.

2. More and more U.S. high school graduates **have not taken any physics course**. And college physics instructors now openly boast that they can teach physics without students needing to understand calculus!

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4. What Should Parents Do?

Every university professor I know who cares about secondary education agrees: **starting to learn Algebra I in 9th grade is far too late.**

To catch up, students need to double their effort in high school or enroll in external tutoring programs. That's why programs like Kumon, RSM are flourishing across the country.

Ironically, here in Cambridge—the school district that hosts two of the world's top universities (Harvard and MIT)—people were still debating in 2023 whether 8th graders should be allowed to take Algebra I. By 2025, I no longer find it surprising.

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5. So, What's the Solution?

What should families do?
You must not passively rely on the school system.

If you want your child to truly succeed in math, stay on track, and not fall behind, **you need a clear, systematic, and effective strategy.**

That's exactly why we created **Everyone Academy**.

🌐 https://everyone-math.com

We'll help you face the reality of math education in the U.S.—and provide the guidance and structure your child needs to thrive.