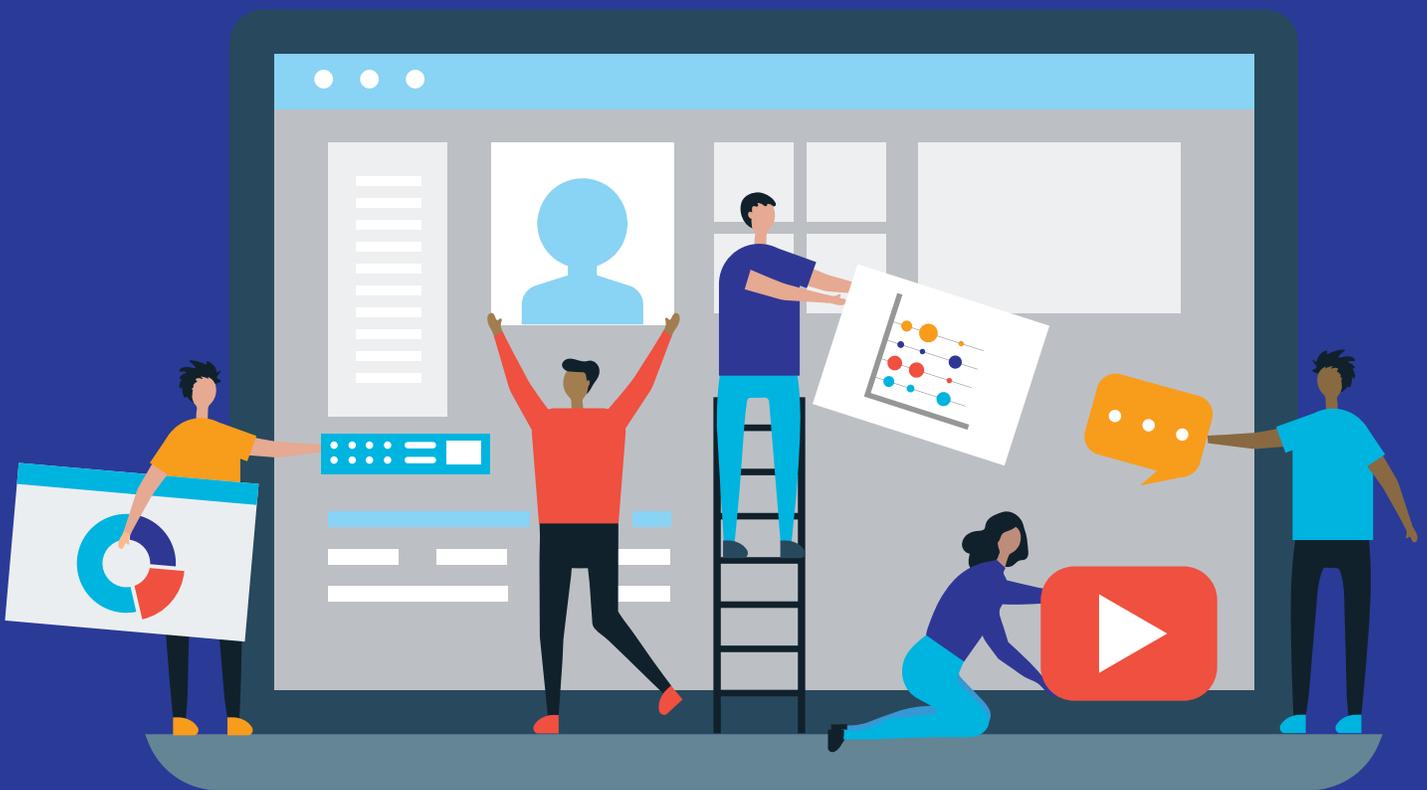


Technology in Teaching and Learning

Results of a National Survey



Executive Summary

It can be difficult to predict the staying power of pandemic-related changes. But March of 2020 may well prove to be a turning point that permanently altered the way technology is used in teaching and learning. Educators across districts, grade levels, and subjects expanded their use of educational technology as they adapted to school shutdowns caused by the coronavirus. Pressure mounted as some districts achieved 1:1 computing—providing a device for every student—and others struggled to reach students who may share devices among family members or face unreliable internet connectivity. Educators gained familiarity with a wide range of digital instructional products and some K-12 officials started thinking creatively about how digital tools might shape longer-term strategies to offer remote and hybrid instruction once the pandemic ends.

In January and February of 2022, the EdWeek Research Center surveyed educators to learn more about the opportunities and tensions that arise as new technologies are incorporated into daily instruction. This report details findings from the survey, which also informed in-depth journalism for Education Week’s Technology Counts 2022 report.

Even with opportunities for online instruction growing, educators remained skeptical about its effectiveness. Ninety-five percent of educators indicated that remote learning is “somewhat less” or “much less” effective than in-person instruction. They also reported concerns about the impact of additional screentime. Eighty-eight percent of educators reported that, in their experience, student learning challenges get more severe as screentime increases.

If digital instruction is here to stay, it will be critical to address widespread concerns that more technology will mean more behavioral and learning challenges. The years ahead may also clarify whether and how educators can instead harness educational technology to support students’ social-emotional development. Educators remain split: 43 percent of respondents believed that educational technology can effectively enhance students’ social-emotional skills. Just under half said that educational technology is “very” or “somewhat ineffective” in promoting social-emotional learning. Only 8 percent thought it wouldn’t have any effect at all.

Other survey results highlight differences in educators’ views and experiences related to educational technology depending on their districts’ size and demographic characteristics. Students in large districts appear to have greater access to online coursework than students in smaller districts. Ninety-five percent of administrators in districts with at least 10,000 students reported offering some type of virtual instruction at no cost, compared to 78 percent of those whose districts serve less than 2,500 students. Forty-eight percent of educators in districts with less than 2,500 students said technology can effectively improve students’ social-emotional skills. Only 39 percent in districts with 10,000 students or more agreed.

Officials in districts where more than half of the student population is nonwhite were nearly twice as likely as those in mostly-white school systems to say their district did not offer any free online coursework to students (28 percent vs. 15 percent). Fifty-two percent of educators in minority-serving districts said they were “very” or “somewhat” concerned about the potential for racial bias in the educational technology used in schools. Just 43 percent of their peers in mostly-white school districts agreed.

Introduction

The COVID-19 pandemic led to a rapid and system-wide upswing in districts' reliance on educational technology and the need for digital instructional products. In some cases, the sudden shift to remote learning accelerated plans for digitization; in others, educators adopted entirely new tools and methods for virtual instruction. Two years later, what digital instruction opportunities have persisted? And what concerns do educators have about the ongoing use of educational technology in schools?

To answer these questions, the EdWeek Research Center surveyed a nationally representative sample of 888 K-12 educators in January and February of 2022. The survey assessed students' access to virtual instruction opportunities, including full- and part-time virtual academies and online coursework. The survey also gauged educators' views on the impact of increased screentime and remote instruction and educational technology in schools.

Educators across the board described similar challenges associated with remote learning and heightened screentime for students. Yet they had differing perspectives on educational technology's role in social-emotional learning (SEL) and racial bias in education.

In particular, their responses identified several ways educational technology might reinforce inequities across students' educational experiences. For instance, educators in higher-income and mostly-white school districts were more likely to report that their students had access to flexible online coursework than those in low-income or minority-serving districts. As ed-tech products proliferate across the K-12 system, more than half of educators in minority-serving districts shared concerns about the potential for racial bias in the educational technology used in schools.

SURVEY DETAILS

Survey Administered: January 26 to February 7, 2022

Respondents: 888 K-12 educators, including:

- 263 district leaders
- 165 school leaders
- 460 teachers

Sample: Nationally representative

Method: Online [Email invitations sent to an online survey]

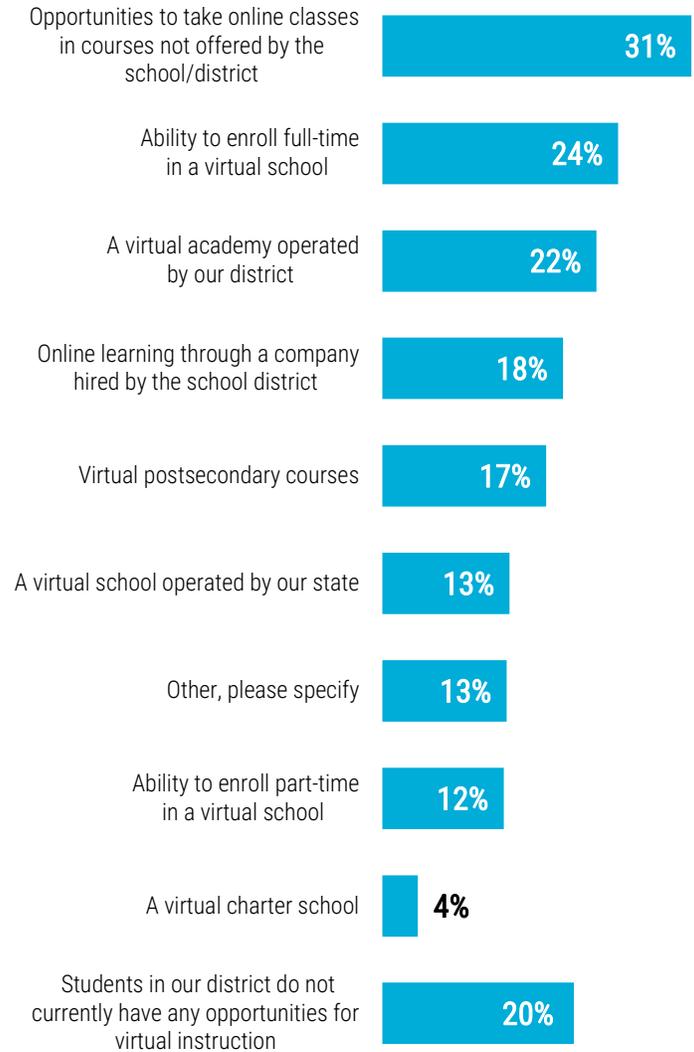
Opportunities for Virtual Instruction

School and district leaders who participated in the survey highlighted a range of remote learning opportunities available to their students at no cost, including full- and part-time options to complement more traditional coursetaking.

The most common forms of virtual instruction included opportunities to take online classes in courses not offered by the school or district (cited by 31 percent of school and district leaders) and options to enroll full-time in a virtual school (24 percent). Twenty-two percent of school and district leaders reported that their students could enroll full-time in a virtual academy operated by the district. In contrast, somewhat fewer—13 percent—said that students could enroll in a state-run virtual school. Respondents least often reported that their students could opt to attend a virtual charter school (4 percent).

Still, virtual arrangements remain far from universal: one in every five respondents stated that students in their district did not have any opportunities for no-cost virtual instruction.

What types of virtual instruction are currently available to your students that they can access at no cost? Select all that apply.



*Results show responses from principals and district leaders.

Virtual Options in Low-Income and Minority-Serving Districts

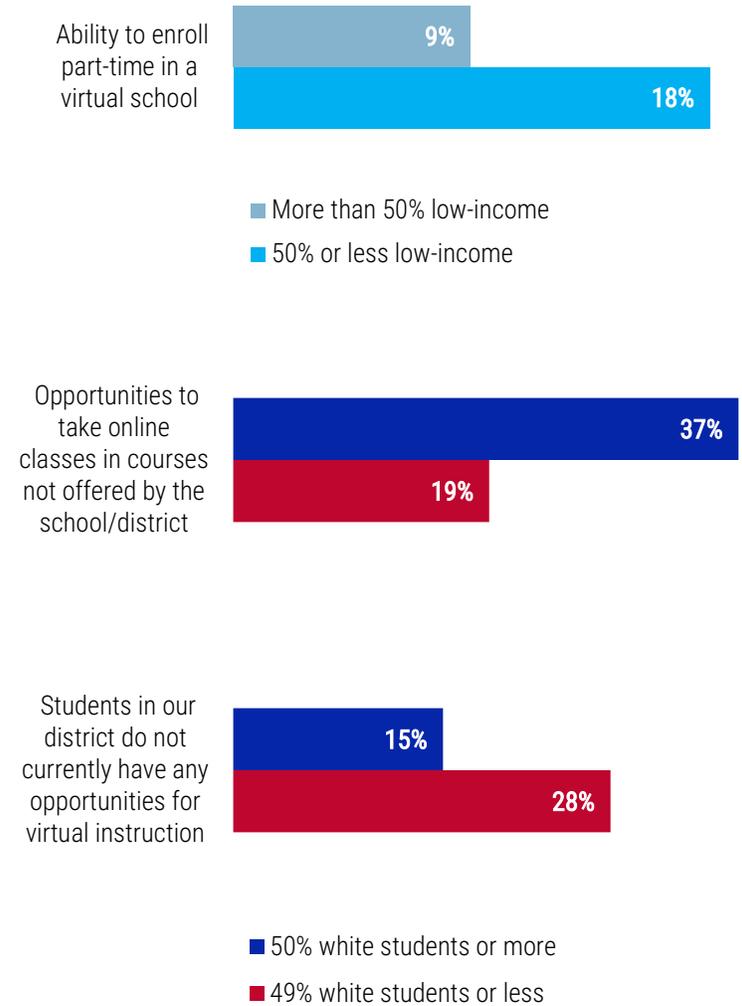
K-12 officials in majority-white and high-income districts reported greater virtual flexibility than those in lower-income and minority-serving districts, suggesting their students may be more likely to have opportunities to choose online coursework.

Twenty-eight percent of officials in districts where most students are nonwhite reported that their students did not have any opportunities for no-cost virtual instruction, nearly double the rate among those who work in majority-white environments (15 percent). Nineteen percent of leaders in minority-serving districts indicated that students could take online classes in courses not offered by their school or district, compared to 37 percent of those who work in majority-white districts. That figure is especially concerning if students take advanced coursework online, potentially limiting access to AP or college-level content for students of color.

Eighteen percent of K-12 officials from high-income school systems said their students could enroll part-time in a virtual school at no cost. Leaders in lower-income districts, where most students receive free and reduced-price lunch, were half as likely to say they offered that type of flexibility (9 percent).

Overall, the findings show disparities in access to online learning options that parallel other existing inequities in educational opportunity.

What types of virtual instruction are currently available to your students that they can access at no cost? Select all that apply.



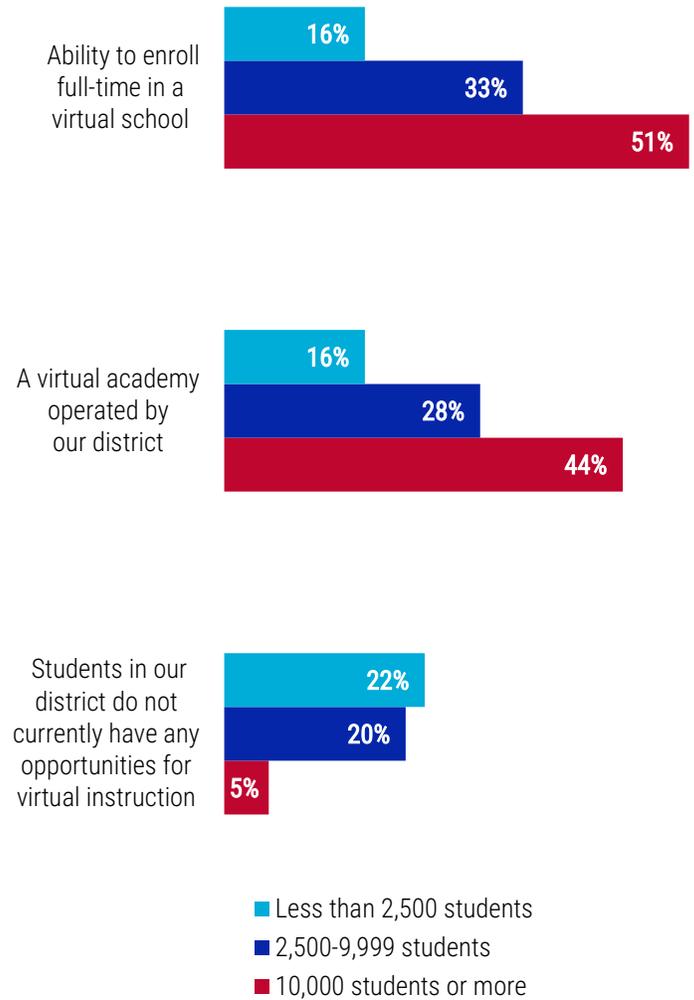
*Results show responses from principals and district leaders.

Larger Districts Offer More Online Flexibility

District leaders and principals from larger districts reported more virtual instruction opportunities than those working in smaller school environments. Forty-four percent of K-12 leaders whose districts serve at least 10,000 students said students could enroll in a virtual academy operated by the district at no cost. Fifty-one percent said students could enroll full-time in a virtual school, and just 5 percent said students do not currently have any opportunities for virtual instruction.

By contrast, 1 in 5 officials in medium-sized districts indicated their students had no access to free virtual instruction at the time of the survey, as did 22 percent of leaders in small districts. Sixteen percent of leaders in small districts (enrollment less than 2,500) said that students could attend a virtual school full-time at no cost, less than half the rate among those in large districts. Thirty-three percent of leaders in medium-sized (2,500 to 10,000 students) districts said the same.

What types of virtual instruction are currently available to your students that they can access at no cost? Select all that apply.



*Results show responses from principals and district leaders.



Navigating Hybrid Learning Curveballs and Future-Proofing Your District

Change has seemed like the only constant over the past few years. During the pandemic, IT teams accomplished the seemingly impossible by quickly transforming K-12 districts from classroom-only teaching environments to virtual hubs of education.

EMBRACING CHANGE WITH THE CLOUD

School systems large and small are meeting the demand for flexible, hybrid learning environments, evolving into omnichannel centers for community engagement and navigating a constant flurry of budget curveballs. These challenges have highlighted the need for an agile infrastructure and a culture ready to embrace change like never before.

For many IT leaders, the foundation for agility resides in the cloud. Moving processes, applications, security, and other functions into public, private, or hybrid clouds not

only extends access to dispersed teams but also provides flexibility and dexterity to IT, allowing you to quickly do more with less from decentralized locations.

As the move to the cloud continues and you're tasked to do more with the same budget, how can your team drive and support the changes needed to enable the digital workplace and hybrid learning of today and the future?



Learn more about maintaining a flexible learning structure in our [K-12 e-book](#).

Building a Cloud-Managed Foundation for Your Classrooms

Shifting to a more flexible education structure that allows schools to move from in-person to hybrid learning as needed requires your district's technology infrastructure to have a robust, secure, and strong foundation. Whatever your district's size, you are most likely searching for ways to minimize time spent on the mundane and maximize resources spent on digital innovation, like new services, products, and capabilities.

With a cloud-based network platform, your school will have the agility needed to take on this evolution and provide the best experience for students, staff, and teachers, in addition to providing equitable learning opportunities for students regardless of their environment.

Tools for smarter districts

Although many parents and students are happy about the return to classroom-led lessons, some schools continue to offer a variety of hybrid teaching. Equipped with the latest tools, schools can curate the best learning environment for each student and subject and potentially accelerate the education process.

across disparate devices connected to the network, IT professionals have **clear visibility** into potential problems.

During the pandemic, districts were challenged to provide remote support to students and families, and **61%** of IT departments were **unprepared for this task**. By using a **cloud-first platform** that provides transparency

Schalmont Central School District manages the entire network for its approximately 1,800 students via one centralized dashboard, and can quickly change something if there's a problem. Improved insight dramatically reduced their troubleshooting needs, creating a better employee and user experience.

CISCO MERAKI CUSTOMER STATISTIC

58% of surveyed IT organizations are using Meraki to address challenges with improving student and staff experience caused by the pandemic.

Source: TechValidate survey of 43 users of Cisco Meraki

58%



Check out our [K-12 use cases](#).



Future-Proof Your District with Connected Classrooms

Connected classrooms are facilitating A+ learning environments with a network combination of IT and IoT technologies.

DO CLASSROOMS IN YOUR DISTRICT MAKE THE GRADE?



Smart cameras, smarter schools

Modern schools require agile, intuitive [smart cameras](#) to ensure a safe learning environment.



Reliable connection, flex learning

Ensure accessible, reliable, and secure connectivity anywhere for all students with [cloud-first Wi-Fi](#).



Sustainable moves, happy kids

[Environmental sensors](#) save budget and time by activating HVAC units only when needed.



Agile analytics, better outcomes

[Data analytics](#) allow for you to see usage patterns that may unveil opportunities or highlight problems.



Cybersecurity, safer spaces

Remotely manage student and faculty devices to [ensure data security](#).



Easy automation, one dashboard

[Automate](#) device updates with ease through one dashboard for all your IoT.

A More Connected Classroom is a Safer One

What does it take to cultivate a safe learning environment? This is a prevalent question, now more than ever. A great first step starts with agile planning and tactical surveillance. Students and faculty should feel comfortable going to school knowing they have security teams looking out for them. Conversely, security staff should feel confident knowing they have accessible visibility into the environments they are serving.

PROTECTING STUDENTS, STAFF, AND GROUNDS WITH SMART SPACES

The technology team at the [East Stroudsburg Area School District \(ESASD\)](#) in Pennsylvania has worked hard to become more efficient and proactive in their security approach. However, they were dealing with cameras that would often break and shut down, requiring days of maintenance, not to mention travel time between school locations to manually upload footage and access faulty cameras.

ESASD began by deploying 40 Meraki MV cloud-managed smart cameras to one of their smaller elementary schools. The cameras were placed in hallways, stairwells, and cafeterias to monitor school activity and prevent and respond to any security issues. The team was excited to

learn that the installation process of each camera was incredibly simple, involving just a single Cat 6 run that could go anywhere the school had a network switch in range (100 m).

Because of the cloud-managed nature of Meraki smart cameras, ESASD could now access footage remotely through one dashboard. This allowed the team to monitor and send footage on the fly from all 40 cameras.

This more connected approach to district safety has given confidence back to students and faculty, knowing their environment is being monitored accurately, consistently, and intelligently: **a confidence that is priceless.**



USING FUNDING TO INVEST IN SCHOOL SECURITY

Check out this video to learn how the [Reading School District](#) utilized government funding to invest in technology that enhanced school safety and improved the student experience.



Utilizing Funds to Modernize Your District

Let's make the most of your federal funding. Today, K-12 institutions have a unique opportunity to accelerate their digital transformation journey to improve the school experience for everyone by investing in technologies that enable modern learning while creating safe environments and smarter spaces. With more than \$130 billion available in funding, there's no better time than now to invest in your school's technology needs.

[Meraki experts](#) can help you identify available funding to support your district by reviewing your project and recommending a solution that fits your needs.

E-RATE

Through E-Rate funds, school districts and libraries have a unique opportunity to replace old technologies with modern infrastructure that supports today's demands. The E-Rate program receives \$4.2 billion yearly.

ARPA

The American Rescue Plan Act (ARPA) has allocated more than \$1.9 trillion for efforts associated with pandemic recovery.

CARES 2.0

The Consolidated Appropriations Act of 2021 includes \$900 billion in stimulus funding ("CARES 2.0") to assist state and local governments, educational institutions, and healthcare providers to respond to the COVID-19 pandemic.



Check out our [K-12 funding guide](#) to learn more about federal funding.

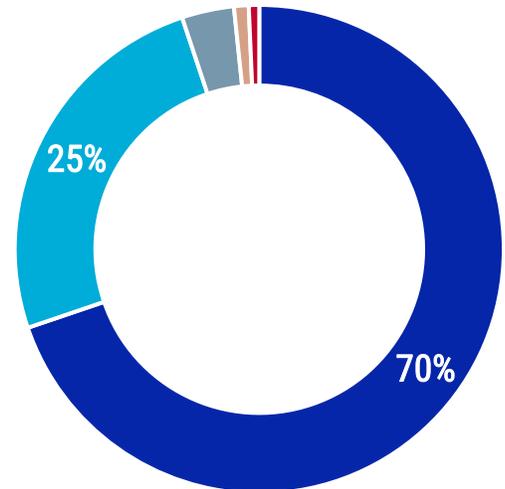
Educators Share Concerns Around Efficacy of Virtual Learning, Screen Time

Effectiveness of Virtual Learning

While the format of virtual instruction varies across districts, educators' views around the efficacy of remote learning aligned regardless of their district's size, location, or demographic composition. Ninety-five percent of educators agreed that virtual learning is less effective than in-person learning, highlighting severe concerns around the long-term impact of remote instruction and interrupted learning during the COVID-19 pandemic.

Seventy percent of teachers, principals, and district leaders agreed that virtual or remote learning is “much less effective,” and 25 percent described it as “somewhat less effective” than in-person instruction. Three percent said that virtual learning is about as effective as in-person learning, and just 2 percent of educators stated that virtual learning is more effective than in-person instruction.

Compared to in-person learning, virtual/remote learning is:



- Much less effective
- Somewhat less effective
- About the same level of effectiveness
- Somewhat more effective
- Much more effective

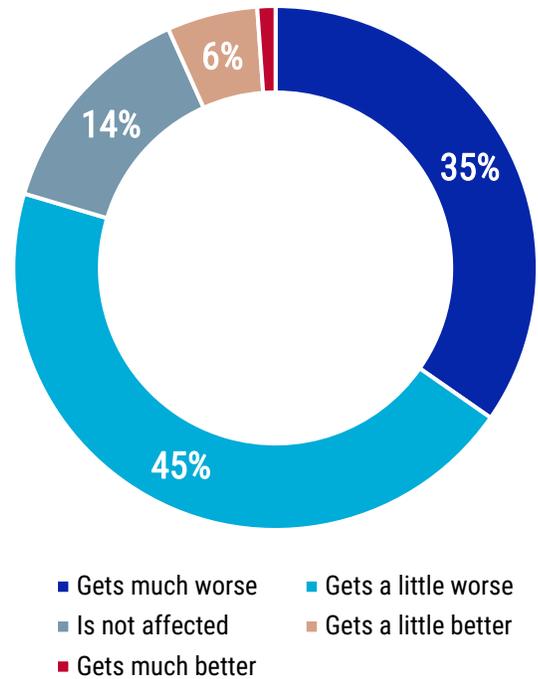
*Results show responses from teachers, principals, and district leaders.

Screen Time and Student Behavior

Virtual instruction has heightened daily screentime for many students and educators shared a negative perception of the impact of added screentime on student behavior and learning outcomes. Four out of every five educators who participated in the survey agreed that student behavior tends to worsen as screentime increases. Forty-five percent said student behavior typically “gets a little worse,” and 35 percent said that behavior “gets much worse” with increased screentime. In comparison, just 7 percent found that student behavior improves as screentime increases, and 14 percent said behavior typically remains unaffected.

Responses were consistent across geographic regions, urban and rural districts, and low- and higher-income school systems. However, educators whose districts serve at least 2,500 students were more likely than those in smaller districts to say that student behavior improves as screentime increases. Nine percent of educators in large districts and 10 percent in medium-sized districts reported that student behavior gets “a little” or “much better” with added screentime. Only 4 percent of educators in districts with less than 2,500 students agreed.

In my opinion/experience, when the amount of screentime increases, student behavior typically:



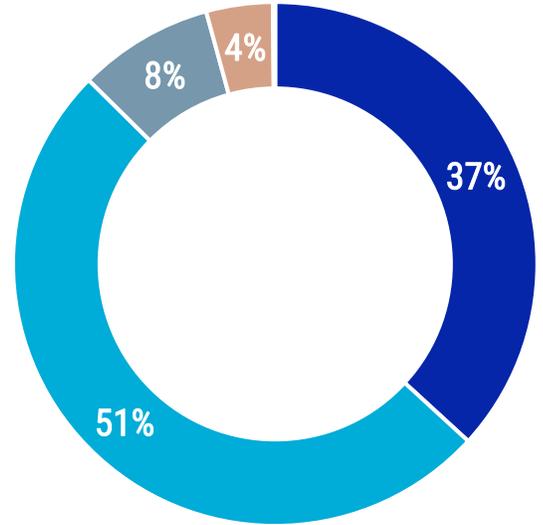
*Results show responses from teachers, principals, and district leaders.

Screen Time and Student Learning Challenges

A more substantial majority of educators—88 percent—reported that in their experience, student learning challenges become more severe as screentime increases. Just over half (51 percent) of respondents said that student learning challenges typically become “a little more severe” with added screentime, and 37 percent said that student learning challenges “get much more severe” as screentime increases.

By contrast, 8 percent said that student learning challenges “are not affected,” and four percent indicated student learning challenges usually become less severe with added screentime.

In my opinion/experience, when the amount of screentime increases, student learning challenges typically:



- Get much more severe
- Get a little more severe
- Are not affected
- Get a little less severe
- Get a lot less severe

*Results show responses from teachers, principals, and district leaders.

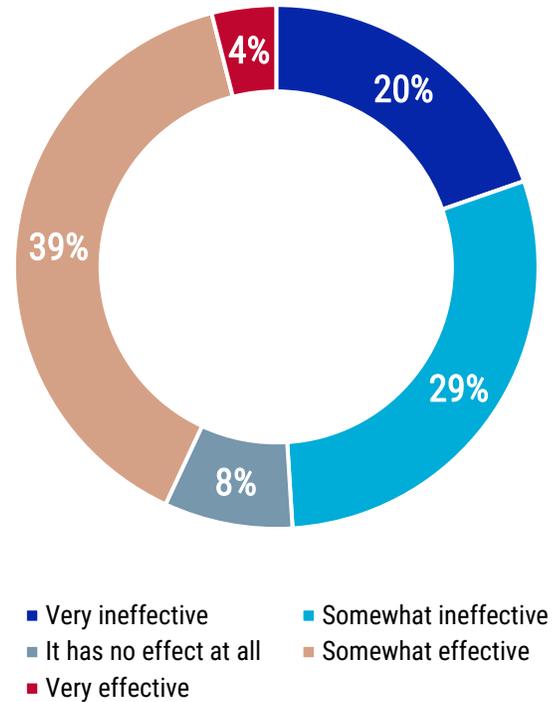
Educators Divided Over Impact of Educational Technology on SEL, Racial Bias

Using Technology to Promote SEL

When asked whether or not technology can effectively promote social-emotional development, educators showed a marked split. Forty-nine percent of survey respondents said technology is very or somewhat ineffective when used to try and enhance students' social and emotional skills. Slightly fewer, 43 percent, believed technology can effectively foster SEL — though, among those educators, the large majority said technology can be “somewhat effective” (rather than “very effective”) in doing so.

The remaining 8 percent of respondents said that technology does not affect students' social-emotional development.

How effective do you think technology can be when used to try to enhance students' social and emotional skills?



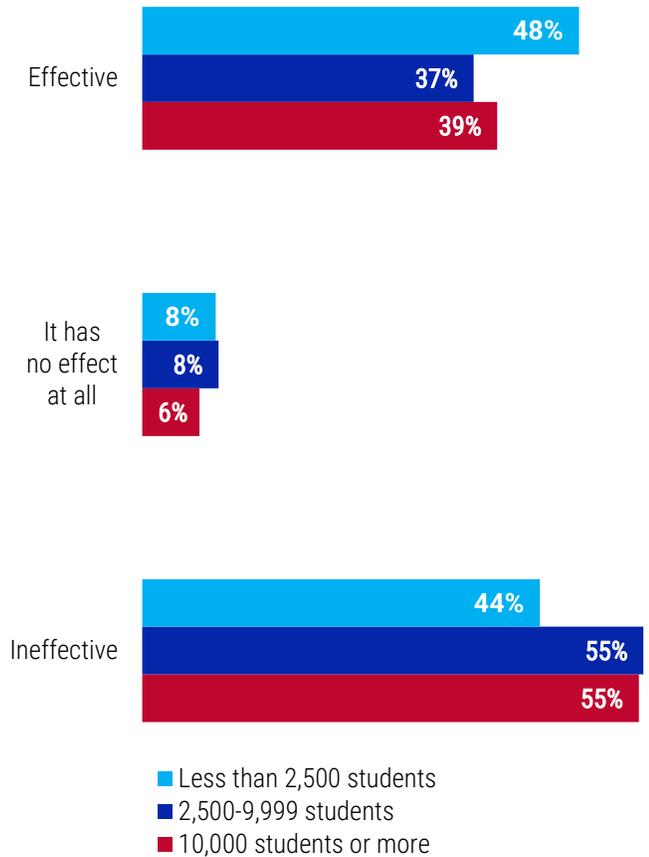
*Results show responses from teachers, principals, and district leaders.

Educators in Smaller Districts More Open to Using Technology for SEL

Educators in smaller districts were more likely to say that educational technology can promote SEL than their counterparts in larger districts. Forty-eight percent of survey respondents in districts with less than 2,500 students said technology can be very or somewhat effective when used to enhance students' social-emotional skills, as opposed to 37 percent in districts with 2,500-9,999 students and 39 percent in districts with 10,000 students or more.

It's not immediately clear why educators in smaller districts appear more open to the prospect of using technology for SEL, especially since those same respondents were more likely than educators in larger districts to link screentime with worsened student behavior. It's possible that educators in smaller districts might be more likely to see technology as a way to access digital curricula or other SEL content that would not otherwise be available to their students.

How effective do you think technology can be when used to try to enhance students' social and emotional skills?



*Results show responses from teachers, principals, and district leaders.

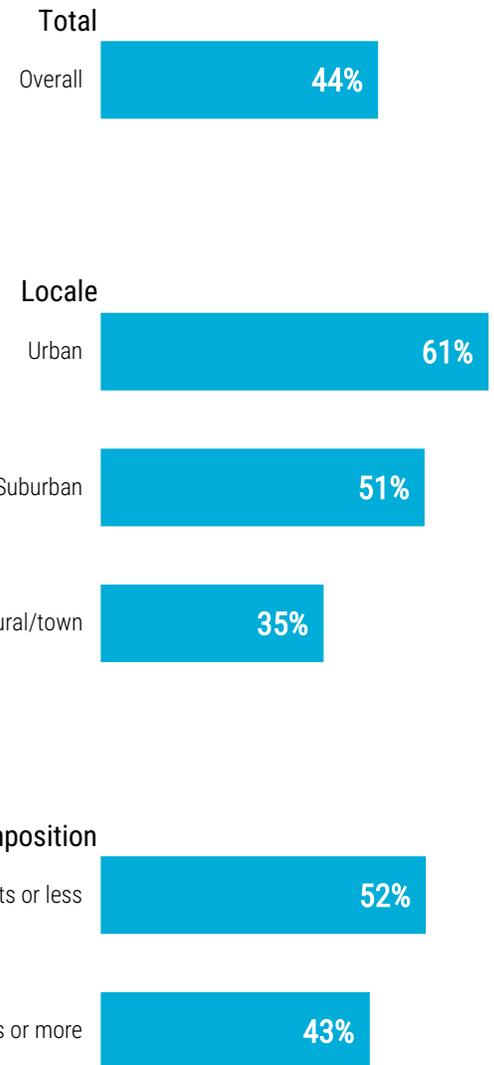
Racial Bias in Educational Technology

A narrow majority of educators who participated in the survey indicated that they were very or somewhat unconcerned about the potential for racial bias in the educational technology used in schools (29 and 28 percent of respondents, respectively). Thirty-four percent reported they were “somewhat concerned” and just 10 percent said they were “very concerned.”

Those overall percentages may obscure differences in educators’ perspectives based on their districts’ demographic characteristics. Educators who work in urban or predominantly nonwhite districts shared significantly more concern about the potential for racial bias in educational technology than their counterparts in rural or majority-white school districts.

Fifty-two percent of educators working in minority-serving districts—where students of color make up the majority of the enrollment—said they were very or somewhat concerned about racial bias in educational technology, as did 61 percent of those in urban districts. Just 43 percent of respondents in mostly-white districts and 35 percent in rural districts agreed. Suburban educators fell in between, with just over half of respondents (51 percent) reporting such concerns.

Percent of educators reporting that they are “somewhat concerned” or “very concerned” about the potential for racial bias in the educational technology used in schools



*Results show responses from teachers, principals, and district leaders.

Conclusion

The survey results discussed in this report highlight three broad trends to focus on as educators adjust and refine their use of educational technology in a post-pandemic future.

First, concerns around screentime temper educators' views on remote learning. Educators who participated in the survey overwhelmingly agreed that heightened screentime has a negative effect on student behavior and exacerbates student learning challenges. However, they disagreed on the extent of these impacts.

Second, educators' technological needs and resources vary based on their district's size. Principals and district leaders whose districts serve 10,000 students or more reported more opportunities for virtual instruction than those in small or medium-sized districts. Educators in districts with at least 2,500 students also gave a more positive assessment of the impact of screentime on student behavior than those in small districts (with enrollment below 2,500).

Third, survey results also point to heightened tech-equity concerns, particularly for educators who work primarily with students of color. K-12 officials in mostly-nonwhite districts reported fewer virtual instructional opportunities than those in mostly white school systems. Additionally, most educators in those same districts said they were concerned about the potential for racial bias in education technology. Educators in mostly-white districts were less likely to have that concern.