

—Illustration by Jori Bolton for Education Week



# Impacts of COVID-19 on Education

## EDITORS NOTE

Educators predict that COVID-19 will have long-lasting effects on education. In this Spotlight, discover how COVID-19 is reshaping tech use in education, understand how the pandemic is widening inequities, and learn about how teachers are employing additional social-emotional learning techniques within their curriculum.

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# How COVID-19 Is Shaping Tech Use. What That Means When Schools Reopen

## EdWeek Research Center surveys reveal good and bad trends

By Kevin Bushweller

It might not be a tectonic shift yet, but the changes taking place in the K-12 tech landscape as a result of the coronavirus school closures are real and meaningful, and good and bad.

That is what Education Week is learning as it surveys educators across the country about the impact school closures have had on their morale, student engagement, technology skills, and many other factors.

In nationally representative surveys of teachers and district leaders, the EdWeek Research Center found that teachers reported their ability to use technology was rising during the school closures, online instruction was taking hold in some form in most places, and 1-to-1 computing opportunities were expanding gradually.

But at the same time, huge tech-equity issues emerged, revealing challenges ahead whether school buildings reopen or not in the fall. Students living in poverty, for instance, are much more likely to have to share devices with family members to complete schoolwork than their wealthier peers. And although online instruction is taking hold, the wide range of approaches shows a potentially big divide in the quality of instruction.

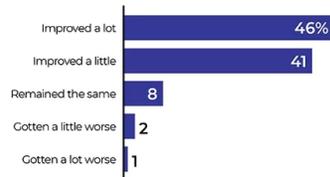
And in looking ahead, the big elephant in the room is the economy. School budgets are expected to take a big hit this coming school year, and educational technology programs will likely suffer significant cuts, too.

Here are 10 key findings from the EdWeek Research Center surveys conducted this spring about how the coronavirus school closures have influenced the role and use of technology in K-12 education and what that might mean for the future:

### 1. Teachers see their ability to use educational technology improving.

The massive shift to remote learning was frustrating and demoralizing for many teachers, especially those who struggled with spotty internet access for themselves or their students, low online student engagement, and nightmarish technical problems. But the result of having to shift every-

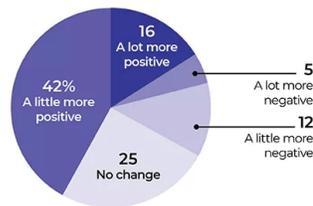
1. Since schools closed, my ability to effectively use educational technology has:



\*Results show responses from teachers.  
SOURCE: EdWeek Research Center survey, 2020

EdWeek Research Center

2. As a result of our/my increased use of technology during coronavirus closures, my opinion of educational technology has gotten:



\*Results show responses from teachers and district leaders.  
SOURCE: EdWeek Research Center survey, 2020

EdWeek Research Center

thing online is that many teachers report their skills in educational technology improving.

A whopping 87 percent of teachers who responded to the EdWeek Research Center survey said their ability to use educational technologies had improved during the school building closures. Only 3 percent said their ed-tech skills had worsened during that time.

Those findings echo many of the sentiments from teachers who Education Week reached out to directly via email and phone and who responded to an open-ended question in the survey. Though frustrated with remote learning in big ways—particularly the lack of in-person, face-to-face communication with students and colleagues—many teachers reported meaning-

ful growth in figuring out how to use technology to improve teaching and learning. And some said they plan to continue using those newfound skills even when school buildings reopen.

“I think it’s made me a better teacher already,” said Amy Campbell, a special education teacher at Helen Baller Elementary School in Camas, Wash. “This has really pushed the innovation envelope. During the shutdown, my teaching partner and I have been able to make many materials—YouTube videos and resources—available on a newly created private class website. This is the first time I’ve created a way to ensure access, in one place, to a whole package of resources for students with disabilities to access outside of school.”

### 2. Educators’ opinions about technology are improving, but teachers hold more critical views than district leaders.

Fifty-eight percent of survey respondents said their opinion of ed tech has grown more positive as a result of the increased usage of technology during the coronavirus school building closures. As is often the case, administrators have a rosier outlook than teachers: Just 6 percent of district leaders said their experiences during the coronavirus closures have led to a more negative view of ed tech, compared with 21 percent of teachers.

IT help desks for school districts likely played a significant role in helping prevent those negative feelings from being much higher. Those IT help desk workers had to pivot from previously supporting district employees and staff to now becoming the first line of contact for just about every student and parent with a remote learning inquiry.

The calls and emails were flooding in around the clock, according to interviews with district technology officials. How do I log in? How do I use this app?

Daily call volume for the San Antonio schools’ IT help desk escalated from 75 before the pandemic to 600 during the building closures.

### 3. Online instruction evolved, but the approaches varied widely.

Fully 93 percent of teachers reported that

they were doing at least some online instruction, with 50 percent of teachers saying they were teaching online-only. That figure goes up to 68 percent in districts with the fewest low-income students; in districts with the most low-income students, just 36 percent of teachers said they were teaching online-only.

The switch to online learning is being fueled in part by expanded access to digital devices. All told, 42 percent of educators who responded to the EdWeek Research Center survey said their students had more access to school-issued personal devices than they did prior to the pandemic—although 18 percent of these educators reported that such expanded access is temporary and will end when schools reopen.

But an Education Week review of states' continuous learning directives and guidance shows wide variation in what was expected of remote instruction during the coronavirus pandemic.

"There are still a number of states where districts are being recommended, but not required, to develop plans. If you think about that with respect to on-the-ground implications, you could have pretty enormous variation," said Sarah Reckhow, an associate professor of political science at Michigan State University.

#### 4. A new level of experience emerges for troubleshooting technology problems.

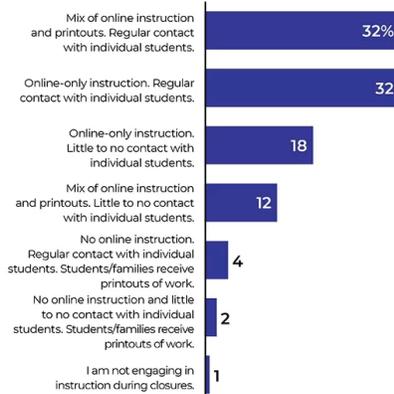
Nearly 9 out of every 10 teachers reported spending more time troubleshooting technology problems during COVID-19 than they did when they were in their physical classrooms. The downside of that finding is that, in many cases, teachers were devoting what would have been instructional time to tackling technology challenges, whether struggling to get up to speed learning the intricacies of a learning management system or fixing access problems on Zoom calls.

The upside is that now you have a teacher corps full of educators who are much better technology troubleshooters than they were before school buildings were closed. They might not need to call the IT help desk quite as much as they used to. And that means their problems will possibly get fixed faster. "I have become so much better with technology! It was 'sink or swim,' and I have persevered and am so much more knowledgeable with using technology," said an elementary teacher from North Carolina who responded to the EdWeek Research Center survey.

#### 5. 1-to-1 computing environments expand, very gradually.

In February, prior to the coronavirus school

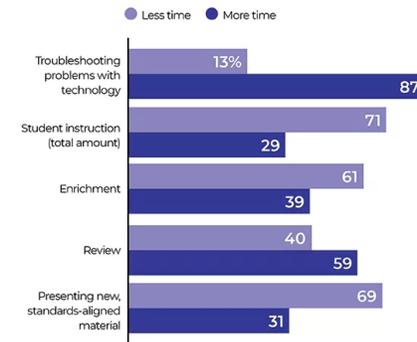
3. Which of the following best describes your approach to instruction during coronavirus closures?



\*Results show responses from teachers. SOURCE: EdWeek Research Center survey, 2020

EdWeek Research Center

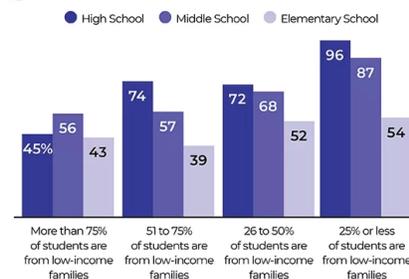
4. Since schools closed, how, if at all, have you changed the amount of time you devote to the following aspects of teaching?



\*Results show responses from teachers. SOURCE: EdWeek Research Center survey, 2020

EdWeek Research Center

5. Schools have at least one device for every student.



\*Results show responses from teachers. SOURCE: EdWeek Research Center survey, 2020

EdWeek Research Center

closures, the EdWeek Research Center surveyed teachers on the availability of a digital learning device for every student. At the time, about 57 percent said each student in their schools had a device. That percentage increased slightly, to 59 percent, when teachers were surveyed again in May.

But that slight increase is likely to rise noticeably by this summer, because in late April, many districts were still waiting on deliveries of digital devices purchased during COVID-19. A huge spike in demand for digital devices and disruptions in the supply chain from China were slowing deliveries from tech giants such as Dell, HP, Apple, and Lenovo, according to "The Impact of COVID-19 on the K-12 Education Mobile PC Market," an analysis from market research firm Futuresource Consulting.

Plus, many districts might not feature 1-to-1 computing environments in their schools just yet, but the proliferation of devices will be significantly higher than it was before the pandemic. The 55,000-student Boston public schools, for instance, purchased 20,000 new laptops in March to try to make sure that all students in the district had access to learning during the school building closures. The competition to get those laptops was intense.

"Everybody is fighting for them," Mark Racine, the district's chief technology officer, said at the time. "We had some districts reach out to us and say, 'Can we buy some off of you?'"

#### 6. Educators see greater access to 1-to-1 computing improving teaching and learning.

Seventy-three percent of district leaders and teachers responded in the EdWeek Research Center survey that they believed when school buildings reopen, greater access to 1-to-1 computing will make high-quality teaching easier. Just 4 percent said they thought it would make teaching more difficult.

But the problem is that without sound professional development to show educators how to integrate mobile learning devices into instruction, the mere presence of those devices in classrooms is unlikely to improve teaching and learning and could actually hurt it, research shows. That is why schools will be hard-pressed to put together PD programs over the summer to ensure that educators make good use of the availability of more digital learning devices.

For instance, long before the coronavirus forced schools into throwing together remote learning strategies, Miami-Dade County district officials were steadily ramping up the use of technology over the past six years as part of a "Digital Convergence" initiative. It has included the acquisition of more than 200,000 new de-

VICES and continual professional development focused on e-learning. Officials of the Florida district say it allowed them to hit the ground running during the current crisis.

### 7. Big tech-equity issues persist for students and could get worse.

The shift to remote learning has revealed a digital divide in American society and education that is much worse than many people realized. Those equity problems showed up in the survey research in many ways.

One of the more practical equity pictures the survey data showed was how much more difficult it is for students from families living in poverty to have access to digital devices to do schoolwork at home than their wealthier peers.

District leaders and teachers from school systems where more than 75 percent of students qualify for free or reduced-price lunches reported that more than half (59 percent) of their students had to share digital devices with parents, siblings, and other family members and/or friends in order to complete their schoolwork during the school building shutdowns. That figure is more than double the percentage for district leaders and teachers from school systems with 25 percent or less of their students living in poverty.

Home access to high-speed wireless internet services is also a big challenge for students living in poverty.

“It’s not the time to be timid,” said Federal Communications Commissioner Jessica Rosenworcel, a long-time proponent of more aggressive federal efforts to eliminate disparities in access to high-speed internet, in a statement. “We have the authority right now to extend the reach of broadband and close the ‘homework gap’ so we connect millions of children who desperately need to get online for school.”

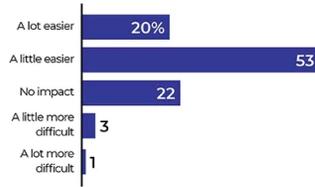
### 8. Some teachers lack high-speed internet connections, too.

More than a quarter of U.S. homes don’t have broadband internet service, according to a Pew Research Center report from last year. District leaders, especially those who serve a high percentage of students from low-income families, have said technology access is a major challenge during these extended school shutdowns.

But it’s not just students without access to the internet—it’s also their teachers.

While only 4 percent of teachers don’t have high-speed wireless access at home, according to the EdWeek Research Center, it’s particularly

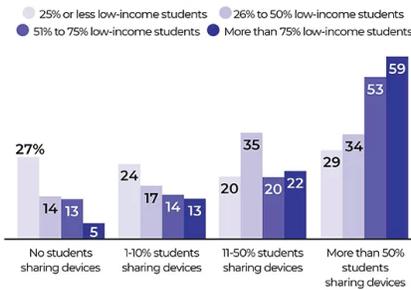
6. When schools reopen, students’ increased levels of access to 1:1 computing (one device per student) will make high-quality teaching and learning:



\*Results show responses from teachers and district leaders. SOURCE: EdWeek Research Center survey, 2020

EdWeek Research Center

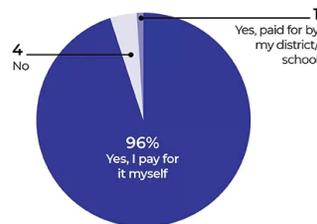
7. What percentage of your students share devices with parents, siblings, or other family members and/or friends in order to complete their schoolwork during coronavirus?



\*Results show responses from teachers and district leaders. SOURCE: EdWeek Research Center survey, 2020

EdWeek Research Center

8. Do you have high-speed wireless internet access at home?



\*Results show responses from teachers. Note: Numbers may not add up to 100, due to rounding.

EdWeek Research Center

a problem in rural areas, where broadband internet service is spotty, expensive, or nonexistent.

“Educators are now assumed to have devices and internet access and unlimited data to do their job, and [in some cases], they don’t,”

said Cheryl Bost, the president of the Maryland State Education Association.

### 9. The rise of virtual events is upon us. But will that stick for the long haul?

Live, in-person ed-tech events were very popular in the K-12 world. Tens of thousands of educators traveled to cities all over the country to attend conferences sponsored by ASU+GSV, SXSWedu, and ISTE. The events have touted the value of live presentations packed with attendees, face-to-face meetings, social gatherings, and opportunities to sample new ed-tech products.

But COVID-19 prompted the cancellation of all three of those big live events, which were supposed to take place in San Diego; Austin, Texas; and Anaheim, Calif.; this spring and summer.

Now, educators are turning their attention to virtual events. The EdWeek Research Center survey found that 94 percent of teachers and district leaders said in April they had attended a virtual event since school buildings closed in March, which could include webinars, virtual conferences, online summits, virtual happy hours, and other online gatherings.

How that willingness to engage in online events will shape the live, in-person ed-tech events of the future is likely to be unclear until the coronavirus is in the rearview mirror.

### 10. The school budget picture looks bleak. Ed-tech programs, like everything else, are expected to take a hit.

Fiscal analysts are forecasting that the recession associated with the coronavirus pandemic will be deeper and longer-lasting than the last, with severe implications for America’s public schools.

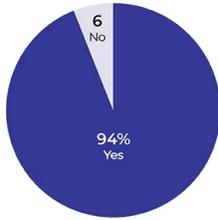
The \$13.5 billion that Congress recently provided to school districts will not be able to make up for the anticipated losses.

Without another federal bailout, several states will have to cut anywhere from 5 percent to 20 percent from their budgets when their legislatures reconvene this month and next, according to fiscal analysts.

Cuts will fall on most school districts to some degree, but those whose budgets are built largely on property-tax revenues will suffer less.

Just last month, district leaders were already planning spending reductions for the remainder of the 2019-20 academic year, according to the EdWeek Research Center survey. It found that 17 percent are planning significant budget

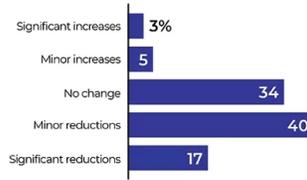
9. Have you attended any virtual events related to your job since schools closed due to coronavirus?



\*Results show responses from teachers and district leaders.  
SOURCE: EdWeek Research Center survey, 2020

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Research Center

10. Since the coronavirus closures, how, if at all, has your district changed spending for the remainder of the 2019-20 school year?



\*Results show responses from district leaders.

EdWeek  
Research Center

reductions this school year, and 40 percent are preparing for minor reductions.

“What’s so stunning about this recession is that poor districts are going to bear the brunt of these cuts because they rely so heavily on state aid and they don’t have the capacity to raise their property taxes,” said David Sciarra, the executive director of the Education Law Center, a law firm and advocacy organization that has sued states for having inequitable funding systems. ■

*Daarel Burnette II, Benjamin Herold, Elizabeth Heubeck, David Saleh Rauf, Sarah Schwartz, and Madeline Will contributed to this article.*



Taylor Gallery for Education Week

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# Devastated Budgets and Widening Inequities: How the Coronavirus Collapse Will Impact Schools

By Daarel Burnette II

Almost half of the nation’s 13,000 school districts may be forced to make the deepest cuts to education spending in a generation—slashing programs and laying off hundreds of thousands of administrators, teachers and other staff—to fend off financial collapse brought on by the coronavirus.

But while the economic impact on schools will be historic, it will not be random.

The districts most at risk share demographic

profiles—student populations that are heavily Black, Latino and low-income—and one crucial trait of their budgets: They get more than half their revenue from state aid.

The reliance on state funding has always been precarious because that money tends to come from volatile revenue streams such as sales, oil and income taxes. But in the economic standstill triggered by the virus, those tax lines have nearly been wiped out.

The result is a recession that threatens to

make the divide between rich and poor school districts even more profound.

Even before the coronavirus pandemic, these 6,000 districts identified in an Education Week analysis were underfunded and had yet to recover from the recession between 2007 and 2009. The districts enroll 2.4 million students—nearly half the population of all U.S. public schools.

With states now collectively projecting spending cuts in the coming years in the range of \$500 billion, administrators in these districts will be forced to dismantle their central enterprise of teaching and learning. Their choices will be stark.

“What’s so stunning about this recession is that poor districts are going to bear the brunt of these cuts because they rely so heavily on state aid and they don’t have the capacity to raise their property taxes,” said David Sciarra, the executive director of the Education Law Center, a law firm and advocacy organization which has sued states for having inequitable funding systems.

## Schools at Greatest Risk

The district in Rochester, N.Y., is among those most at risk.

Of the 25,000 students in Rochester’s schools, 86 percent are Black and Latino. Ninety percent of them qualify for free and reduced-price meals. Just 13 percent of elementary school students in the district can read on grade level.

The city has a median household income of just over \$33,000, far below the nearly \$62,000 median for the United States, according to the U.S. Census Bureau. The share of city residents who live in homes they own is 36 percent, compared to 64 percent nationally. Today, the upstate district gets more than 85 percent of its money from the state.

Before the coronavirus’ freeze on the econo-

my, Rochester's schools were reeling from chronic underfunding and gross fiscal mismanagement that were forcing leaders there to make deep cuts. The virus brought even more devastation as lawmakers in New York voted not to increase state aid to districts.

On May 7, the Rochester school board permanently closed five schools, shuttered its program for teenage mothers, and another for Puerto Rican students who fled from Hurricane Maria. Since late last year, more than 300 teachers—one-tenth of its teaching force—have been laid off.

And Rochester must brace for more pain. State lawmakers will likely reconvene soon to make another round of cuts to fill an estimated \$8 billion budget deficit.

"I have never seen the world as upside down as it is now," said Adam Urbanski, the longtime president of the Rochester teachers' union.

## A Historical Shortfall

Fiscal analysts are forecasting that the recession associated with the coronavirus pandemic will be deeper and longer-lasting than the last, with severe implications for America's public schools.

The \$13.5 billion that Congress last month provided to school districts will not be able to make up for the anticipated losses.

Without another federal bailout, several states will have to cut anywhere from 5 to 20 percent from their budgets when they reconvene this month and next, according to fiscal analysts.

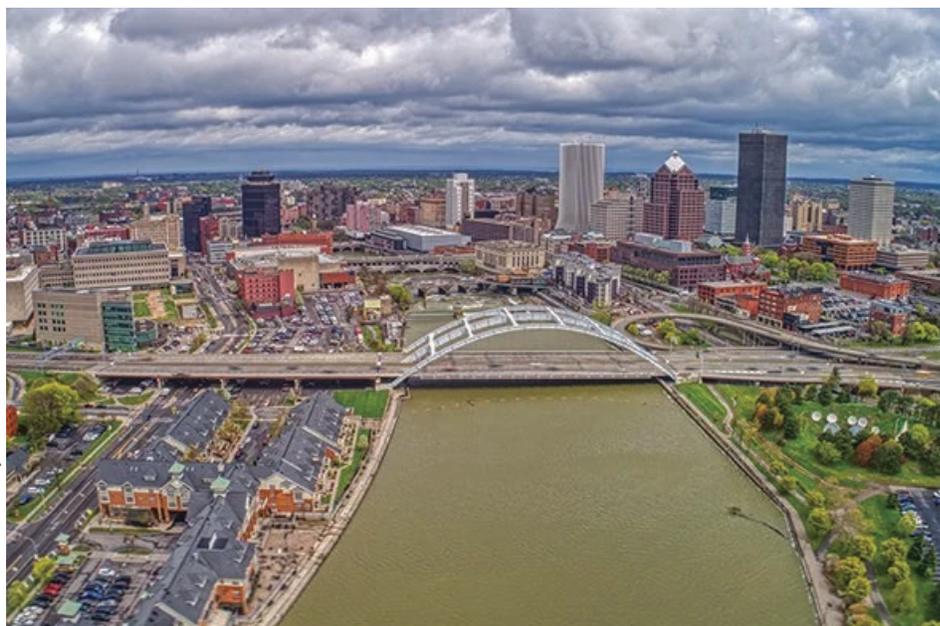
Cuts will fall on most school districts to some degree, but those whose budgets are built largely on property tax revenues will suffer less.

Education Week analyzed 2016 school spending data, the latest available, to identify which districts will be most at risk of harm because of their heavy dependence on state aid.

Education Week's analysis shows more than 600 districts get more than 75 percent of their aid from their states, putting them at great risk for deep cuts.

Hawaii is a single, statewide district, and schools are funded without a penny from property tax revenues. Sales and income taxes generated by Hawaii's tourism pays for schools—an industry that has ground to a halt. The state's school system is predicting a \$1.5 billion shortfall next year and the governor has proposed pay cuts for teachers as high as 30 percent as one remedy for filling the gap. Cutting salaries could hurt teacher recruitment and retention at a time when the state already struggles to hire enough teachers.

The demographics of districts dependent on state aid vary by state and depend on how well



—Jacob Boomisma/Getty

states target their aid to students with the most needs. Nearly every district in Vermont—there are more than 200 of them—is almost entirely reliant on state aid.

In Georgia, which plans to cut \$1.6 billion from its K-12 budget this year, more than two-thirds of students in districts that receive the majority of their funding from state aid are poor. That's compared to 58 percent of students in districts that are less than 50 percent reliant on state aid.

In addition, Education Week identified more than 465 school districts that have instituted sales taxes of their own. Philadelphia, for example, generated \$381 million from local taxes on parking meters, hotel occupancy, and lottery ticket sales in 2016. Much of that money is likely now gone, according to school officials.

In New York state—the epicenter of the coronavirus outbreak—an analysis done by the Education Law Center shows that an across-the-board percentage cut to K-12 spending, which is how legislatures have historically made budget cuts, will be devastating to a district like Rochester but will have little impact on the public schools in Pittsford, N.Y., a suburb which sits just south-east of the city.

Pittsford, where the median household income is more than \$116,000, is majority white. U.S. News & World Report this year ranked its two high schools among the nation's top one percent.

The 5,000-student district, whose leafy cul-de-sacs are lined with large homes, gets more than 76 percent of its money from property tax revenue and only 23 percent from the state.

The district is keeping a close eye on what state lawmakers do to address budget cuts, but

The school district in Rochester, N.Y., already in financial distress, will likely face even more draconian spending cuts because of its heavy dependence on sources of state funding.

“  
State funding for education is a way to equalize spending across districts, but the problem is that when there are these global economic shocks, states' budgets are going to get crushed.”

**WILLIAM EVANS**  
ECONOMIST, NOTRE DAME UNIVERSITY

has so far made no plans to lay off staff this year, a spokeswoman said.

## Boom and Bust

Economists have long warned that, because students academically thrive in stable learning environments, school districts should avoid building budgets on revenue sources such as sales and income tax, which swing wildly depending on unemployment rates, the stock market, and even the weather.

But using state sales and income tax revenue for schools was a politically palatable answer to courts that began to demand in the 1970s that states even out K-12 spending disparities between wealthy and poor school districts.

The risks of that remedy played out starkly during the Great Recession between 2007 and 2009 when sales and income tax revenues went into a tailspin, accelerating a divide between wealthy and poor school districts.

By 2010, more than 300,000 public school librarians, counselors, office secretaries, and teachers had lost their jobs—layoffs that fell disproportionately on low-income urban and rural districts. A study released last year showed that districts that cut the deepest in the Great Recession showed the least progress in students' academic performance, as measured by standardized test scores.

The job losses and spending cuts would have been far worse without a \$100 billion bailout for schools under the 2009 American Recovery and Reinvestment Act.

Counterintuitively, even though the recession was sparked by the collapse of the housing market, property tax revenues rose. That's because states allowed school districts to adjust their property tax rates to offset dipping home values. Wealthy school districts escaped unscathed.

"All of states' efforts to equalize spending was undone in the last decade," said William Evans, an economist at Notre Dame University who studied the effect that the last recession had on America's public schools. "State funding for education is a way to equalize spending across districts, but the problem is that when there are these global economic shocks, states' budgets are going to get crushed."

## Rochester in Bad Shape

Rochester has for decades had a fraught relationship with New York's state legislature over school spending. The district spends around \$12,500 per student, roughly \$1,000 less than the state average. Its per-pupil spending on students who require special education is about \$29,000, which is \$3,000 less than the state



—AP Photo/John O'Boyle

average. Twenty-two percent of Rochester's enrollment are students with disabilities. In 2007, New York agreed to ramp up its K-12 spending after losing a years-long court battle over its funding formula. But the state, which was slammed during the last recession, has failed to live up to that promise. Today, the state is more than \$4 billion below its funding obligations to districts. For Rochester, the state has fallen more than \$86 million behind in its funding obligations.

"The state for years has been reneging on its constitutional obligation to equitably fund schools," said Jasmine Gripper, the executive director of the Alliance for Quality Education, a K-12 funding advocacy organization that's filed a lawsuit against the state. "It's systemic racism. Large populations of Black, brown and immigrant students are not a top priority for this state."

The district's problems were compounded when, after the last recession, thousands of students left the district for local charter schools. Rochester's ongoing fiscal crisis reached a head earlier this school year when an auditor discovered that the district's administration spent \$45 million more than it collected last school year.

Despite student walkouts, teacher protests, and tearful school board meetings, the district in December, laid off 109 teachers. The layoffs would have been even worse without a last-minute, \$35 million, 30-year loan from the state.

After the December layoffs, administrators and school board members assumed the state would increase the amount of state aid Rochester would receive. Then the pandemic hit.

Along with worrying if they'll have a job next month, Rochester's teachers have been attempting to roll out distance learning plans and checking on the well-being of their students. Rochester's union has posted on its website open teaching jobs across the state and teachers have encouraged each other to keep handy documents proving the day and time they signed their contracts since the layoffs are last in, first out.

Board members, who meet bi-weekly via Zoom, have been at odds with the district's administration over which programs to cut and which schools to close. Because so much revenue comes from outside the district, administrators have little flexibility on how to spend its money. And on April 23, Superintendent Terry Dade quit. He had barely been on the job for a full year. "It's been brutal," said Abby Bardanis, a bilingual special education teacher who works with refugee students and worries about being laid off. "We've been defeated by the system."

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## What's the Outlook?

If the past is a guide to how state lawmakers will plug the giant hole that the coronavirus

has blown in their budgets, the most vulnerable school districts have a lot to worry about.

Historically, there’s been little political will in statehouses to address inadequate and inequitable school spending patterns.

“You want to use a scalpel instead of a sledgehammer,” said Aaron Garth Smith, the director of education reform for the Reason Foundation, a libertarian think tank. “Legislatures should siphon off scarce resources from districts that need them least.”

If a huge, new bailout package doesn’t arrive from the federal government, K-12 funding advocates are pushing for states to use alternative budget-cutting strategies such as making bigger cuts from wealthier districts, temporarily capping property tax revenue or overhauling funding formulas. Such attempts typically face fierce backlash from suburban parents and their political representatives.

“Equity has always been a challenge for this country,” said Van Henri White, the president

of Rochester’s school board, which has had to make budget cuts every year for the last 12 years straight.

“The responsibility of our government is to make sure that there’s equitable funding for schools that are behind the eight ball. Otherwise, why collect taxes? ... We have to be crystal clear about the consequences of these draconian cuts: it won’t hurt school boards or administrators. It’s going to hurt America’s most vulnerable children.” ■

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## Lost Learning Time Compounds Over Summers. Students Are Taking an Extra Hit Right Now

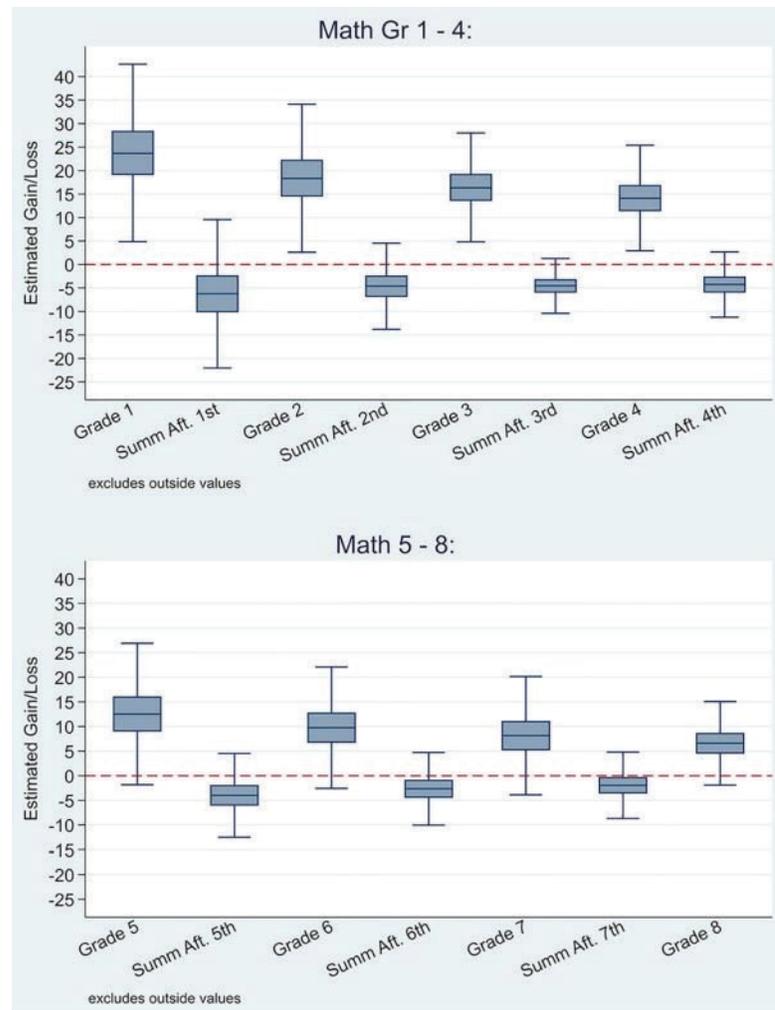
By Sarah D. Sparks

**M**ore than half of students consistently experience summer learning loss throughout their primary grades, finds a large new national longitudinal study, with compounding summer deficits leaching away on average nearly 40 percent of students’ yearly progress.

Allison Atteberry of the University of Colorado-Boulder and Andrew McEachin of the RAND Corp., co-authors of the new study in the *American Educational Research Journal*, analyzed the progress of nearly 18 million students in 7,500 districts who participated in the math or English/language arts tests from NWEA’s Measures of Academic Progress from 2008 to 2016.

As the charts below show, the researchers found students’ math test scores improved during each school year—though by smaller amounts as they moved up from grade to grade. For example, in math, the average student improved by 24 points during 1st grade, but only by 6.5 points during 8th grade. The average learning losses each summer stayed more consistent from grade to grade, but still varied significantly. For example, the average student lost a quarter to a third of the progress he had made in math each grade during the following summer. But within that average, some students lost more than 16 test-score points in math during the summer, while other students *gained* nearly 7 test-score points:

“Mean summer learning loss patterns—those that most researchers, policymakers, and practitioners are familiar with—do not characterize



Source: American Educational Research Journal

# Models: Bringing Real-World Phenomena to School

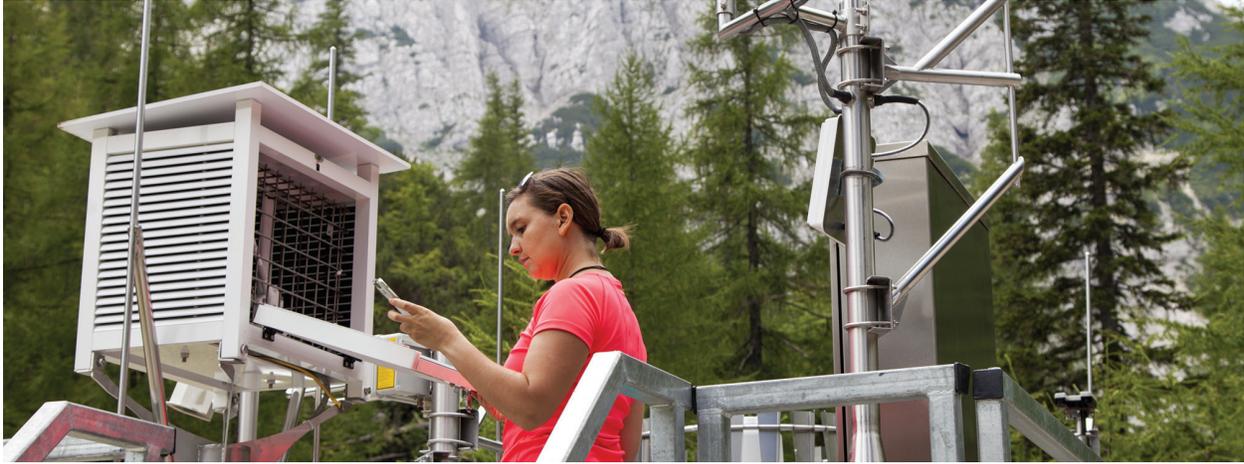
**Whether learning in a physical or virtual classroom, using models helps students understand real-world phenomena—like COVID-19—and solve problems related to phenomena.**



“Thanks in large part to the power of model-based science, we are in a far better place than any generation before us to deal successfully and efficiently with a pandemic of this scale.” That statement about the COVID-19 pandemic is from Rachael L. Brown, director of the Centre for Philosophy of the Sciences, Australian National University (Brown 2020). It highlights the value of scientific modeling in making complex issues that impact the world easier to understand—to define, quantify, and visualize.

Modeling is a key process for *both* scientists and engineers. Models represent a system (or parts of a system) and its interactions—such as inputs, processes, and outputs—and can be modified or refined with new evidence or new test results.

- Scientists use models to help develop questions and explanations, generate data that can be used to make predictions, and communicate ideas to others (NSTA 2014).
- Engineers use models to help analyze a system to see where or under what conditions flaws might develop or to test possible solutions to a program (NSTA 2014).



A meteorologist gathers data at an observation station.

For example, an epidemiology-driven machine-learning model is just one of the models developed to predict the spread of COVID-19 (UCLA Samueli Newsroom 2020). In atmospheric science, forecast models use equations and weather data to guide meteorologists in predicting the weather (NOAA 2017). In earth science, soil scientists use stream tables (or river models) to study erosion. In mechanical engineering, engineers use computational models of wind turbines to visualize and refine a design and communicate the design to others.

In science education, in which both science and engineering practices are taught, models are powerful tools that engage students by combining physical, tactile learning reinforced with digital content to construct knowledge. Science standards based in phenomena (including problems that arise from phenomena) and three-dimensional learning, such as the Next Generation Science Standards\* (NGSS), incorporate modeling, encouraging students to learn by following the same science and engineering practices that scientists and engineers do.

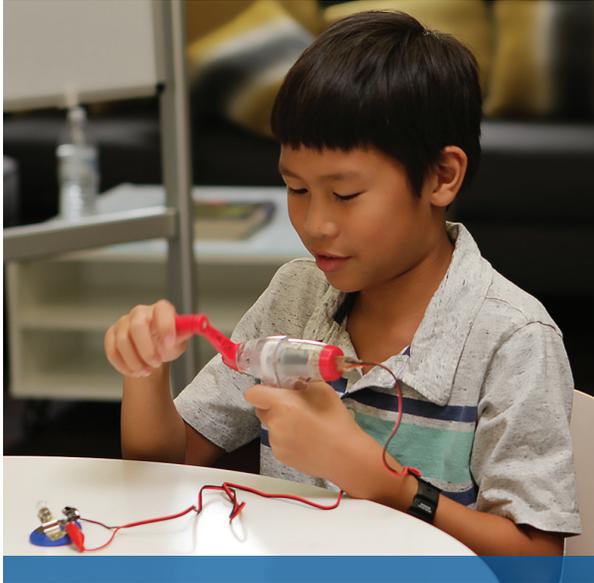
“One of the best ways to become comfortable with the changing state of the world is by arming yourself with knowledge and then using that knowledge to make a difference in the world. This is true for young people as well,” Smithsonian Science Education Center Director Dr. Carol O’Donnell writes ([Smithsonian Institution 2020](#)). She explains that as students engage

in activities—including creating models—they are better equipped to share their knowledge, engineer solutions to problems that arise from phenomena, and take action.

## The Progression of Modeling

“Models make it possible to go beyond observables and imagine a world not yet seen.” So says the National Academies of Sciences, Engineering, and Medicine [formerly the National Research Council (NRC)], noting that modeling in science education should begin in the earliest grades and progress to more abstract representations for students as their learning evolves (NRC 2012, 50, 58). However, with newer standards, there has been a shift in when models are introduced in the lessons.

“Historically, we would start with a model and have students ‘do’ an experiment that we predetermined, and then we would ask students to apply their findings to something real,” O’Donnell explains. “Today, it’s the reverse. You start with the real-world scientific phenomenon or problem, you engage students in sensemaking—the idea of what you notice about the phenomenon or problem and what you wonder—and *that* drives the need to engage with a model to explain the questions that may have arisen from the students’ observation of the phenomenon or problem.”



By beginning with asking questions and wondering about phenomena or problems that arise from phenomena, science and engineering are put into a broader context, which cognitive psychologists say helps enhance students' memory of the experience (Godden and Baddeley 1975). "In particular, experiences which involve engaging our perceptions of sight, sound, touch, smell, or taste, coupled with strong and realistic context, stimulate a pattern of neural activity in our brains that help us remember the experiences with greater detail," O'Donnell says (O'Donnell 2019). In other words, the hands-on, multisensory nature of phenomenon-driven learning and use of modeling can be considered an essential ingredient of the glue that helps learning stick.

In *A Framework for K–12 Science Education*, the focus is on conceptual models—explicit representations that “allow scientists and

engineers to better visualize and understand a phenomenon under investigation or develop a possible solution to a design problem” (NRC 2012, 56). These include diagrams, physical replicas, mathematical representations, analogies, and computer simulations. Developing conceptual models engages students as they're motivated to figure out why something happens.

- Through observations, testing, and refining, they use scientific models to explain phenomena and predict what may happen.
- To incorporate engineering practices, they create and use models to test solutions.

Throughout the process, students continue to deepen understanding as they mimic how scientists and engineers develop explanations, make predictions, and solve problems.

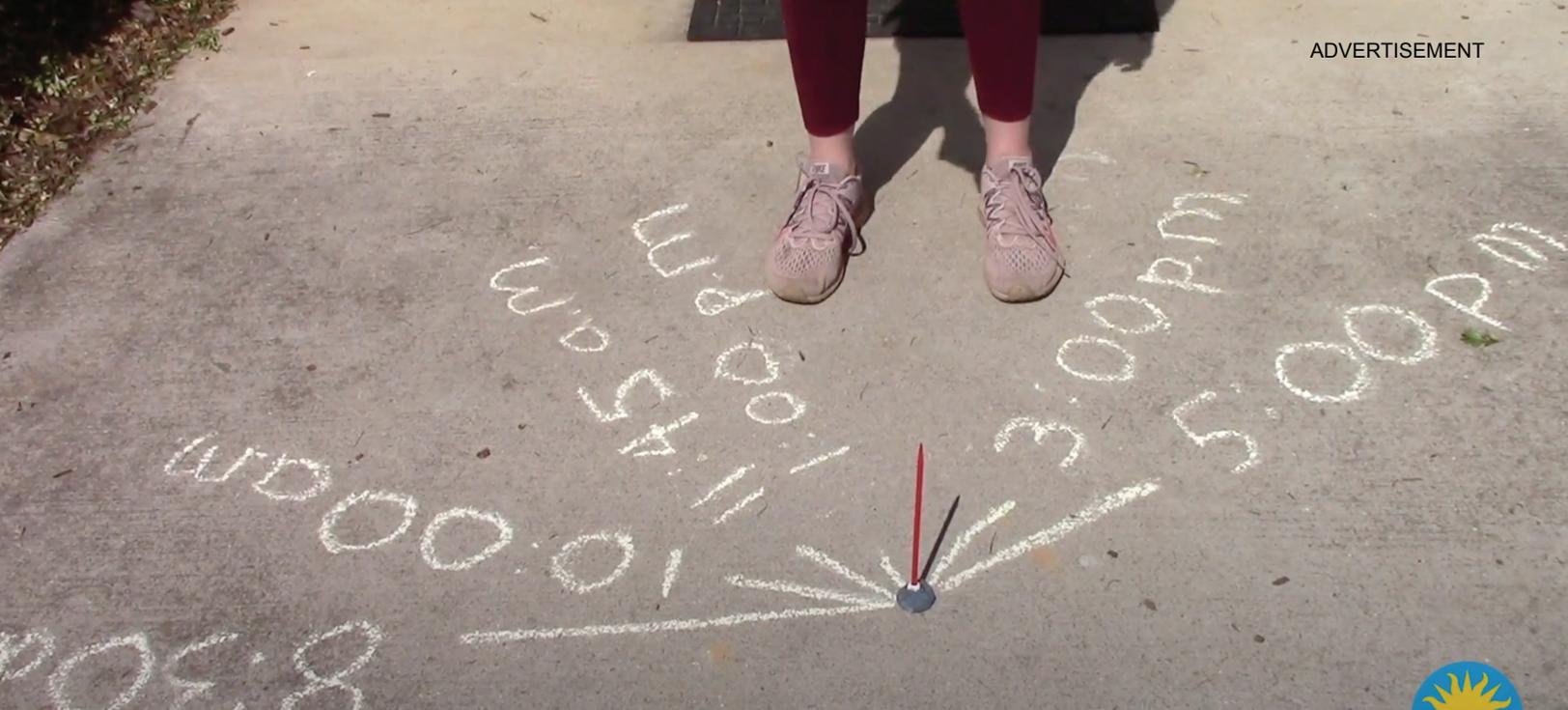
## Model Growth by Grade Level

The NGSS outlines a logical progression of developing and using models in education (NGSS Lead States 2013, 6).

- Grades K–2: Builds on prior experiences and progresses to include using and developing models—such as diagrams, drawings, physical replicas, dioramas, dramatizations, and storyboards—that represent concrete events or design solutions.
- Grades 3–5: Builds on K–2 experiences and progresses to build and revise simple models and using models to represent events and design solutions.
- Grades 6–8: Builds on K–5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems.
- Grades 9–12: Builds on K–8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their components in the natural and designed worlds.

“Models make it possible to go beyond observables and imagine a world not yet seen.”

—NRC *Framework* 2012, 50



Why is my shadow shorter sometimes and longer other times?



Credit: Smithsonian Science Education Center

## What Makes a Good Model?

No matter what type of model students use to explain a phenomenon, solve a problem, or make a prediction, the models should incorporate prior experiences to build toward answering a question or solving a problem about a phenomenon. Ideally, the question or problem should promote a transdisciplinary approach, integrating science content across a variety of subjects—such as literacy, history, art, and culture—giving the phenomena being investigated a real-world perspective. This can help students understand which features are important and how they interact, enabling them to not only develop explanations but also to use what they observe to make predictions.

As part of the process, students should acknowledge that their models are limited by the data known and be prepared to refine as new data becomes available. For example, in discussing pandemic models, scientists for the National Institute of Allergy and Infectious Diseases look at the data as it's evolving and do everything they can to ignore extremes of the model. Atmospheric scientists who use computer models to forecast the path of a hurricane may have 20–30 different

models that all differ slightly, so they need to examine trends. Soil scientists may need to simulate river flows in a variety of conditions to model real-world processes. Mechanical engineers may need to refine their models to better harness wind energy.

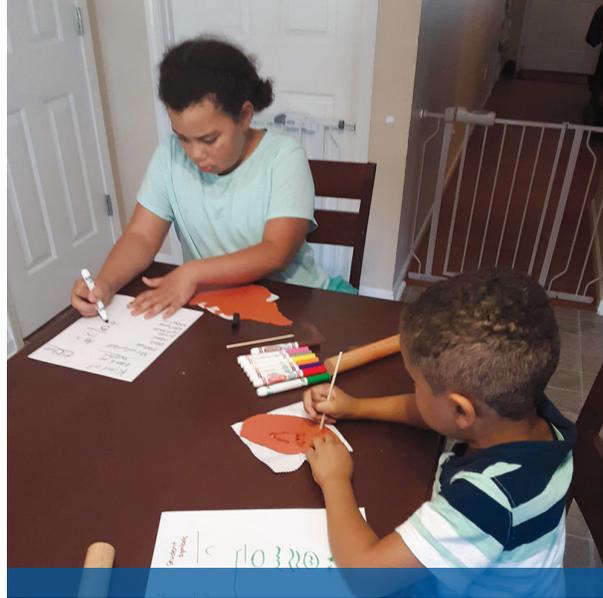
O'Donnell says one example of a K–5 activity at [ssec.si.edu/distancelearning](https://ssec.si.edu/distancelearning) that optimizes student learning by effectively incorporating modeling looks at shadows to examine the scientific phenomenon of the Sun's apparent daily motion across the sky. Designed for grades K–3 students, the lesson builds toward answering an essential question: “Why is my shadow shorter sometimes and longer other times?”

Learning remotely with video support or in a classroom, students draw on prior experiences and share their ideas about the question, make and record observations, develop a model that will help them figure out the answer to the question, check the accuracy of their model through further observation, and make predictions.

What makes the activity an effective learning experience? O'Donnell summarizes: “It's phenomenon driven, it creates a model to explain that phenomenon, and students engage in sensemaking and questioning, then revisit to understand that model.”

To assess students' models, consider these points:

- Is the model based on reliable observations?
- Does it aid in sensemaking?
- Does it explain the characteristics of the observations used to formulate it?
- Is it predictive?
- Does it answer an essential question about a phenomenon or help students solve a problem?
- Can it be refined when new data is determined?



Students make maps and create legends to model what maps can tell us about land and water on Earth.

## Modeling for the Real World

From the first months of the COVID-19 pandemic, phrases such as “flatten the curve” became a routine part of even casual conversations as the world population became invested in the science, evaluating epidemiology-driven models to make predictions and decisions that affected every aspect of society.

To prepare students for understanding phenomena they encounter, look for real-world current events that are examples of scientific modeling (e.g., predicting the spread of a pandemic, studying the path of a hurricane, reducing soil erosion on a hillside, or designing a wind turbine to harness

wind energy). Create transdisciplinary science lessons that embed a universal perspective by incorporating a cultural view and ample opportunity to converge the history, art, and science of phenomena together. Lessons should engage even the youngest students in thinking critically as they seek to answer essential questions, creating a bank of prior knowledge that can be refined and applied to new and evolving situations.

An understanding of modeling not only provides a basis for students interested in future science technology, engineering, and math (STEM) careers but empowers all learners to be global citizens who are critical thinkers as they navigate phenomena in the world around them.

### Models That Work for Classroom and Distance Learning

Grade	Essential Question	Model
1	How can we send a message using sound?	Students design a code (depicted as a series of dots and dashes) using patterns of sound and devise ways to represent their patterns.
2	How can we stop soil from washing away?	Students investigate how different materials might slow down erosion using models to represent the real materials.
3	How can we protect animals when their habitats change?	Students play the roles of tigers and plants and use a model of a tiger habitat (denoted by chart paper) to explain why tiger populations are declining.
4	How does motion energy change in a collision?	Students design a model of a bicycle helmet that changes motion energy to heat, testing it using an egg to represent a head.
5	How can we identify materials based on their properties?	Students watch a computer simulation of sugar dissolving in water and water evaporating, discovering that water and sugar comprise particles that are too small to be seen.

\*Examples are from [Smithsonian Science for the Classroom™](#).

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## How the Smithsonian Science Education Center Supports Using Models in Three-Dimensional Learning

The Smithsonian Science Education Center has developed [Smithsonian Science for the Classroom™](#) for grades 1–5 and [Science and Technology Concepts™ Middle School](#) curricula from the ground up to engage students. Every module is three-dimensional, hands-on learning that incorporates science and engineering practices—including the modeling that helps students explain phenomena and engineer solutions to problems.

Each module offers opportunities to do science following a coherent progression as it integrates engineering concepts, literacy, and math, developing deep connections to phenomena. With print, digital, and lab materials in one all-inclusive package, the lessons are designed for classroom use but can be adapted to supplement distance learning. The accompanying literacy series, [Smithsonian Science Stories](#), provides students with the opportunity to connect STEM to history, art, and culture at the point of use. The curricula help students realize how modeling can enhance understanding of real-world phenomena, improving the lives of all.

The Smithsonian Science Education Center also offers free STEM resources to support distance learning for grades K–8 at [ssec.si.edu/distancelearning](https://ssec.si.edu/distancelearning). Its most recently released resource is [COVID-19! How Can I Protect Myself and Others?](#) This free guide for youth helps students ages 8–17 understand the science (and social science) of the virus that causes COVID-19. [Find it at ssec.si.edu/covid-19](https://ssec.si.edu/covid-19).

Carolina Biological Supply Company. [www.carolina.com/ssftc](http://www.carolina.com/ssftc)  
Email: [curriculum@carolina.com](mailto:curriculum@carolina.com)  
Call: 800.334.5551

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most students' summer experiences very well," explained Atteberry and McEachin. "Some students maintain their school-year learning rate throughout the summer, while others can lose almost as much ground as they had gained in the preceding school year. We show that even if all the inequality in school-year learning rates could be entirely eliminated, students would still end up with very different achievement levels due to [summer learning loss] alone."

For some students, these compounding losses over summers explained more than 30 percent of the difference between them and their class-

mates by grade 5. Prior research has shown that while students in poverty and those from disadvantaged racial and ethnic groups are more likely to experience summer learning loss than white or wealthy students are, these demographic factors only explain about 4 percent of the difference in students' summer learning loss over time. School closures in the wake of the coronavirus have made it more urgent for schools to identify the students most vulnerable to summer learning loss. A separate study released earlier this spring and also based on NWEA data found that the so-called "COVID slide" could cause students to

lose as much as 30 percent of their annual progress in reading and half to all of their progress in math, without intervention.

Districts are still deciding how to measure and pinpoint how much ground they will have to make up with students when schools finally reopen this fall. But the researchers suggested that education leaders should consider how new scheduling structures intended to reduce the number of students on campus, such as moving to year-round calendars, could affect which children remain out of the classroom, and for how long. ■



Education Week/Getty

Published June 2, 2020, in Education Week's Special Report: *Technology Counts 2020: Coronavirus, Virtual Learning, & Beyond*

## How Technology, Coronavirus Will Change Teaching by 2025

By Catherine Gewertz

**I**n 2015, Elliot Soloway and Cathie Norris made some predictions about what education technology would look like in 2020. Soloway and Norris have long worked as a team to research ed tech and help districts put it into practice. In early March, Education Week caught up with them by phone when they were in Paris to speak at an ed-tech conference. We asked them how their 2015 predictions had fared. Then, we talked again in late April, when the coronavirus had suddenly transformed K-12 education into a massive remote learning system.

The interview has been edited for length and clarity.

**In 2015, you two predicted that by 2020, hardware, software, and network technologies would mature so much that ed tech's "Holy Grail"—a mobile computing device for every child 24/7—would be realized. You were so confident that you said: "We guarantee you can take this to the bank." Can we go to the bank now?**

**SOLOWAY:** [laughing] We were wrong. We were too optimistic about some of our predictions, and in others, we were spot-on. The hardware has been reduced in price, so almost 70 percent of children from the age of 12 have a smartphone in their hands. But schools aren't typically permitting students to use their

smartphones during school, and only about 50 percent of U.S. classrooms are 1-to-1 desktops, laptops, etc. On the software, though, we were spot-on.

**You predicted that developers would create apps that are truly device-agnostic. Did that happen?**

**SOLOWAY:** That prediction is pretty much spot-on. We are moving from native apps to web-based apps, and that means those apps are device-agnostic, so an iPad or Android or Chromebook can use all the same software. The [bring-your-own device] strategy is now much more viable than it was in 2015. In 2015, HTML 5 was adopted by the World Wide Web Consortium. That enabled the development of device-agnostic software. Now, it's really web- and browser-based apps that are driving ed tech.

**NORRIS:** An example of that is Kahoot!. Teachers use that regardless of whether they have desktops or laptops, Chromebooks; they can use Kahoot! on any, because it's web-based.

**Five years ago, you said that even if kids have 24/7 access to mobile tech, they wouldn't fully realize its benefits unless instruction changed pretty dramatically, from the dominant mode of direct instruction to a project- or inquiry-based approach. Have we made any progress?**

**NORRIS:** We have made some progress there. But the predominant mode of teaching, even now, is still direct instruction. The opportunities are incredible right now because of the technology. But if we've learned nothing else in the last 20 years, it's that the curriculum is missing. Teachers aren't given curriculum materials that support these different pedagogical methodologies. To put that burden on teachers, to take this curriculum and make it into projects or think up projects, is unrealistic.

**You also predicted that ed tech would be fully “collabrified,” allowing students to work at the same time, in the same app, on different devices and in different places. Are we living in that fully collabrified world yet?**

**NORRIS:** We are not. For the same reason! Curriculum! Collaboration is not an easy thing to do, but if you give teachers lessons that are designed to be collaborative, then they will have the students do it.

**What about the technical capacity to collaborate, though? Is the technology there to allow a fully “collabrified” world if teachers had the support of good curriculum?**

**SOLOWAY:** The truth is, we were wrong about that prediction. The demand was missing. If the teachers had curriculum that required kids to collaborate, then teachers would demand that the software does it and would put pressure on software developers to develop that functionality. But the curriculum doesn’t demand it, and thus, software developers are not including real collabrification in their software.

**NORRIS:** You’ve got to give teachers more help than just saying, “The technology can do this.” Teachers say, “The computer can do it, but how do I do it?”

**SOLOWAY:** As a techie, I believe if you build it, they will come. I am very wrong. [laughing] But we are hopeful for the next five years.

**Why?**

**SOLOWAY:** We believe in the Wiki model and the open-education-resource model: You make the materials open and available, with free curriculum, and teachers will use it. But it’s got to be a year’s worth of curriculum. It’s got to be well-defined, vetted, and aligned. We believe that teachers will use these digital resources when they see it as real curricula.

**NORRIS:** That is the goal we’re working on. Last year, we started the Center for Digital Curricula, with funding from the college of engineering at the University of Michigan. We’re building a fully digital open curriculum. Teachers are free to make any changes they want.

**SOLOWAY:** For the last six months, we’ve had a pilot project on it, with 12 teachers and about 600 students in grades 3-5. They’re using science, math, social studies, and ELA materials, all digital, all collabrified, free and open.

**Are those materials available, even as you pilot them?**

**SOLOWAY:** The math and social studies are freely available. The science, not quite yet.

**How will coronavirus school building shutdowns transform ed tech between now and 2025?**

**SOLOWAY:** Digital transformation is being accelerated. Technology and 1-to-1 [computing] will be available faster because schools are seeing the need for it. They’re going out and buying equipment for the have-nots, which is a wonderful thing. But there’s still a tension between paper and technology, and paper is still winning.

**NORRIS:** Teachers are inundated because everyone is making their stuff available for free, and they’re trying it. But they’re quickly getting discouraged.

**SOLOWAY:** The ed-tech tools feel overwhelming because it’s “ed-tech first.” The stumbling block has been the marriage of curriculum and tech, delivered in a way that is accessible.

**So how will this overload sort itself out?**

**SOLOWAY:** Right now, every [online tool] has its own ecology, its own sign-in. All these companies are doing their own thing, not playing with each other. I think most of these tools will go away, and a couple will figure out how to integrate and aggregate the various pieces to make access easy, and those are the few tools that will remain, and that’s what schools will buy. ■

*Published July 21, 2020, in Education Week’s Special Report: Taking Care of Teachers*

## Round-the-Clock Communication Is Exhausting Teachers

By Sarah Schwartz

**N**ot long after schools transitioned to remote learning this spring, English teacher Shelby Davis started getting messages at all hours of the night.

Her 11th graders, whose sleeping schedules had already reset by then, were sending her questions at 1 or 2 am and multiple follow-ups into the early hours of the morning, “because I wasn’t answering fast enough,” she said.



— Getty and Vanessa Solis/Education Week

She’d wake up to the notifications in the morning and start making her way through them. On Sundays, her school’s end-of-week deadline for student work, she felt tied to her inbox, replying to students’ last-minute questions about assignments. In all, Davis thinks she spent about five hours a day on her email.

The sheer volume of communication was overwhelming, and its round-the-clock nature nothing like what she had experienced in the classroom. Before COVID, most students would wait until the next day to ask her questions in person.

“With distance learning, there’s kind of like a

blend between days,” Davis said. “My day doesn’t naturally stop at 2:30.”

Even before the pandemic, texting and school communication apps—like Remind or Class-Dojo—had given students and families new ways to contact teachers 24/7. But teachers like Davis say that school closures have increased the pressure to be “always on” for students and parents, as remote instruction has blurred the boundaries between work life and home life.

And it isn’t just messages about assignments. As most families’ closest connection to their schools, teachers are also fielding worried questions—about when classes will finally resume in person, or what next year will bring—from children dealing with the stress of uncertainty.

“I definitely think I took on more of a counselor role,” said Courtney Jones-Stevens, who taught 6th and 7th grade social studies this past school year at KIPP South Fulton Academy, in East Point, Ga. “To see them struggling definitely takes a toll on you.”

Teachers want to be available to their students, to clarify their questions and calm their fears. But it’s also crucial that teachers set time aside for themselves, and that schools and districts respect—and even help create—these boundaries, said Kathleen Minke, the executive director of the National Association of School Psychologists.

Developing systems that protect teacher well-being should be a priority for schools in the fall, she said, as the demands of remote learning aren’t likely to disappear. Some districts are planning for hybrid models, with both remote and in-person classes, and an increasing number are planning to start fully online.

“I like the metaphor of the stress cup. When your stress cup gets full, it doesn’t take much more to get you over the edge,” Minke said. “Teachers have to think about, how do you empty that cup so that [you] are available when needed?”

### An ‘Internal Battle’ Over Boundaries

This past spring, parents, teachers, and students were all adjusting to a new reality, Minke said. Teenagers sending emails in the middle of the night were figuring out how to set their own schedules; parents who had late-night questions may have had to wait until they were off work, or after they had put young children to sleep, to send their messages.

“There’s no bad guys in this,” said Minke. “This is all people doing the best they can with what they know and what they have to work with.”

Some teachers found that opening up to students and parents about their own responsibilities outside of class helped families understand

and respect the boundaries that they set around communication.

Shanice Maxwell, a 5th and 6th grade history teacher at a charter school in Bridgeport, Conn., mostly heard from parents early in the morning or late at night. Her school is near a hospital, and many of her students’ families included essential workers.

In the first weeks of distance learning, she felt pressure to respond to parent texts and emails about assignments or technical problems immediately. Throughout the beginning of last school year—her first as a teacher—she had worked to build relationships with families. Maxwell, who is Black, said she wanted parents to know that she had a “fire in my belly about teaching Black and brown students in this community,” and that parents could count on her support.

The pandemic brought on an “internal battle,” she said. “Because at first, it was like, I want to make sure they have everything they need, I want to answer their questions ... But I was ignoring the fact that I, too, need to rest, and I, too, have a family I need to cater to, and I was also in grad school.”

With about a month left of school, two things happened that changed her experience. Her administration set a policy that teachers didn’t have to respond to messages sent after 5 p.m. until the next day. And then, Maxwell shared with parents why she was planning to follow it: She had evening classes for her master’s program, and she was also caring for her elderly mother.

Her students’ families were understanding. Parents sent more messages during the day, and when they would send messages later at night, they added an acknowledgment: It’s OK if you get back to me in the morning.

School support structures—like Maxwell’s administration’s 5 p.m. cut-off—can make it easier for teachers to set boundaries around communication, Minke said.

“This shouldn’t be something that teachers are facing on their own as an individual,” she said. “This is something that schools should be having conversations about: What are the expectations, and how are they communicating those expectations?”

One solution: distributing responsibility. Grade-level teams could take turns having “on” hours, Minke suggested. It’s also helpful to have teachers’ schedules clearly accessible, possibly including them in an email auto-reply, she said.

### ‘Grasping for Answers’

Heather Levine, a high school English teacher in Lawrence Public Schools, in Massachusetts, said that most of her 9th graders respected the

“

This is something that schools should be having conversations about: What are the expectations, and how are they communicating those expectations?”

**KATHLEEN MINKE**

EXECUTIVE DIRECTOR, THE NATIONAL ASSOCIATION OF SCHOOL

boundaries she set around her time.

Tougher for her was not having answers to the questions kids asked all spring, about what would come next. Students would text her with rumors they’d heard, asking, “Is that true?”

“I think everyone was sort of grasping for answers,” Levine said. And though the rush of messages from students was daunting at first, harder still was not hearing from some of her 9th graders at all.

Levine checked in with all of her students at least once a week. “Sometimes I would get an inclination, just by the way that a student would write something, or even by their lack of writing, that something was wrong,” she said.

One-word responses, or students just saying, “I’m fine,” worried her. She knew a lot of her students were shouldering big responsibilities, supervising siblings or working to support their families after parents were laid off. If she were in class, she could have offered a granola bar, or a hug, or an open invitation to talk. But over text, she had fewer options.

Hearing regularly from students about their fears—or not hearing from them much at all—can take a toll on teachers’ mental health, said James Caringi, a professor and the chair of the School of Social Work at the University of Montana, who studies secondary traumatic stress in educators.

Peer support, just talking to other teachers, is an effective way to work through these feelings. But “unless you happen to live next to one of your

colleagues, it's harder to do that now," Caringi said. Schools and districts have a role to play here, providing opportunities for teachers to tap into these support networks virtually, while not adding another to-do to their plates, he said.

Jones-Stevens, the social studies teacher in Georgia, said that a group counseling session led by her school psychologist helped her better un-

derstand how to reply to the many students asking what would happen in the coming months.

The school psychologist talked with teachers about how to be vulnerable with students about uncertainty, and she gave teachers strategies to help students make safe decisions as the state reopened.

Jones-Stevens understands why her commu-

nication with students became more personal, as they turned to her this spring for reassurance from an adult.

"They're not going to school, they're not seeing adults outside of their families, so providing that support is very helpful to kids," said Minke, of NASP. "But again, within that construct of: We have to set some limits." ■



—Getty

## OPINION

Published August 3, 2020, in Education Week's Finding Common Ground Blog

# Social-Emotional Learning Is the Elephant in the Room: Three Challenges to Consider

By Shanna Sloyer-Martin

**I**n a few short weeks, students from across the country will return to school. How that happens will look different depending on geography, virus surge, and local politics. For some, classes will start online and remain that way for the foreseeable future. Others will attempt a hybrid model that allows for a couple of days in person, then rotates to virtual instruction. Disease-mitigation strategies like mask-wearing, frequent hand sanitizing, and social distancing will be in place for districts planning to return to traditional brick and mortar models.

Whatever model of instruction students encounter when they return to learning this fall, there

will be one constant. Social-emotional learning (SEL) needs will be higher than ever, and the education community, in its efforts to keep students physically safe, must not ignore or minimize their mental health. Many of our students have been out of school buildings for nearly half of a calendar year. Despite continuing to learn virtually, the social norms and expectations they have adhered to since February or March have likely been different from those that will be expected when they return.

### What Will Change About the Expectations for Learning?

Students are going to be asked to sit in the same room for most of the day, wearing a mask and staying six feet or more from their peers.

Virtual learning expectations will be more rigorous than they were in the spring, so some students will need to adapt to many more hours per day in front of the computer.

While these measures are necessary to curb the trajectory of COVID-19, they fly in the face of everything educators know about developmentally appropriate experiences. It seems that most of the discussion on reopening schools has centered around the desires and experiences of adult stakeholders during the pandemic. There hasn't been much discussion on how this pandemic has affected and will continue to impact our youths, other than to use their mental health as an argument for reopening. It's like there's a giant proverbial elephant in the room, and we don't want our kids to notice it. Guess what? They noticed.

Children and young adults are not insulated from the stressors of society. Our youths are bombarded by news about refrigerated trucks storing virus victims' bodies, the instability of our economy, and the powder keg of racial tension that exploded across the country this summer. Many of them have experienced firsthand the loss of a loved one to COVID-19, financial hardship, or social injustice. Simply shielding kids is no longer a practical solution, and failing to recognize and acknowledge their experiences only increases their anxiety. We must address their experiences head on and we have to do it before any meaningful academic learning can take place.

SEL during the COVID-19 pandemic will (and should) look different from a year ago. While SEL staples like online safety, citizenship, and interpersonal relationships will certainly still be important, I believe the following components should be included in the SEL curriculum to adapt to the times we're in:

### Grief & Loss

Grief counseling often brings to mind the loss of a loved one or a death experience, but grief and loss are so much more. When we shuttered schools last spring, students were robbed of the closure that the end of a typical school year brings. Final field trips, telling teachers goodbye

for the summer, and the sense of accomplishment that comes with the culmination of another year.

Our students have missed out on important life experiences and rites of passage in the past six months. Canceled proms and athletic seasons and long separations from family members are losses that deserve our acknowledgement. For students who depend on school as an environment of safety and security, their grief may stem from loss of access to reliable resources like food, electricity, water and affection.

Students will also undoubtedly experience feelings of loss surrounding what the upcoming school year will look like. No longer able to sit shoulder to shoulder with peers at lunch or move from classroom to classroom, students will need to mourn what once was before they can begin to accept the new reality.

Rather than simply moving on, we need to provide students opportunities to discuss their shared experiences since we were last together. This can look like:

- How are you doing?
- What have you been doing since the last time we were together?
- I've missed seeing you and hearing about your life.
- Is there anything you want to share?
- What has been difficult about this experience?
- How can I help you if you're struggling?

Going on without acknowledging the grief and loss that come from living through a pandemic is disingenuous, invites potential behavior issues, and fails to honor our students as individuals.

### Resilience & Adaptability

One of the things that I love about working with young people is their ability to adapt and change. They are so much better at being flexible than most adults I know (myself included).

By discussing with students what it means to be resilient and adaptable and giving them opportunities to practice, we're not only teaching them how to cope with what's happening in the world right now but also providing them with important life skills that will serve them into adulthood.

As educators, we need to praise students for the resilience and adaptability they demonstrate this school year. This can look like:

- I'm so impressed with how you rose to that challenge.

- I know wearing a mask isn't always fun, but you are doing such a great job keeping yourself and your classmates healthy. Thank you.
- Brainstorming positive things that have come out of this period (my own kids learned how much they like homemade bread when we couldn't find bread at the grocery store).
- Brainstorming ideas with students for how we can adapt pre-COVID traditions and activities to work in a post-COVID world (think recess and playground activities at the primary level and Spirit Week for secondary students).

When we invite students to be part of the discussion, even the youngest children often surprise us with their insight.

### Community

A building is just a building; people make up a community.

Even if schools are not back in brick and mortar, students need to be reminded that they are valued members of the learning community. Helping our kids feel the same connectedness we create when we sponsor clubs and participate in pep assemblies is even more vital to their mental health than before COVID-19.

As adults, we can foster the idea that we are all in this together, not only as a school community, but as part of our larger communities. This can look like:

- Continuing, where possible, remote extra-curricular opportunities like clubs.
- Encouraging a mentoring program pairing older and younger students. (Reading buddies, Freshmen Mentors, etc. via teleconferencing)
- Creating a pen pal program between students and a local residential-living facility.
- Maintaining school traditions where possible. (Can we still play the school fight song over the PA? Wear our class colors?)

Every member of our school community is going to play a vital role in the mental health of students this year. We can begin by acknowledging the COVID elephant in the corner, mask and all. ■

*Peter DeWitt is a former K-5 public school principal turned author, presenter, and independent consultant. This guest post for Peter DeWitt's Finding Common Ground blog was written by Shanna Sloyer-Martin. Sloyer-Martin is a guidance counselor, freelance writer and mother of three living in the Midwest.*

## OPINION

*Published on July 15, 2020, in Education Week's Ask A Psychologist Blog*

# Stress Can Lead to Student Failure. New Research Offers a Path for Success

By Jamie M. Carroll & David Yeager

**S**hould I make my class less challenging when my students are stressed and anxious?

Students will face many difficulties in the coming year. They will need to catch up on last year's content and learn this year's—all while possibly confronting such issues as social isolation, difficulty with internet or computer access, food insecurity, family responsibilities, and more.

For many students, the demands of the schoolwork will exceed the support they have available. Psychophysicologists, who study the connection between the mind and the body's stress system, call this "threat" stress (see the left side of the figure below). Scientists like Jeremy Jamieson have shown that students feel "threat" when they're being asked to do more than they can handle. Their bodies then prepare for damage and defeat: Their blood vessels constrict, limiting blood flow, which leads to less oxygen to the brain. And their bodies release cortisol, the "toxic stress" hormone that makes it harder to form new memories. Both of these effects cause students to do worse in school.

As teachers, we don't want to put our students under "threat." Therefore, we often pull back; we decrease our expectations to match the support available. We say, "That's OK, you don't have to worry about that" (see the bottom right of figure). While of course we need to be compassionate and flexible with how students complete assignments, we can end up pulling back for precisely the students who need us the most: lower-achieving students or those from low-income families. In fact, in the spring of 2020, teachers in high-poverty schools were less likely to introduce new material during distance learning.

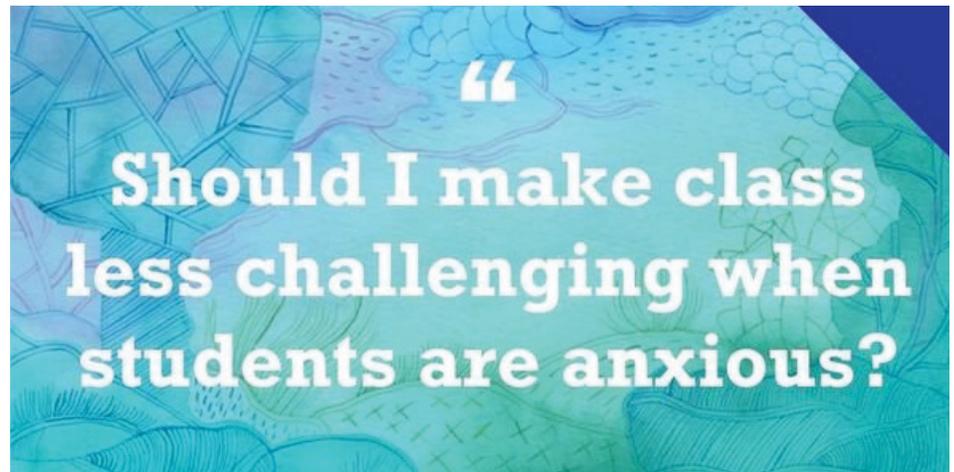
Fortunately, there's another way to help stu-

dents who feel stressed: by keeping schoolwork challenging but increasing support so it matches the expectations. This approach promotes resilience.

How can teachers help students deal with stress while maintaining high standards? For Sergio Estrada, an OnRamps physics teacher in El Paso, Texas, the move to distance learning meant continuing to challenge students while supporting their growth mindsets. “I want to be a support system for them but not necessarily a crutch,” he explains. “My students are engaged in learning, and they know more than they think they do. But there are a lot of confidence issues.”

In distance learning, Sergio did whatever it took for his students to know that his support will meet the rigorous demands of the course. When students got a problem wrong, he emphasized to them: “You are more than just a number. You can answer this question.” He tried to make his students feel comfortable with making mistakes to emphasize that failure is the starting place for growth.

Even in the early days of the pandemic, he didn’t give them the answers when they were stuck but instead asked them guiding questions to



help them connect the dots on their own: “I want them to learn how to think and what questions they should be asking themselves.” But he let them know he was available on a chat app at any time to help. “I tell them, ‘You have Mr. Estrada in your pocket. You just need to reach for him.’”

Teachers like Sergio convey to students that they are up to the challenge and that you will do whatever they need so they can meet the

course’s ambitious learning goals. “I want to think my students are prepared for challenges,” explains Sergio. “They need to be resourceful because I may not always be there.”

*Jamie M. Carroll is the associate project director for the National Mindset Innovation Network, and David Yeager is the psychology professor at the University of Texas at Austin. ■*

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