Reimagining K-12
Emerging from Disruption with Insights for Reform

Overview

In March 2020, at the start of the COVID-19 pandemic, K-12 schools struggled to transition to remote learning. School districts across the country with differing budgets and technological infrastructure responded uniquely, achieving differing levels of success. The transition to remote learning during the pandemic exposed a deep digital and device divide, widened achievement gaps between students in low- and high-income households, and imposed a physical and emotional toll.

Even prior to the pandemic, according to international assessments of student achievement, American children were performing below the OECD average in math, and performance gaps between low- and high-income students were widening faster in the US than in other countries, especially in reading.

Pandemic-related school closures and remote learning mandates exacerbated existing inequities domestically. Remote learning has been widespread during the pandemic. Near the end of the 2020–2021 school year, 49 percent of households with children enrolled in public or private schools reported that children were still receiving at least some virtual or online instruction (Chart 2). (In some cases, this included on-campus students logging on to virtual lessons from inside their classrooms, despite their schools having reopened to physical learning.) This is down from the nearly two-thirds of households who reported children moving to at least some online learning at the beginning of the school year. However, more than a year after the onset of the COVID-19 pandemic, many children are still subject to the learning limitations of emergency remote learning models.
Students of color and those in low-income households have suffered the largest setbacks from this reliance on remote learning because they are more likely to have received remote education and, at the same time, are the least equipped for it. They have less access to devices, less reliable or mobile-only internet connections, and less real-time contact with teachers to fill in these connectivity gaps. Although overall digital connectivity and remote learning methodologies have improved over the 2020–2021 school year, and the pace of learning loss has slowed, opportunity gaps have continued to widen between different student groups and have led children of color and those in low-income families to fall behind more than others.

These challenges present a unique opportunity to reimagine a more effective, engaging, and equitable educational system more resilient to future disruption. The pressure of pandemic response has forced innovation that could benefit our nation’s children if we can identify and harness best practices for online education now and into the future, including during the next pandemic or other interruptions of classroom learning. Policymakers and educators must learn from the pandemic experience, leverage technology in and out of the classroom, and integrate remote learning when and where it is most constructive. By using digital and online tools more effectively and equitably, and integrating them into curricula, school districts can offer effective blended learning settings that better support students and teachers while reducing inequalities among schools and diverse student populations in the longer term.

Provisions have already been made to address the challenges and begin capitalizing on these opportunities. In response to the pressures of the pandemic, Congress has provided a combined $189.5 billion to the nation’s K-12 schools as part of the three aid packages tied to the COVID-19 pandemic. States have significant discretion in how to spend these funds, and the process of allocating the funding is still in its early stages.

This Solutions Brief will examine the impact of remote learning during COVID-19 and lay out recommendations for addressing the pandemic’s impact on learning achievement and harnessing learning technologies effectively in the years ahead as well as for any unwelcome future disruptions.
RECOMMENDATIONS TO MEET POSTPANDEMIC NEEDS

Policymakers and educators must address the harm inflicted by the pandemic and develop strategies, including public-private partnerships, for harnessing remote learning technologies more effectively in the future. A strategic plan to achieve these ends should target five primary goals:

1 **Narrow the digital divide.** Remote education cannot succeed without universal student access to high-speed internet and learning devices throughout the school year and during periods of remedial instruction outside the regular academic calendar.
   - At the state and school district levels, some short-range strategies have already proven successful and could be scaled and replicated to quickly expand access to high-speed internet and necessary devices. These strategies include establishing and expanding computer device lending programs, creating lending libraries for individual Wi-Fi hotspots, and retrofitting school bus fleets with Wi-Fi connectivity.
   - The federal government should connect states and school districts pursuing similar strategies to identify the most effective practices and negotiate collectively for the lowest prices for high-speed internet and devices and the quickest procurement.
   - Business leaders should engage with their communities, especially through public-private partnerships, to address shortages of laptops and tablets and provide access to Wi-Fi.
   - The federal government **should expand internet access** through publicly funded high-speed networks to better service rural areas and low-income households.

2 **Address learning loss.** Policymakers and educators should reengage students and accelerate learning through remedial education opportunities. Options include:
   - Expanding summer school and tutoring programs and attracting students to them (such as by adding arts, sports, and recreational opportunities);
   - Restructuring the academic calendar to make up school days lost during the pandemic; and
   - Building a cadre of trained tutors or teaching assistants focused on literacy and math skills to tailor instruction to struggling students.

3 **Improve student and teacher well-being.** Policymakers and educators should work closely with parents to ensure the safe return of students and teachers by:
   - Investing in school infrastructure and supplies (i.e., proper ventilation, PPE, and disinfectants) to ensure physical well-being;
   - Hiring additional counselors to provide teachers and students with the social and emotional support for reintegration into a physical environment; and
   - Providing teachers with counseling resources and prep time for hybrid or remote instruction to avoid burnout.
4 **Improve online learning models and methodologies.** Policymakers and educators should develop effective digital curricula and assessment tools for remote and asynchronous learning on personal devices—not only for future unexpected school closures but also to capitalize on opportunities for more effective education by:

- Training teachers to build digital skills and effective hybrid teaching practices, including coaching on how best to integrate multimodal technology (e.g., mobile, digital content, and platforms) into instruction both in and out of the classroom, and how to adapt lessons to the digital abilities and requirements of different grade levels;

- Undertaking assessments of remote learning to identify what works under what conditions for which students;

- Supporting innovation by integrating technology into the classroom and the curricula and piloting and refining new remote learning models, including the most successful technology-enabled practices for remote and asynchronous instruction deployed during the pandemic;

- Incorporating cybereducation and elements of vocational training into curricula to develop responsible cybercitizens and open pathways to future careers; and

- Promoting innovative partnerships among business, K-12 schools, colleges and universities, community-based organizations, and parents to build a new digital learning infrastructure including hardware, broadband, high-quality curricula and student assessments, teacher training, and home and community supports.

5 **Identify best practices.** Policymakers should establish a national task force and sponsor research to more comprehensively assess the lessons learned and best practices undertaken during COVID-19 and then use those lessons to drive broader education reform and to inform preparation for the next disruption.

- Such evaluations should capture lessons learned from both the schools that remained open during the pandemic and those that transitioned easily to remote education. They should also identify—and work to codify—the best methods for testing the effectiveness of online learning.
Impact of Remote Schooling During COVID-19

Understanding how the pandemic has exacerbated preexisting disparities will enable policy makers and education leaders to help children recover from learning losses and return to new, reimagined learning models. The COVID-19 crisis has exposed the weakness of education systems along three important dimensions: 1) narrowing the digital divide; 2) accelerating learning; and 3) ensuring the social and emotional well-being of students and teachers.

1. While the digital and device divide narrowed over the course of the pandemic, the digital hurdles faced by children of color and low-income households remained acute.

Surveys suggest that nearly two-thirds (65 percent) of households with children enrolled in public or private school started the 2020–2021 academic year with at least some component of their education online. At that time, nearly a quarter of households reported that they did not always have an internet connection or a computer or other digital device available for educational purposes (Chart 1). But by the end of the academic year, largely due to innovative efforts by school districts to hand out devices and offer mobile hotspots, access to devices and the internet was more widespread across all demographic groups, especially among Black households who saw the largest improvements (Chart 1). By May of 2021, Black households reported similar levels of internet availability and even greater levels of device access compared to White ones.

Yet the digital and device divide (i.e., less access to affordable, high-speed internet and digital devices for minority and lower-income households compared to their White and higher-income counterparts) did not substantially narrow for Hispanic and low-income families. A fifth of Hispanic households, and a quarter of low-income households overall, still did not have consistent access to a learning device by the end of the school year (Chart 1b). And for both groups, close to 30 percent still did not have reliable internet availability (Chart 1a). Families making less than $50,000 a year are the most digitally disadvantaged and about twice as likely as those with higher incomes to suffer inadequate connectivity.

At the same time, the students least equipped for online learning are those most likely to have been put into virtual instruction (Chart 2). In May 2021, while students in about two-thirds of all minority households experienced real-time online instruction, only 38 percent of students in White families did so. Students of color were also significantly less likely to have received in-person instruction than White students. A similar disparity exists between low- and high-income households, although the most acute differences occur by race and ethnicity. Poor school-aged children of color, especially those living in rural areas, have been most affected by the digital and device divide and are at greatest risk of falling behind both academically and developmentally.
The digital and device divide has narrowed since the start of the pandemic, but internet and device availability remain least reliable in Hispanic and lower-income households.

Internet and computer/digital device availability for educational purposes in households with children in public or private school, by race, ethnicity, and income.

Note: Data for September 2020 refer to September 2-14, 2020 (Week 14 of the survey). Data for May 2021 refer to May 12-24, 2021 (Week 30).

Many K-12 students have fallen behind academically during the pandemic, but those from minority and poorer households have seen the largest setbacks. Children in families of color and those in low-income households had inconsistent access to digital learning during the pandemic, and so were less likely to regularly attend class—and in some instances were even “lost” by their school systems. Difficulty in completing schoolwork due to poor internet connections and lack of access to a workable learning device—sometimes called the “homework gap”—led some children to do schoolwork on cell phones or in parking lots with access to public Wi-Fi, or leave their work incomplete. The homework gap has in turn amplified learning losses among the most vulnerable populations of children.

Learning disruptions appear to have been most severe during spring of 2020, as schools suddenly closed and shifted to online learning models. There is widespread consensus among researchers that school-aged children started the 2020–2021 school year weeks behind in reading, and even more behind in math. Studies find the largest learning losses were among late elementary and middle school students. And although all demographic groups saw setbacks, Black and Hispanic students and those in low-income households or school districts experienced the most acute learning deficits.
But a year of learning and experimenting with remote education has paid off. States and school districts have worked to close the digital and device divide and improve remote learning. Teachers have adapted their curricula and teaching, enhanced their digital literacy, and bolstered communication and collaboration with students and parents. Early evidence suggests that learning gaps have shrunken since the beginning of the school year. However, students of color who were the least prepared for online learning have continued to fall behind, exacerbating achievement gaps. Even by the end of the school year, students in Black, Hispanic, and low-income households were much less likely to have received live contact with teachers over the course of the week than students in White or more affluent households (Chart 3).

Yet research cannot measure the extent to which school closures and the shift to remote learning have driven learning deficits. Most learning assessments do not distinguish between students attending school in person and those attending online at home. This makes it difficult to disentangle the impact of remote learning models on student outcomes, especially because learning losses could be the result of other pandemic-related household stressors, such as illness, job loss, lack of childcare, or housing or food insecurities. Assessment results could also be skewed.
because students testing at home could have received help from adults, and because the most vulnerable students who are not participating in online learning regularly—or were even “lost” by their schools and school systems—are less likely to have been tested. Ultimately, it is difficult to isolate the impact of remote learning and still too soon to tell if students are catching up after starting behind in the fall.

3 Children’s and teachers’ mental, physical, and emotional pandemic health challenges may have long-term effects.

The pandemic’s toll on the psychological and physical health of children and teachers may include lasting effects on educational outcomes. For school-aged children, especially teens, the social isolation, lack of a structured school day, and family and financial stress during the pandemic—including COVID-19-related illness or death, caring for siblings, or working to help support the family—resulted in rising anxiety and depression and an increased need for mental health services.
The social disconnect and limits on physical activity associated with virtual learning have been especially taxing. According to a CDC survey conducted in fall 2020, children receiving only virtual instruction were more likely to have experienced reduced physical and outside activity, less time with friends, a deterioration in their mental and emotional health, and symptoms of anxiety and depression than children learning in-person or in hybrid models (Chart 4). The direct link between mental health and academic performance suggests that students must feel good about themselves and connected to their school before they can perform well academically.10

Teachers have also struggled. In a fall 2020 RAND survey, nearly 40 percent of teachers providing remote instruction said they needed additional strategies to help students catch up on learning, and most reported that they had not received adequate guidance to support students from vulnerable populations. Overall, 80 percent of teachers reported feelings of burnout, and about a quarter indicated they were likely to leave the teaching profession. The pandemic has lowered teacher morale and could erode instructional quality, lead to early retirement, and result in teacher shortages that would further complicate the transition to normal schooling.

Lessons for Reform

For policymakers and educators, directly addressing the setbacks highlighted by the pandemic—narrowing the digital divide, accelerating learning, and ensuring the social and emotional well-being of students and teachers—will be essential for recovery. But the forced introduction of remote education on such a large scale has also created a new knowledge base that may pay dividends well beyond that recovery and help address K-12 educational inequities.

Many states rushed to spend large proportions of their early funding on devices and broadband access, but districts need more than technology to make remote education work. Remote learning’s potential to reach large numbers of students across communities could yield better results per dollar spent. Over the long term, online learning models and methodologies should be improved, and teachers equipped and trained to successfully integrate remote instruction into their curricula. Remote learning can potentially provide children with more individualized learning opportunities, implement school- and community-based supports that target communities in need, and address both preexisting and digitally generated achievement gaps.

Accomplishing these goals will require that US policymakers build a new digital learning infrastructure—composed of hardware, broadband, curriculum, training, and community supports—by promoting innovative partnerships among business, local schools, and community-based organizations and leveraging the new pandemic-relief streams of funding. As outlined in the recommendations below, policymakers should address the current challenge of ensuring children catch up and also aim to effect lasting change by helping them get ahead for a digital future.
Pandemic-related K-12 Funding

In response to COVID-19, Congress passed three stimulus bills that provided $189.5 billion in relief aid to public K-12 education through an Elementary and Secondary School Emergency Relief (ESSER) Fund. These funds are directed by the law to the generic goals of getting students safely back into the classroom, making up for learning loss accrued during the pandemic, narrowing the digital divide, and supporting educators in more effective uses of technology. Federal funds have been allocated to states with broad spending guidelines, giving the states substantial discretion as to where the money will be spent. Transparency in the allocation and spending of these funds will be critical to effectiveness and efficiency.

Foster public-private partnerships that make rapid progress toward closing the digital divide

Narrowing the digital divide is essential to bridging educational inequities. The Coronavirus Response and Relief Supplemental Appropriations Act (CRRSA) provided $7 billion to address connectivity disparities in underserved communities. The American Rescue Plan established the Emergency Connectivity Fund, an education-focused broadband fund, which provided an additional $7.2 billion to help schools and libraries provide devices and connectivity to all students. The FCC has been left to distribute these funds.

In its March 2021 Solutions Brief, Broadband Access: Connecting America, CED laid out the need for the US to narrow the digital divide by expanding affordable broadband access to underserved areas. CED recommended, and continues to recommend, that Congress modernize digital infrastructure to achieve true “100/100” broadband speeds, identify underserved communities more accurately through federally conducted surveys, and better target those communities by extending existing programs that subsidize service to low-income households.

Yet providing robust home connectivity by expanding broadband is a longer-term endeavor. In the interim, public policy, education, and business leaders must partner to replicate and scale up creative, shorter-term solutions proven to expand access to technology, including both high-speed internet and personal learning devices.

Examples of public-private partnerships among states, school districts, and local businesses or internet providers to narrow the digital divide include: extending the reach of Wi-Fi into library and other public or private parking lots; outfitting school or public buses as mobile hot-spots parked in areas identified as lacking internet access; lending out mobile hotspots or devices at schools or libraries; and offering refurbished computers, laptops, and hotspots. In Connecticut, a partnership among the state, school districts, and local internet providers worked to install—and pay for—wired internet in students’ homes. The Oklahoma Department of Education, in partnership with Verizon, allocated a portion of its funds for a Hotspot Grant, providing low-income and rural students with high-quality broadband access. Other states have banded together to negotiate deals with internet providers on a larger scale and to deliver connectivity across state lines.
The federal government should also connect states and school districts pursuing similar strategies to identify the most effective practices and negotiate collectively for the lowest prices and quickest procurement. In Texas, for example, when school districts were experiencing delays and backorders of laptops and tablets, the state used its bargaining power to bulk purchase the devices at a steep discount and on an expedited time frame.

Such innovative and collaborative efforts were key to nearing one-to-one device connectivity in many school districts. Nationally, at the start of the 2020-2021 school year, school districts provided devices to 57 percent of households with children enrolled in public or private schools. And districts effectively targeted the neediest families, providing devices to two-thirds of households making less than $50,000 a year.\textsuperscript{15}

**Address Learning Loss**

Widespread, bipartisan concern about children’s learning loss and widened inequities brought on by the pandemic has motivated funding and thereby offers an unprecedented opportunity. Policymakers and education leaders must implement engaging and socially interactive education experiences to offset the learning gaps exacerbated during the pandemic. For example, summer and after school programs, strategic tutoring programs, and adjustments to the academic day or calendar can make up for lost instruction time.

But these measures must not only fill pandemic gaps in education but also address students’ social and emotional needs to ensure learning success. New summer learning programs must combine traditional notions of summer school with aspects of summer camp, such as games, art, music, and physical fitness, that keep students engaged throughout the day and attract them to such voluntary programs. The Cleveland Municipal School District’s Summer Learning Experience is one example of an innovative program that gets students back on track with a mix of fun activities and learning.

One summer of expanded educational opportunities, however, may not be enough for all children after this past year. Policymakers and education leaders must look ahead to summer 2022 programming, and more broadly, rethink the academic calendar. Even in normal years, summer learning loss (in which students start the academic year with lower achievement levels than at the beginning of summer break) can set a child behind by one month’s worth of learning. The most profound setbacks occur in math, at higher grade levels, and among lower-income students. Extending the 2021-2022 school year from the typical 180 days to 200, for example, would help minimize the yo-yo effect of additional learning loss next summer after a year of catching up.

Districts would also benefit from hiring tutors and establishing strategic tutoring and afterschool programs. Research suggests that consistent, in-school tutoring from a trained aide or volunteer, ideally one-on-one or in a small group, can help students catch up to grade level. Scaling up evidence-based tutoring programs can improve academic outcomes in a cost-effective way. For example, an evaluation of an intensive tutoring model showed that personalized instruction approximately doubled how much math students learn in a year for about one-fifth the average cost of schooling per student per year.
Improve Student and Teacher Well-Being

The perfect storm of mental, physical, and emotional health challenges children and teachers faced during the pandemic underscores the need to place a greater focus on well-being throughout the learning environment. Policymakers and education leaders must both ensure a safe physical return inside school buildings and provide proactive and responsive social and emotional support to students and teachers.

Schools cannot reopen safely without proper ventilation, PPE, and disinfectant supplies to ensure physical well-being. A June 2020 study by the Government Accountability Office (GAO) found that 41 percent of US public school districts needed to update or replace their heating, ventilation, and air conditioning (HVAC) systems in at least half of their schools. School districts should invest to upgrade HVAC systems to avoid indoor air quality problems that can cause schools to close or change their schedules.

Policymakers and education leaders should increase the number of school psychologists, guidance counselors, nurses, social workers, and other health care professionals throughout the education system, as well as bolster community partnerships and supports, to ensure emotional and psychological health. Schools should have the resources to deal with emotional issues and trauma from the pandemic and help students readjust to life in the classroom.

School districts should also provide teachers with counseling resources and prep time for hybrid or remote instruction to avoid burnout that can erode instructional quality and lead teachers to retire early or leave the profession. The success of remedial summer and after-school programs, in particular, hinges on the well-being of teachers and their willingness to participate in these programs. Some teachers burnt out from a year of in-person, virtual, and hybrid teaching have decided to take the summer off—they are not obligated to teach summer school, which falls outside their contracts. As a result of the teacher shortage, Arlington Public Schools in Virginia has limited participation in its summer program for pre-K students, students with disabilities, English learners, and poor performers, leaving many families without resources to address pandemic learning loss. In Ohio, the Salem City School District is not providing any summer programming due to the teacher shortage.

The CDC finding that virtual instruction puts children at greater risk of mental and emotional health problems than in-person or hybrid instruction also highlights the importance of investing in social and emotional supports while making online learning a regular part of school curricula.

Improve Online Learning Models and Methodologies

The pandemic has revealed that online learning—with the right technology, training, and supports—can be an important part of K-12 education. The technologies that are available today provide policymakers and educators with the opportunity to not only adapt to the pandemic but also begin preparing for the classrooms of tomorrow. Policymakers should encourage educators to better integrate state-of-the-art education technology (edtech) to improve the content and delivery of online learning models and develop effective digital curricula that become a regular part of a child’s learning experience.
Although many children have struggled with remote learning during the COVID-19 pandemic due to connectivity and social-emotional issues, others have thrived. This may be one reason why, according to a March 2021 survey of US parents, 29 percent indicated that they were likely to continue with remote learning indefinitely.

Making permanent the virtual and hybrid instructional models adopted in response to the pandemic will require new and ongoing professional development. Teachers were ill-equipped to shift from brick-and-mortar teaching to Zoom teaching and to do both at the same time. School districts should provide training on effective strategies for teaching online-only or a hybrid approach of mixing online with in-person instruction. Training should also enhance digital literacy of state-of-the-art edtech—including mobile, digital, and cloud-based tools and platforms—and provide coaching on how to integrate these technologies on a regular basis to give online lessons, hand out assignments, share educational resources, grade tests, and communicate with students and parents.

School districts should also invest in the technological and administrative infrastructure that enables online learning models—for example, by assigning leadership to online instruction (e.g., a head of digital programs), hiring dedicated e-learning teachers or tutors, and securing continuous and reliable IT support for online learners. Such infrastructure would not only allow for ongoing virtual instruction but also facilitate smooth remote transitions to online curricula during unexpected school closures, such as for weather events, building maintenance, or even the next viral outbreak.

Education leaders should undertake assessments of remote learning to identify what works under what conditions for which students and begin compiling lessons learned and best practices. Assessments must accurately measure learning at school versus online learning at home versus learning done in a mix of these environments.

Finally, policymakers should encourage innovative online learning models, support pilots of the most effective programs in other school districts to determine their scalability, and work with education leaders to refine new remote learning models. A Rand Corporation survey of US school districts found that one-fifth of them had already adopted, were planning to adopt, or were considering adopting virtual school programs as part of their district portfolios. The Montgomery County Public School system in Maryland, for example, will launch its Montgomery Virtual Academy for the 2021–2022 school year. In the long term, participating school districts should share promising remote learning practices to help improve online education models.

Identify Best Practices

More broadly, policymakers should establish a national task force and sponsor research to more comprehensively assess the best practices and lessons learned during the COVID-19 pandemic and use them as models for reform and preparation for the next disruption. Such evaluations should capture lessons learned from both schools that remained open during the pandemic and those that more easily transitioned to remote education. They should also identify—and work to codify—the best methods for testing the effectiveness of online learning. The task force should produce a practical toolkit on remote learning methods for school districts, including recommendations for developing effective and engaging digital curricula to support remote learning on personal devices.
An example of a statewide effort to identify lessons learned from online education during the COVID-19 pandemic is the Technology Alliance Remote Learning Task Force. The task force, composed of business and education leaders, assessed the state of remote learning in Washington state and set forth recommendations for preparing for the next “calamity” in K-12 education. Another report from Teach for America and Bellwether Education presents case studies of twelve US school districts and highlights successful approaches to online learning during the pandemic that might be applied in the future.

Conclusions

Remote learning will continue to transform education and has the potential to redress disparities in K-12 education if it is found to contribute to a better student experience. Remote instruction will become more successful as students (and teachers) become more accustomed to this new way of learning. The next several years will be a period of exploration and experimentation to discover the learning design and delivery formats that best combine online and in-classroom learning experiences.
Endnotes


7 Goldstein, “Does it Hurt Children to Measure Pandemic Learning Loss?”


10 Jones, “Why Mental Health Is the Key to Dealing With Learning Loss.”

11 See note 2.


SUSTAINING CAPITALISM

Achieving prosperity for all Americans could not be more urgent. Although the United States remains the most prosperous nation on earth, millions of our citizens are losing faith in the American dream of upward mobility, and in American-style capitalism itself. This crisis of confidence has widened the divide afflicting American politics and cries out for reasoned solutions in the nation’s interest to provide prosperity for all Americans and make capitalism sustainable for generations to come. In 1942, the founders of the Committee for Economic Development (CED), our nation’s leading CEOs, took on the immense challenge of creating a rules-based postwar economic order. Their leadership and selfless efforts helped give the United States and the world the Marshall Plan, the Bretton Woods Agreement, and the Employment Act of 1946. The challenges to our economic principles and democratic institutions now are equally important. So, in the spirit of its founding, CED, the public policy center of The Conference Board, will release a series of 2021 Solutions Briefs. These briefs will address today’s critical issues, including health care, the future of work, education, technology and innovation, regulation, China and trade, infrastructure, inequality, and taxation.