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Getting the intervention dosages right

The United States has a math crisis—and it’s not just the students. It extends to those choosing how to spend federal pandemic relief dollars. Even when they choose the best prescriptions to make up for the pandemic’s learning losses, they are using the wrong dosage. It’s a multiplication problem.

The average student in the U.S. lost the equivalent of [half a year of math instruction](#) and a quarter of a year in reading. Many urban school districts that were closed for much of 2020-21, such as St. Louis and New Haven, lost one and a half years, but for simplicity’s sake, let’s start with the national average of half a year.

Let’s complete a math exercise together, focusing on four interventions proven to help students catch up: high-dosage tutoring, an extra period of math instruction, six weeks of summer school, and an extended school year. Pre-pandemic research suggests that the first three types of interventions generate the equivalent of one year, half a year, and a quarter of the typical year’s growth in math, respectively. Let’s assume that students receive the same amount of instruction in each additional week of school as they do during the school year. As illustrated by the chart (see page 47), if 10% of students in any given district received “high-impact” tutoring, 30% received double periods of math, 75% attended summer school, and 100% went to school for two and a half weeks longer, they would recover half a year of learning.

Comparing Losses to Recovery Plans

Example: Suppose students lost 1 year.

INTERVENTION OPTIONS	% OF STUDENTS	EFFECT SIZE FROM RESEARCH	MULTIPLY % BY EFFECT SIZE
Tutors	10%	x 1 year	= .10 year
Double Math	30%	x .5 year	= .15 year
Summer School	75%	x .25 year	= .19 year
Extended School Year	100%	x 2.5/36 wk	= .07 year
Sum of expected effects			= .50 year

Would need to repeat for **two years** to replace one year.

Challenging? Yes. But doable.

INADEQUATE RESPONSES

Unfortunately, I know of no district coming close to this level of intervention. Nationally, only [2% of students](#) are receiving high-impact tutoring, where they are receiving about three hours a week of tutoring for 36 weeks, or about 108 hours total. Most districts are providing only 15-20 hours and only for a small percentage of students, nowhere near the 10% in my catch-up assumption.

Summer school attendance has been 15% or 20% in many urban districts, light years behind my assumed 75%.

I don't have national data on the percentage of students receiving double doses of math, but I'm confident it is nowhere near 30%.

Further, very few school districts have extended their school year. The [struggle in Richmond, Virginia](#) illustrates the challenge. According to the [Education Recovery Scorecard](#), students in third through eighth grade lost the equivalent of one and a half years of math and reading achievement between 2019 and 2022, more than any other district in Virginia. Starting in the spring of 2021, while schools were still closed, Superintendent Jason Kamras proposed a year-round calendar to help students catch up. Students would have one month off in the summer and four two-week breaks during the school year. Most students would still have 180 school days a year, but the district would select 5,000 students to receive up to 40 days of extra instruction during the breaks. His school board turned him down. Instead, they allowed him to pilot a longer school year in just two of the city's 54 schools. The two schools started this summer, and student attendance has been strong.

LEADERSHIP COUNTS

As illustrated in Richmond, part of the challenge has been the absence of political leadership. To undertake the major reforms that would be required to help students catch up, school district leaders need political air cover.

As a U.S. senator, Lamar Alexander helped push through the latest version of the Elementary and Secondary Education Act in 2015, which defined the federal role in K-12 education, returning significant power to the states. But states have largely declined the opportunity to lead, and the education reform effort in the U.S. has been rudderless. We're a long way from the era when governors such as Bill Clinton (Arkansas), Jim Hunt (North Carolina), brothers George W. Bush (Texas) and Jeb Bush (Florida), as well as Alexander himself (who then led Tennessee) used a combination of the bully pulpit, funding, and policies to push an unprecedented wave of state-led reforms in the 1980s and 1990s.

Only recently have leaders such as [Governor Jared Polis in Colorado](#) and Governor Glenn Youngkin in Virginia begun to make improving students' outcomes a centerpiece of their agendas, and not just a stage for culture wars.

There are some modest bright spots. Under Commissioner of Education Mike Morath's leadership, Texas required districts to provide an additional 30 hours a week of small-group instruction to students in the lowest achievement category. It's unlikely to be enough for many students, but it's a lot more than what other states are providing.

Many states, such as Tennessee and Colorado, have launched tutoring initiatives—again, a laudable move—but none of these programs have the dosage levels that will produce a meaningful impact.

The federal government provided billions of additional dollars of pandemic-related support. When the American Rescue Plan passed in March of 2021, no one knew how large the achievement losses would be. And, wanting to preserve district flexibility, Congress only required districts to spend 20% of the money on academic catch-up (with a loose definition of what could count). The result was predictable. Much of the funding has gone to salary increases, HVAC systems, or additional school counselors. In the worst cases, states have allowed communities to use the federal funds to replace local tax revenues—a shell game that will help exactly zero children. In the end, only a small share of federal aid has been used to replace what students lost during the pandemic: instructional time.



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LOOKING AHEAD

With a legal deadline to commit the funds by September 2024, school districts have one more year to spend their federal relief dollars. Given that budgets have been set and the 2023-24 school year is about to begin, it will be difficult for districts to scale up their plans for the coming school year. However, there is still time for districts to plan a major scale-up of summer learning for the summer of 2024. There's even some hope of continuing the effort beyond next summer. Although the American Rescue Plan law requires districts to commit the funds by next September, the federal Department of Education has the authority to allow districts to spend down those funds over the following year (the legal term is "liquidate"), as long as the contracts are signed and the funds are obligated by the deadline. The Biden administration should prioritize extending the spending deadline for programs that increase students' instructional time—tutoring programs, summer learning, after-school programs, school vacation academies, and salary increases associated with an extended school year.

Although there's still hope that districts will help younger students catch up, we cannot forget that four high school graduating classes—roughly 12 million students—have already started their postsecondary careers. The data suggest it's been a rough start. According to the [National Student Clearinghouse Research Center](#), community college enrollment declined by a staggering 20% between spring 2019 and spring 2023. The number of students seeking bachelor's degrees at public and private colleges declined by 6%.

We know remarkably little about what has driven the declines in postsecondary enrollment. Many have speculated that the hot labor market was to blame. However, there's little concrete evidence to confirm this. It is also possible that the decline was connected to the learning losses in K-12. For instance, especially in areas that spent much of the 2020-21 school year in remote instruction, the

high school graduating classes of 2020 and 2021 would have had a hard time meeting with their college counselors to explore their postsecondary options and get help with financial aid.

Moreover, students who fell behind in math or reading in eighth through 10th grades may not have had time to complete the advanced high school coursework expected of many science and engineering majors. According to the [College Board](#), the number of students taking Advanced Placement exams in biology and calculus (both AB and BC) fell by 9% and 12%, respectively, while the number of students taking the chemistry exam declined by 21%. Even if college enrollment rates recover, such trends do not bode well for what may happen to the number of college students pursuing STEM degrees in the coming years.

STATE LEADERSHIP NEEDED

To resolve this question, we need more research on the relationship between achievement losses, school closures, and changes in postsecondary enrollment by high school. The answer is of more than academic interest as the pace of recovery in the postsecondary sector may well depend on recovery in elementary and secondary schools.

Because many students will not have caught up by the time the federal relief dollars are spent, we must begin discussing additional policies to continue the recovery following September 2024. Anything requiring a school board vote or state legislative action will take time to enact.

For one, states and cities should set aside resources for reaching out to recent high school graduates who never enrolled in college and offer assistance in exploring postsecondary options and applying for federal financial aid. It would be foolish to allow them to fall through the cracks, as the nation's future workforce needs will depend on their continued training and development.

In addition, states should ensure that future graduating classes have what they need before leaving high school. For instance, students who do not achieve proficiency on state tests at the end of eighth grade should receive additional help during ninth grade to ensure that they are on track for college and a career. States might consider offering students the option of a fifth year in high school or free tuition for their first year in community college, giving them a chance to fill in gaps in coursework they missed in high school as a result of pandemic achievement losses.

The academic recovery effort following the pandemic has been undersized from the beginning. Although the research community and federal and state regulators encouraged districts to focus on “evidence-based” solutions such as high-dosage tutoring and summer learning, districts were never given clear guidance on the dosages required or the share of students they should be serving. Moreover, the guidance that was provided—specifically, the 20% minimum spending on “academic recovery”—was downright misleading.

The future consequence for students—and for the nation's economy—if students fail to catch up will be dire. A conservative estimate of the loss in future earnings for those enrolled in public K-12 education during the 2020-21 school year is [\\$900 billion](#). As the federal relief dollars are spent down, state and local leaders must step up. Today, there are two or three candidates seeking the mantle of “education governor.” We need 50 of them.

