

The science of catching up

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Tens of millions of students may now be months or, in some cases, even a full year behind because they couldn't attend school in person during the pandemic.

Significant setbacks are especially likely for the most vulnerable students — kids with disabilities and those living in poverty, who didn't have a computer, a reliable internet connection or a workspace to learn at home. Educators will have to do something different for the 2021-22 school year to make up for those losses.

Schools are already spending big chunks of their [approximately \\$190 billion](#) in pandemic relief money on a range of strategies from after-school programs to cutting class size. But research shows that many of these ideas have had a [spotty track record](#) in the past and that schools will have to pay close attention to what's worked—and what hasn't—to maximize their odds for success with just about any strategy. There's no silver bullet. And the pandemic's fits and starts in instruction are unprecedented in the history of American public education and have affected students unevenly.

No catch-up strategy can possibly benefit all students. But studies do point toward which strategies are most effective, how they can best be implemented — and what approaches might be a waste of time and money. Here's a rundown of the most relevant research.

TUTORING

Research points to intensive daily tutoring as one of the most effective ways to help academically struggling children catch up. A seminal 2016 study sorted through almost 200 well-designed experiments on improving education, from expanding preschool to reducing class size, and found that frequent one-to-one [tutoring was especially effective](#) in increasing learning rates for low-performing students.

Education researchers have a particular kind of tutoring in mind, what they call “high-dosage” tutoring. Studies show it has produced big achievement gains for students when the tutoring occurs every day or almost every day. Less frequent tutoring, by contrast, was not as helpful as many other types of educational interventions. In the research literature, the tutors are specially trained and coached and adhere to a detailed curriculum with clear steps on how to work with one or two students at a time. The best results occur when tutoring takes place at school during the regular day.

*“It’s not once-a-week homework help.”
Jonathan Guryan, Northwestern University*

“It’s not once-a-week homework help,” said Jonathan Guryan, an economist at Northwestern University who has evaluated school tutoring programs.

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A [2020 review of 100 tutoring programs](#) found that intensive tutoring is particularly helpful at improving students’ reading skills during the early elementary years, and most effective in math for slightly older children. One 2021 study found tutoring led to [strong math gains for even high school students](#), enabling those who started two years behind grade level to catch up.

Not all tutoring has been successful. When the No Child Left Behind law was first passed in 2001, schools got extra money to tutor students who were behind. But there were many reports of [tutoring fraud and fiascos](#). Sometimes tutors weren’t properly trained and there wasn’t a clear curriculum. Often when tutoring was scheduled after school, many students didn’t show up.

Even thoughtfully designed tutoring programs can fail. A randomized control trial of math tutoring for fourth through eighth grade students in [Minnesota was a flop](#). There have been other disappointments too.

Not all tutoring programs have been successful but, across hundreds of research studies, daily tutoring rises to the top as one of the most effective interventions in helping struggling students. Credit: Amadou Diallo for The Hechinger Report

In effective math programs, for example, tutors don’t simply reteach the previous year’s lessons. Instead, tutors know what is being taught in the students’ regular classes that week and give their students extra practice on those topics or review prerequisite concepts. Much as corporate America relies on just-in-time deliveries, several effective tutoring programs rely on just-in-time review. Determining what those key underlying concepts are isn’t obvious; curriculum experts need to be involved to create materials that guide tutors on how to diagnose each student’s knowledge gaps and what to teach each student.

In a successful algebra tutoring program in Chicago, researchers highlighted how effective it was for tutors to be able to pull different practice problems to match each student’s weaknesses.

To accomplish this, the tutors themselves don’t need to be highly trained educators, but they do need training, coaching and monitoring. The late Robert Slavin, a researcher at Johns Hopkins University, calculated that college-educated [teaching assistants produced learning gains](#) that were at least as high as those

produced by certified teachers and sometimes larger. Even [paid volunteers](#), such as AmeriCorps members working as tutors, were able to produce strong results, Slavin found.

The question, of course, is whether we can recruit and train enough tutors to meet the need right now. That's ambitious but at least there's evidence for this approach.

AFTERSCHOOL

After-school programs might seem like a good idea because they give teachers extra time to cover material that students missed last year. But getting students to attend faithfully is a chronic problem. For students who attend regularly, high quality after-school programs sometimes produce reading or math gains, but many programs operate with poorly trained teachers and lessons that are disconnected from what students are learning in class. When researchers look across studies, they usually [don't see meaningful gains in reading or math](#) achievement.

Summer school programs don't fare well in evaluations either. Kids don't want to miss out on outdoor fun with their friends and often don't show up.

Schools are spending big chunks of their approximately \$190 billion in pandemic relief money on a range of catch-up strategies from after-school programs to tutoring. Credit: Gretchen Ertl for The Hechinger Report

After-school programs appear to be better at improving students' social wellbeing. A [meta-analysis of 68 studies](#) of after-school programs by the Collaborative for Academic, Social and Emotional Learning found that students participating in an after-school program improved their school-day attendance and were less likely to engage in drug use or problem behavior.

Another option is to make after-school hours mandatory by extending the school day for everyone. That has worked well when the extra time is used for tutoring. But research evaluations have also shown [longer school days](#) can be an academic bust. Schools don't always use the extra time effectively with well-designed classes targeted at students' specific academic gaps. And learning is taxing; students' brains might need a break after almost seven hours of classes.

RETENTION

Repeating a grade, what educators call retention, might make intuitive sense, especially for students who missed most of the past year at school and weren't able to engage with online instruction. Before the pandemic, research outcomes for retention were [generally miserable](#). Having students do the same thing twice didn't help. A successful exception was shown in a study of a Florida program in which the most commonly repeated year, third grade, was [accompanied by tutoring and extra support](#). It's possible that these students would have fared just as well, or better, if they had received tutoring and proceeded to fourth grade. We don't have a study to test that.

It's not clear if the retention research is a good guide right now. We don't really know how students will fare if they repeat a year in-person that they effectively missed because they were learning remotely. However, educators point out that

being held back is demoralizing and many students lose their enthusiasm for school. Even if students are told that it's not their fault that they are repeating, they may be discouraged to see classmates move on while they are being left behind. And a discouraged child isn't going to be open to learning.

REMEDIAL CLASSES

Historically, [remedial classes](#) have been a bust. The argument for them is that teachers can give lower-achieving students the correct level of instruction so that the students aren't overwhelmed in classes that are too challenging for them. But in practice, students often don't progress in remedial classes. Instead, they get stuck at the bottom, learning less each year and [falling further and further behind](#) the rest of their classmates.

Online credit recovery classes, which allow students to retake classes that they have failed, have been popular with high school administrators in recent years. Studies show that students are more likely to pass a course when they can click their way through it, and such classes are helping more students graduate from high school, but students do not seem to [improve their academic skills](#) as much as they would in face-to-face classes.

Students often don't catch up in studies of remedial classes and fall further behind their classmates. Credit: Terrell Clark for The Hechinger Report

One promising approach is to assign students who are far behind to both a remedial class and a grade-level class simultaneously. This double-dosing strategy has spread rapidly at community colleges but hasn't been studied as much in elementary, middle or high schools. One evaluation of double-dosing in algebra found that it worked in [Chicago high schools](#) but not in [middle school math in Miami](#). Refinement and further study are warranted.

ACCELERATION

Teachers know that students in remedial classes get discouraged and lose their motivation to learn. This year, an anti-remediation sentiment has spread quickly among educators, who've adopted a mantra: "Accelerate, don't remediate." What they mean by acceleration is fuzzy. Teachers at one elementary school in Washington state described it as promoting kids to grade-level material with extra support, such as a preprinted multiplication table to help them follow along in class, while also asking teachers to somehow find time to do catch-up review when breaking the class into small groups. A charter school network recently described acceleration as [interweaving review material with grade-level content](#).

Though called acceleration, in practice, it can mean teaching less and slowing down the pace.

A May 2021 report by a nonprofit online math provider, Zearn, found that students learned more math during the 2020-21 school year when truncated [review material was woven into grade-level lessons](#) than when they were retaught many of the previous year's lessons. This comparison of the two approaches using education technology is promising, but more research is needed.

The extra review material can push out some topics that would traditionally be taught this coming year. Though called acceleration, in practice, it can mean teaching less and slowing down the pace.

LOOKING AHEAD

Educators have a lot of work ahead of them.

Students will need to be frequently assessed to figure out their individual gaps. Teachers are going to need a lot more planning time for lesson plans. And schools also need strategies to help students move past the trauma of the past two years, including more counselors, because students cannot learn well when they are coping with Covid-19 deaths in the family and struggling with problems at home.

The influx of pandemic money is enticing school systems to spend it on things that they wanted to do long before the pandemic and call it a pandemic response. Reducing class sizes is popular, but it's very expensive to hire more teachers and build more classrooms, and the research shows that you **often don't get a big academic bang** for the buck.

We don't really know how students will fare if they repeat a year in-person that they effectively missed because they were learning remotely.

Our education system has never been good at helping students who are behind catch up. If schools instead embrace the research — adding tutoring for the students who are most behind and testing promising ideas for others — adversity and crisis could lead to lasting, progressive change.

This story about [catching up](#) was produced by [The Hechinger Report](#), a nonprofit, independent news organization focused on inequality and innovation in education, with support from the Education Writers Association Reporting Fellowship program. Sign up for the [Hechinger newsletter](#).

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