LEADING EDUCATION INNOVATION

CoSN 2023 State of EdTech Leadership

Tenth Annual National Survey

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Introduction

"In the classrooms of today, technology is an integral part of how students learn and are assessed, how teachers teach and are evaluated, how parents are kept informed, and how an individual school is integrated into district and state enterprises."

CoSN's K-12 IT Leadership Survey 2013

That statement, made ten years ago on CoSN's first national survey of EdTech leaders, highlighted how their responsibilities expanded beyond infrastructure management and tech troubleshooting. In the classrooms of 2023, cybersecurity, rapid changes in technology, necessities for off-campus access, dramatic increases in the quantity of digital resources and devices, and the lack of interoperability between systems have expanded the scope and depth of those responsibilities even further.

Many of the changes in the EdTech landscape over the past ten years are reflected in the questions themselves. Because the practice has become commonplace, there's no longer a need to assess the use of various social media platforms, which on the inaugural survey included the now-defunct Google +. Cybersecurity, a topic that only appeared once on the 2013 survey, accounted for nearly a quarter of the questions in 2023. Similarly, the growth in the importance of professional development is seen in the expansion from an isolated question in 2013 to the creation of a dedicated Professional Learning section on the 2023 survey,

What hasn't changed over time is the goal of CoSN's annual survey—to give our community a national perspective on the EdTech landscape, the challenges EdTech Leaders face, and the successes they have had. CoSN also uses the survey results in making resource development decisions. Existing CoSN resources include:

- **The Digital Leap Success Matrix** — An outline of the practices needed to perform as a successful digital school system

- **Peer Reviews** — A rigorous process for assessing a school system's digital readiness, based on CoSN's Digital Leap Success Matrix

- **The Digital Equity Toolkit** — A guide to closing the Homework Gap and ensuring digital equity, including our new Student Home Connectivity research

- **Interoperability Toolkit** — Resources to help districts increase the interoperability of their academic and operational systems

- **Student Data Privacy Resources** — A range of resources to help districts build and improve their privacy programs, including an in-depth guide to key federal student data privacy laws, as well as the Trusted Learning Environment Seal

- **Cybersecurity Resources** — A suite of resources for addressing cybersecurity in K-12 organizations around planning, prevention & preparation, implementation, responses and more

- **Trusted Learning Environment (TLE)** — Designed to help K-12 schools and districts build strong, effective privacy programs and a culture of trust and transparency with 25 essential privacy practices

- **Network & Systems Design** — A suite of resources to help schools and districts design technology that adapts to shifting and sustainable technologies which support the increasing demands of teaching and learning

- **EmpowerED Superintendent Resources** — Providing leadership strategies based on imperatives for technology leadership and action steps for strengthening the technology leadership team (created in partnership with AASA, The Superintendents Association). Resources include:
    - One-Pagers on critical focus areas
    - Self-Assessments for Superintendent, CTO, District Leadership Team
    - Financing Technology Innovations: Strategies and Tools for Determining 1) Total Cost of Ownership and 2) Value of Investments

- **Driving K-12 Innovation** — A series of annual reports on key trends around emerging technologies to transform learning, organized around Hurdles, Accelerators, and Tech Enablers

- **CoSN Digital Equity Dashboard** (available in mid-June 2023) – A visualization dashboard that compares various data sets by state, county, zip code, and district boundaries to help districts reduce the Digital Divide between students who have the needed digital resources and those who do not.

- In addition to these public resources, CoSN provides members with extensive member-only resources (such the ASBO/CoSN Toolkit for collaboration between the school business official and CTO) milestones as well as a collaborative resource by CASEL/CoSN on technology & social emotional learning (SEL). Plus, CoSN issues Member Exclusive Briefs that provide guidance on key emerging technologies such as the report on generative AI, “ChatGPT-Above the Noise” as well as EdTechNext reports such as “Low-Cost, High-Impact Technologies to Address Digital Equity.”

Key Findings

Cybersecurity

As it has since 2018, cybersecurity continues to rank as the number-one concern for EdTech Leaders. Cybersecurity is also the topic with the greatest interest for expanded professional learning. Only one-third of districts have a full-time equivalent employee (FTE) dedicated to network security. Two-thirds of EdTech Leaders feel their district has insufficient resources to deal with cybersecurity issues, which likely includes the 12% of districts that do not allocate *any* funds for cybersecurity defense. Yet, EdTech Leaders tend to underestimate the threats to their network: 50% or more rated five threat types as relatively low. While the adoption of practices to improve cybersecurity in K-12 is on the rise, so too are the number of bad actors specifically targeting K-12 schools.

Digital Equity

Students are less likely to receive support for off-campus broadband access than they were in 2021. During the height of remote learning, 95% of districts were providing off-campus broadband, compared to 74% of districts this year. Although the vast majority of districts (97%) report that more than 50% of their students have connected devices at home, the devices have limited use without broadband. Less than 9% of respondents reported that all their students have broadband access at home.

With federal pandemic funding (Emergency Connectivity Fund) for student home access from the FCC coming to an end, many respondents expressed concerns about their ability to sustain broadband access and the majority are worried about being able to sustain student access to devices.

Modernized Infrastructure

Over 10 years, the top challenge for EdTech Leaders has not changed. Budget constraints and lack of resources were ranked the number-one challenge in 2013, and still rank number one in 2023. Although budgets have

become less of an issue in achieving interoperability goals (40% cite budget constraints as a barrier versus 54% in 2021), it is still ranked the second-largest challenge.

However, the 18% of respondents who listed challenges in creating a district-wide data strategy as a barrier is a significant decrease from 47% in 2021. Since a district-wide data strategy is integral to advancing interoperability across all school systems, this is a positive indicator of a district's ability to achieve their interoperability initiatives. With 85% of districts implementing single sign-on (SSO), it the top interoperability initiative.

Professional Learning

With increasingly rapid technology changes and the expansion of areas that now involve technology, EdTech Leaders need to understand an unprecedented range of technologies. The EdTech-related professional learning topics that were of most interest to respondents—cybersecurity, driving and sustaining K-12 innovation, and data governance/privacy—directly align with district needs.

However, for EdTech leaders the top challenge to professional learning remains carving out the necessary space in their schedules and prioritizing the time and funding over other institutional or organizational needs. Yet by prioritizing the professional learning of EdTech Leaders and staff, districts will be better able to achieve their other priorities. Relying on an IT department that is not able to stay up to date on important developments in EdTech can put a district at risk.

Salaries

The percentage of EdTech Leaders earning $130,000 or more has tripled over 10 years, from 6% in 2013 to 18% today. Those earning more than $160,000 account for 7%, compared to 1% a decade ago. Overall, men tend to earn more than women. Nearly half (49%) of male EdTech Leaders earn

$100,000 or more compared to 37% of women. The respondents working in towns and rural areas are generally paid less than their counterparts in metro areas. Cities have the largest percentage of EdTech Leaders earning in the $160,000-200,000 range.

EdTech Leader Profiles

Eight years ago, CoSN added a survey question asking respondents to indicate if they were male or female. This enabled CoSN to analyze key data through that lens and provided a benchmark for future analysis. Since the question was first introduced, respondents have been given additional answer options—"prefer to self-identify" and "prefer not to answer." When comparing 2016 to the current survey, the results are roughly the same—about one-third of EdTech Leaders are female and two-thirds are male.

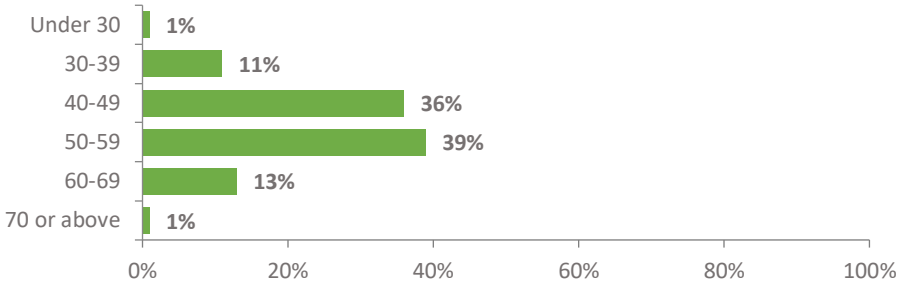
8-year Comparison of Female/Male Ratio of EdTech Leadership

2023	EdTech Leadership	2016
33%	Female	36%
65%	Male	64%
2%	Prefer Not to Answer	*
0%	Prefer to Self-Identify	*

** This answer option was not included on the 2016 survey.*

A survey question regarding age was introduced in 2022, with most respondents in the peak career age bracket of 40-59. The 2023 results are similar, with 75% of respondents in their 40s and 50s (each group at 37%). Those under the age of 40 accounted for 12%, including the 1% who are under 30. EdTech Leaders who were 60 and older accounted for 14%, including the 1% who are 70 and above.

IT Leadership Segmented by Age



CoSN has been asking respondents about their race and ethnicity since 2015. While the number of answer options have increased over time to allow for more refined segmentation, a key data point remains essentially unchanged—the percentage of those leading education technology in school systems that are White. In 2015 EdTech Leaders who identified as White account for 88%, compared to 87% this year.

9-year Comparison of Racial Make-up of EdTech Leadership

2023	EdTech Leadership	2015
86%	White, Caucasian, or European	88%

Hispanic/Latino/Latina/Latinx account for the next-largest category of respondents at 4%. Those identifying as Black, African American, or Sub-Saharan African account for 3%. The remaining three categories—American Indian or Alaska Native, Asian, and Multiracial/Multiple races—each account for 2% of respondents. Four percent (4%) chose not to answer the question. It should be noted that we lack data on the diversity of the full EdTech team.

EdTech Leadership by Race & Ethnicity

Race & Ethnicity	Percentage
White, Caucasian, or European	86%
Hispanic/Latino/Latina/Latinx	4%
Black, African American, or Sub-Saharan African	3%
Asian (East, Central, South)	2%
Multiracial/Multiple races	2%
American Indian or Alaska Native	1%
Native Hawaiian or Pacific Islander	1%
Other	1%
Prefer not to answer	4%

The sum may exceed 100% since participants could select more than one answer.

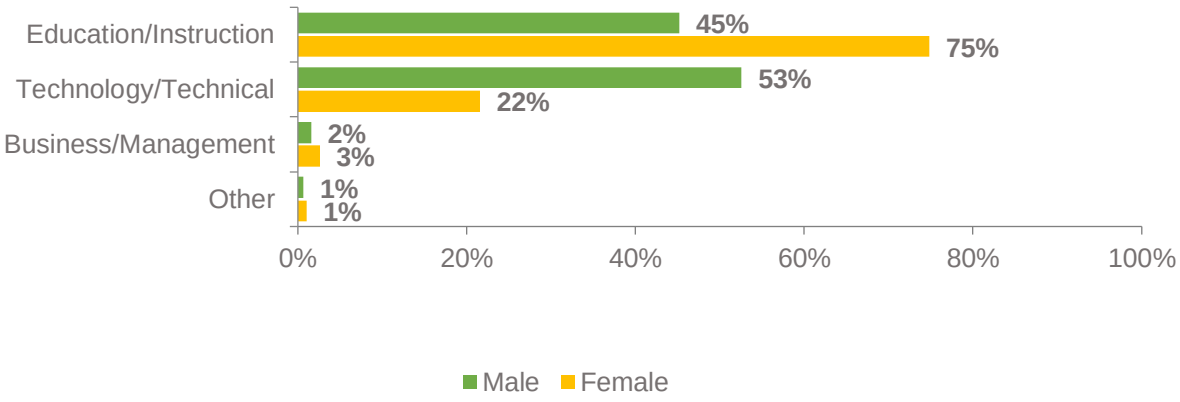
The ten-year survey results show more EdTech Leaders coming from an education/instruction background—the majority (55%) of respondents in 2023 compared to 45% in 2013. With little change in EdTech Leaders coming from the "Tech" side of the equation (only 2% difference from this year's 42% and 44% in 2013), the increase in education backgrounds has been pulled mostly from Business/Management and "Other" categories. Business/Management accounts for only 2% of respondents versus 7% in 2013. EdTech Leaders coming from other backgrounds are just 1% of respondents this year as compared to 5% in 2013.

10-year Comparison of EdTech Leadership by Professional Background

2023	Primary Professional Background	2013
55%	▲ Education / Instruction	45%
42%	■ Technology / Technical	44%
2%	▼ Business / Management	7%
1%	▼ Other	5%

Female EdTech Leaders tend to come to their positions from an Education/Instruction background, 75% compared to 46% of their male counterparts. These different paths to leadership reflect general workforce populations. Women comprise 75% of teachers in public elementary and secondary schools.[1] Conversely, information system managers and computer-related occupations are predominately male; women comprise only 15%.[2]

Primary Professional Background Segmented by Male/Female



Five percent (5%) of EdTech Leaders plan to retire within the year, 8% between one and two years, and 20% between three and five years. More than a quarter (27%) will retire in six to ten years, 18% in 11-15 years, with the remaining 22% planning to retire in more than 15 years.

While these results are similar to those of the prior year, significant changes in retirement plans are apparent when comparing to the results of 2014—the first time the question appeared on the annual survey. Within five years, a third (33%) of current EdTech Leaders will be retiring. In 2014, the rate was 22%. Fewer are planning to be in their positions beyond ten years (40%), as

[1] https://nces.ed.gov/programs/coe/indicator/clr

[2] https://www.census.gov/library/stories/2021/01/women-making-gains-in-stem-occupations-but-still-underrepresented.html

compared to 2014 when half of all respondents intended to remain in the workforce. The larger percentage of retirements will present the opportunity to address underrepresented populations in EdTech leadership positions.

9-year Comparison of Retirement Plans

2023	Years to Retirement	2014
33%	▲ 5 years or less	22%
40%	▼ More than 10 years	50%

Professional Learning

With increasingly rapid technology changes and the expansion of areas that now involve technology, EdTech Leaders need to continually upskill and understand an unprecedented range of technologies. As one respondent simply put it:

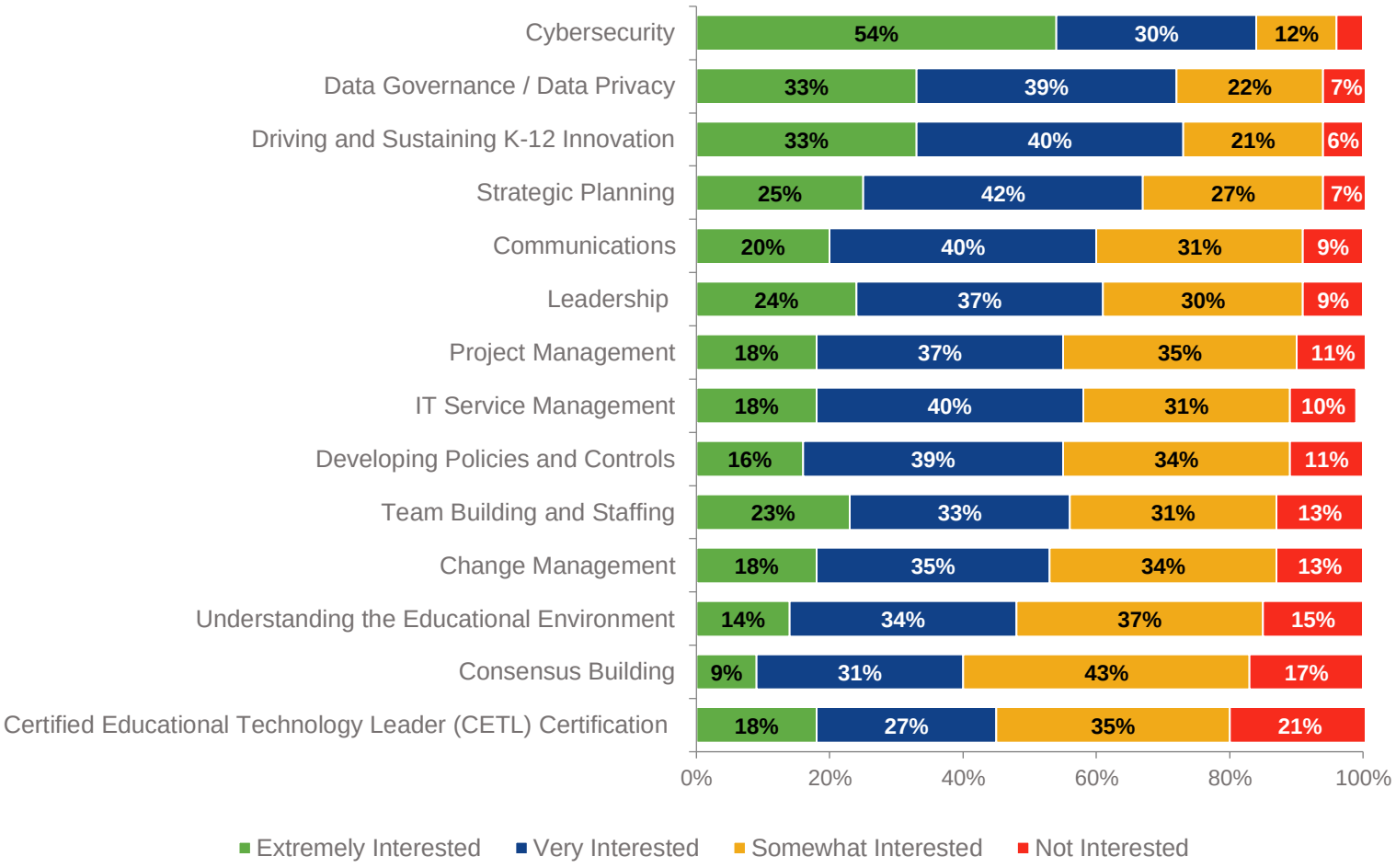
"It is difficult to keep up with everything I need to know."

To better understand and address this reality, CoSN introduced an expanded section of professional learning questions on this year's survey. Respondents were asked to indicate their degree of interest in various professional learning opportunities. Not surprisingly, respondents had the highest interest in cybersecurity learning opportunities, with 84% indicating they were extremely or very interested. Interest was also high in learning about driving and sustaining K-12 innovation, with 73% indicating they were extremely or very interested. Respondents had a similar rate of interest in data governance/data privacy with 72% extremely or very interested. The topic with next highest extremely/very interest rate was strategic planning with 67%, followed by leadership (61%), and communications (60%). Of the 14 professional learning opportunities listed, 11 received extremely interested or very interested ratings from the majority of respondents. This highlights the extent of professional learning desired by EdTech Leaders and their staff.

A comment made by one of the respondents serves to stress the importance of professional learning to school systems:

> *"I feel that I am not adequately trained to wear all the hats that I wear in our small school. I know I have weaknesses and I fear that those weaknesses will hurt the district."*

Interest Levels of Professional Learning Topics



When asked to rank their biggest challenges to ensuring staff participation in professional learning opportunities, time was at the top of the list. Professional learning falls below other district priorities and EdTech Leaders are challenged to carve out the necessary space in their schedules. However, the topics that were of most interest to respondents—cybersecurity, driving

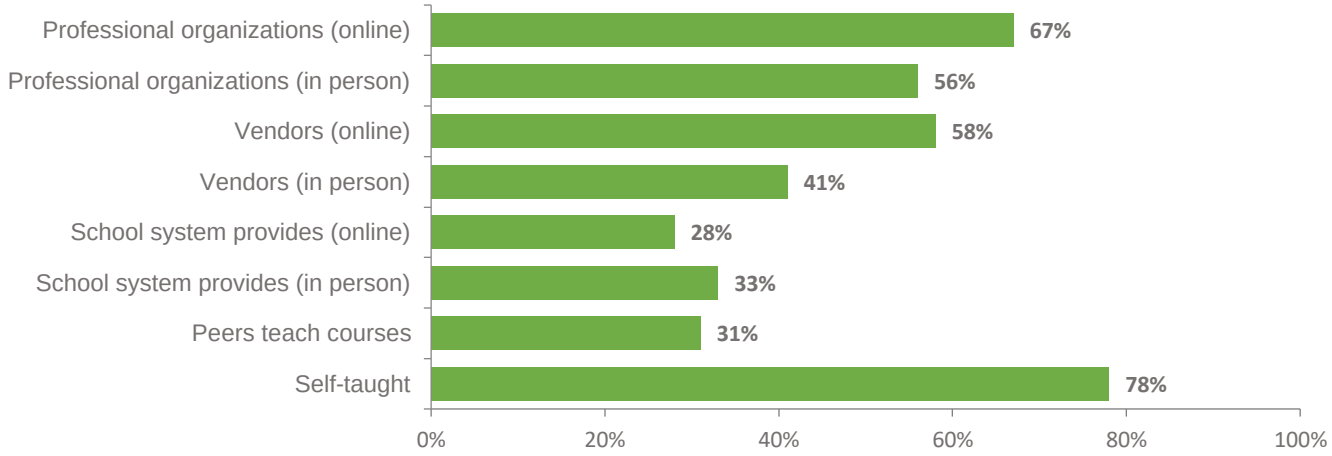
and sustaining K-12 innovation, and data governance/privacy—directly align with district needs. By prioritizing the professional learning of EdTech Leaders and staff, districts will be more able to achieve their other priorities. Relying on an IT department that cannot stay up to date on important developments in EdTech can put a district at risk.

Professional Learning Challenges

Rank	Biggest Challenges to Professional Learning
# 1	Prioritizing professional development time over other institutional or organizational priorities
# 2	Funding and affordability for professional learning and specialized training
# 3	Availability of relevant training opportunities
# 4	Lead time enabling advance budgeting and procurement
# 5	Traveling to in-person training opportunities

The lack of school system support for professional learning is apparent in the responses to the question, “How does your IT department receive its professional development?” Only 33% of school systems provide in-person training and fewer (28%) provide online training. Most IT departments stay up to date on their own, with 78% saying they are self-taught. There is also a high reliance on professional organizations, with 76% accessing an organization’s professional development resources online and 56% in person. Vendors also play an important role, with more than half (58%) of respondents leveraging vendors’ online resources and 41% taking advantage of vendor in-person training offerings. Peer-to-peer learning is available to 31% of respondents.

Available Professional Development Learning Opportunities



Staffing

"*Technology department being overloaded and so many increased job duties over the past 7 years.*"

This respondent quote sums up EdTech staffing issues in many districts. While there was some improvement during the pandemic, three IT functions continue to have the worst staffing level. The biggest problem continues to be an IT department's inability to provide adequate instructional support around classroom use, with 56% of the 2023 survey respondents struggling in this area. A majority (54%) are not sufficiently staffed to provide remote support to students and families, and half (50%) are lacking the staff levels needed to integrate technology into the classroom. Unaddressed inadequate staffing levels affect all district stakeholders. The IT team often feels the impact directly, as explained by one respondent, who is challenged with issues around

"staff burnout, morale, and motivation"

3-Year Comparison of IT Functions with the Worst Staffing Levels

IT Functions with the worst staffing levels	2023	2022	2021
#1 Provide instructional support around classroom use	56%	52%	65%
#2 Provide remote support to students and families	54%	51%	61%
#3 Integrate technology into the classroom	50%	46%	55%

Looking at staffing rates for the other IT functions, a majority (more than 50%) of respondents report adequate staffing for most IT functions. However, only four areas receive a passing grade. Almost three-quarters (71%) report adequate staffing for maintaining network systems, 73% have the staff needed to meet their department's yearly objectives, and 77% to maintain their applications. Installing applications is the IT function with the highest marks, with 83% reporting that they have sufficient staff. As "installing apps" has the best staffing levels and "providing instructional support around classroom use" has the worst, it could be that districts are dedicating precious staff time to providing tools to teachers that the teachers cannot effectively use in their classrooms.

Staffing Levels by IT Function

IT Function	Understaffed	Adequate	Overstaffed
Provide instructional support around classroom use	56%	43%	1%
Provide remote support to students and families	54%	45%	1%
Integrate technology into the classroom	50%	48%	2%
Plan and implement new technology	45%	54%	1%
Support device cleansing protocols	42%	57%	1%
Effectively support the needs of the district/school	37%	62%	1%
Provide remote support to teachers and other educators/administrators	33%	66%	1%
Maintain network systems	29%	71%	0%
Meet your department's yearly objectives	27%	73%	0%
Maintain applications	23%	77%	0%
Install applications	17%	83%	0%

CoSN asked survey respondents about the technology positions in their school systems. Most districts (66%) do not have a full-time cybersecurity position. A large plurality (40%) does not have an Instructional Technology Coach, and 38% reported that their district lacks a "top Instructional Technology Leader." Lack of these positions likely contributes to the worst staffing levels attributed to the IT function "instructional support around classroom use." A quarter (25%) of districts do not have a "top System Administrator" position. This suggests that the responsibilities for the network are included in another position, outsourced, or a combination of both. The same assumption is made regarding equipment technician/help desk for the 17% without the position, as a district's digital ecosystem would collapse without resources to maintain the network or perform technical support functions.

IT Staffing Gaps

IT Position	Do not have this position
Cybersecurity FTE	66%
Instructional Technology Coach	40%
Top Instructional Technology Leader	38%
Top System Administrator	25%
Equipment Technician/Help Desk	17%

Budget

EdTech Leaders have been asked to provide their salary information over the 10 years the survey has been conducted. When comparing the results from 2013 to those on the most recent survey, fewer are in the lower range—less than $100,000—which accounted for 65% of respondents in 2013 versus 49% today. There is also a marked increase during that time of those earning $130,000 or more, from 6% to 18%. Looking at the mid-range ($100,000-129,999) there has not been as much improvement over the 10 years. There was a 3% change from 26% to 23%.

10-Year Salary Comparison

2023	Salary Range	2013
21%	▼ Less than $70K	30%
28%	▼ $70 - 99,999K	35%
23%	■ $100-129,999	26%
11%	▲ $130-159,999	5%
7%	▲ More than $160K	1%
10%	Did not provide or do not have a top EdTech Leader	3%

When segmenting salaries by male and female, a salary gap emerges. Nearly half (49%) of men earn $130,000 or more compared to 37% of women. At the other end of the spectrum, only 19% men earn less than $70,000 compared to a third (33%) of women.

Top Technology Leader by Male/Female

Annual Salary	Male	Female
Under $70K	19%	33%
$70K – 99,999K	31%	31%
$100K – 129,999K	28%	20%
$130K – 159,999K	13%	11%
$160K – 200K	7%	5%
More than $200K	1%	1%

Segmenting the salary data by metro status, it becomes apparent that EdTech Leaders working in rural areas are paid less than those in other metro areas; 85% earn under $100,000. Suburban districts provide the best compensation: they have the fewest (5%) earning under $70,000 and the most (3%) earning more than $200,000. More than a third (38%) in the suburbs—the largest percentage of the four metro areas—earn between $100,000 and 129,999. At 21%, cities have the largest percentage of EdTech Leaders earning in the range of $160,000-200,000.

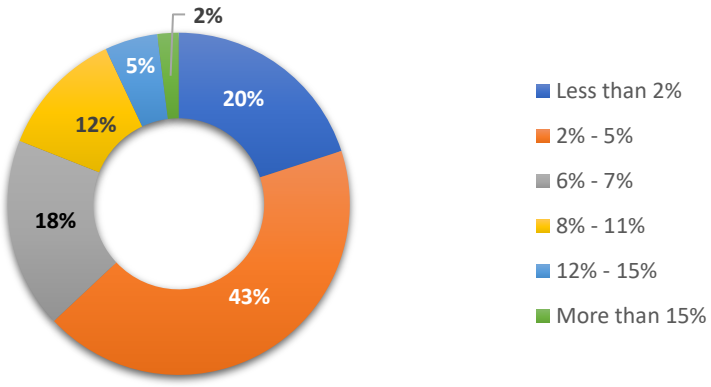
Top EdTech Leader Salary by Metro Status

Annual Salary	Rural	Town	Suburb	City
Under $70K	46%	20%	5%	11%
$70K – 99,999K	36%	45%	25%	20%
$100K – 129,999K	14%	22%	38%	29%
$130K – 159,999K	4%	12%	19%	19%
$160K – 200K	0%	1%	10%	21%
More than $200K	0%	0%	3%	2%

The majority (63%) of technology budgets account for 5% or less of a district's total budget, including 20% of districts that allot less than 2%. Districts that budget 6-7% for technology comprise 18% and those that budget 8-11% account for 12%. Only 5% of districts allot 12-15% with the fewest (just 2%) at more than 15%. In an ever-evolving K-12 technology landscape, there is not a reliable formula for determining the right IT budget allocation. As one respondent explained:

> *"Long-range tech planning is challenging as we don't know what we will be facing even two years from now; the increasing costs of supporting tech are not manageable in our current budgeting process."*

Technology Budget* as Percentage of District's Total Budget

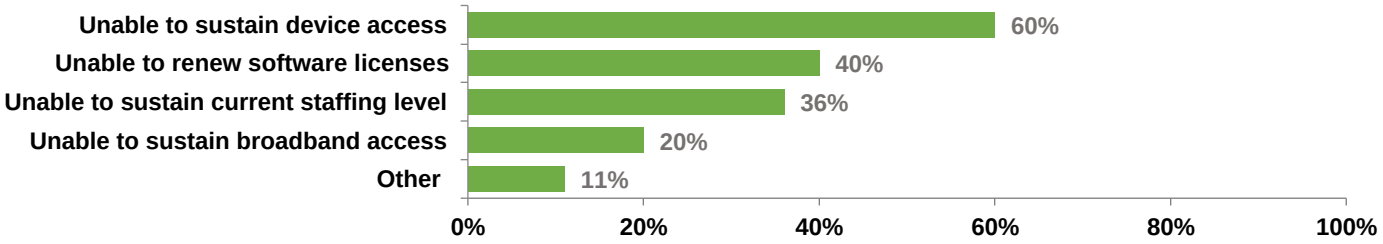


** Technology budget was defined to include salaries and benefits, outside levy funding, and capital funds used for technology for the 2022-2023 Fiscal Year*

As emergency funding ends, EdTech Leaders have concerns about their technology investments. The majority (60%) of respondents are worried they will be unable to sustain device access and 40% worry about their ability to renew district licenses for software. More than a third (36%) are concerned about sustaining their current staffing level, and 20% worry about sustaining broadband access. Half of the 11% who selected "other" concerns are respondents who did not have concerns or did not use any emergency funds. There was also one respondent whose district did receive funds—but

"Funding was used for HVAC. Tech didn't get it."

Technology Investment Concerns



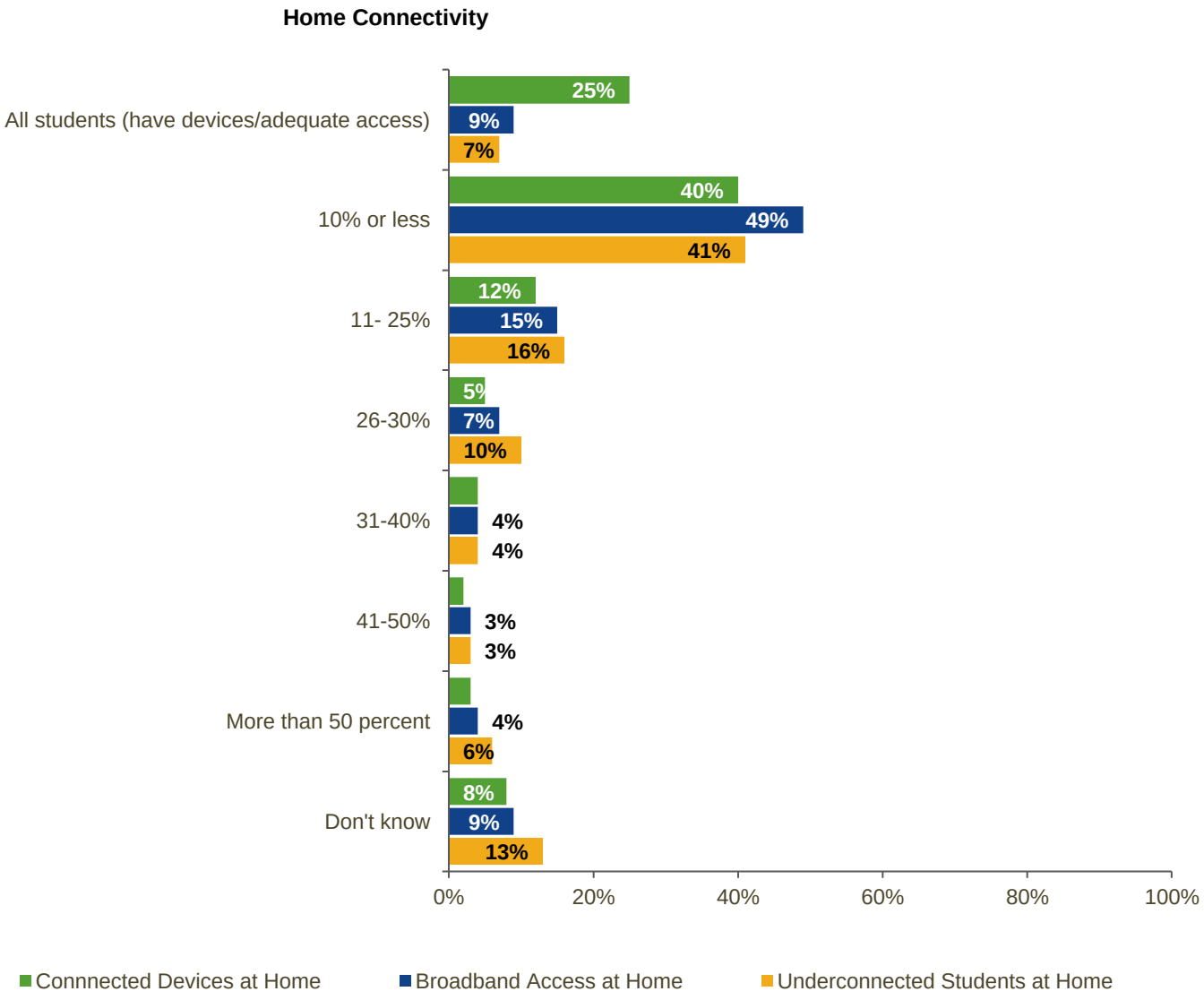
Equity

Only a quarter (25%) of respondents work in school districts where all their students have connected devices at home. However, in 40% of districts those without connected devices account for 10% or less of their students. Only 12% of districts have 11-25% of students without connected devices. Five percent (5%) of districts have 26-30% of their students without connected devices, 4% of districts have 31-40%, and 2% of districts have 41-50%. Though only 3% of districts report more than half of their students don't have connected devices, this percentage is unacceptably high for the students being impacted.

Devices that can connect to the internet from home are only part of the equity equation. Students also need broadband access. Responses to the survey question about home broadband paint a more complete and more negative picture, with just 9% reporting that all their students have broadband at home. Districts where more than 50% of students are "doing without" doubles from 3% (those without connected devices) to 6% (when accounting for those who have the devices but insufficient bandwidth to use them). This lack of access is a long-standing issue for rural areas, as one respondent bemoaned:

> *"We have rural areas where high-speed internet and cell service are NOT available*."

The rates for adequate broadband—suitable for standard video conferencing—are closely aligned with the percentages of students who don't have access to broadband. However, the equity picture gets a bit bleaker: only 7% of districts report all their students have adequate bandwidth at home.



To increase students' broadband access outside of school, districts employ a variety of strategies. Since the pandemic, providing district-owned hotspots has been the most popular method. However, there has been a significant decline in that approach, from 70% in 2021 to 58% this year. Due to changes in answer options, three-year comparisons can't be made for every strategy—but where data can be compared, trends have emerged. There was only one strategy (provider-sponsored services) without a negative change and with a slight increase, from 21% to 25%. Rates of the other

strategies show students are less likely to receive support for off-campus broadband access than they were in 2021. During the height of remote learning, only 5% of districts were not providing any off-campus services. This year, more than 26% of districts do not provide any type of support. Even the use of other strategies—such as providing outdoor wireless on campus or giving families information on where to apply for free access—was halved from 8% in 2021 to 4% this year. It is likely the overall reduced support does not reflect districts' reduced interest in closing the homework gap, but rather their reduced ability to maintain the level of support that was required for remote learning. As one respondent explained:

> *"We did provide hotspots for families without access, but funding ran out and it was too taxing on the IT department to support."*

3-year Comparison of Strategies Employed to Increase Off-Campus Broadband Access

Off-campus strategies for increasing broadband access	2023	2022	2021
Provide district-owned hot spots for students ▼	58%	67%	70%
Promote federal broadband benefit programs for low-income families ▼	35%	33%	*
Do not provide any off-campus services ▲	26%	19%	5%
Promote or participate in provider-sponsored services ▲	25%	23%	21%
Provide free/subsidized home Internet access for low-income families ▼	15%	19%	27%
Provide Wi-Fi on school buses ▼	13%	14%	16%
Provide free/subsidized district sponsored wireless access to the community ▼	10%	12%	18%
Partner with library providing loaner hotspots ▼	8%	10%	*
Other ▼	4%	5%	8%

** This answer option was not included on the 2021 survey.*

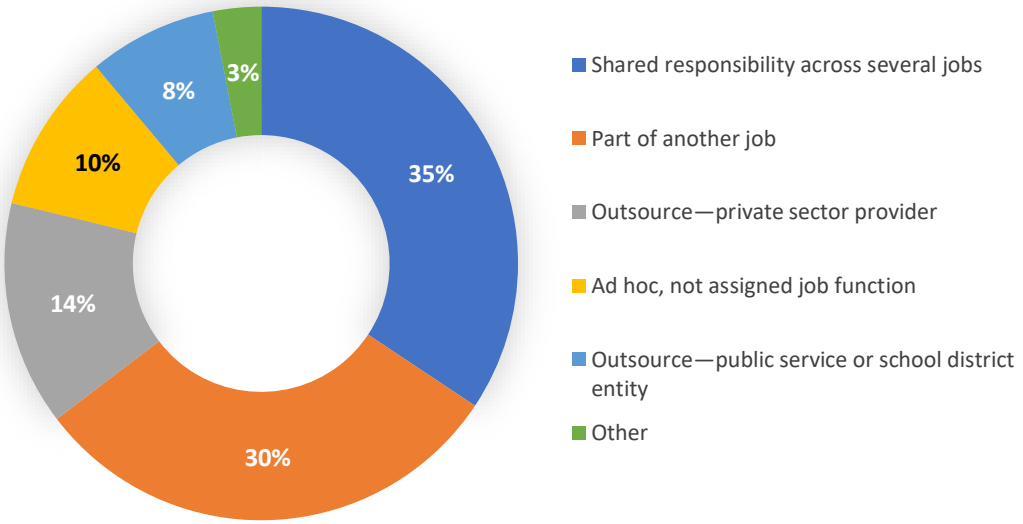
Cybersecurity

A third of respondents (34%) have full-time equivalent employee (FTE) dedicated to network security. The remaining 66% use a variety of methods to monitor their network security. There has been change in the degree to which those methods have been used year over year.

The most popular approach—used by a third (34%) of districts—is distributing the responsibility across several jobs. The next most common method, with 30%, is including the responsibility for security as part of an employee's job. Outsourcing strategy is used by 23% of districts, with 8% outsourcing to a public service or school district entity and 14% to a private sector provider. Ad hoc, the least reliable approach, is used by one-tenth (10%) of districts. Of the 3% of respondents that indicated other methods, many cited the use of multiple methods such as outsourcing to both private and public services or using outsourcing in combination with making it a part of someone's job. But one respondent comment highlights the situation for many districts:

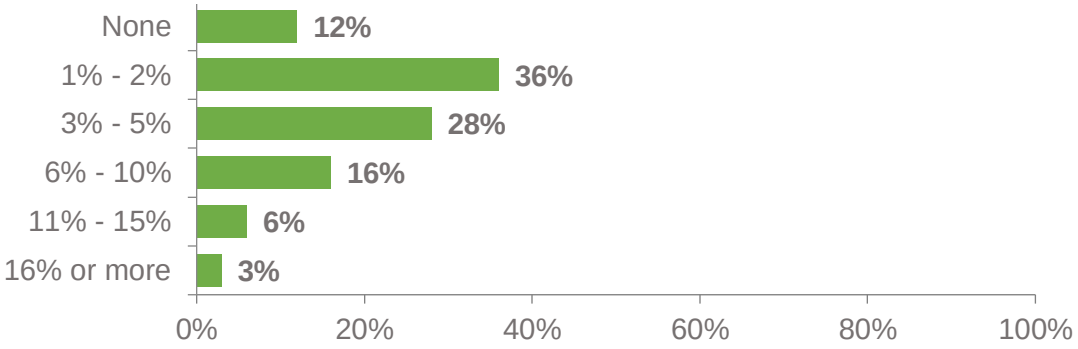
> *"While this job is the most important, we simply do not have adequate funding for it. Cybersecurity falls under the duties assigned to the District Technology Coordinator. He[/she] is unable to give security the time required because of an overloaded duty schedule. Cybersecurity, while the most important, often receives the least amount of time."*

Network Security Monitoring Strategies (without dedicated person)



Inadequate funding is glaringly apparent for the 12% of districts reporting zero allocation in their district's IT budget for sustaining cybersecurity defense. While cybersecurity professionals know that "spending doesn't necessarily equate to security," the lack of any budget for network security equipment or software to manage aspects like access and identity is alarming. More than a third (36%) of districts allot 1-2% of their IT budget to cybersecurity and 28% allot 3-5%. District percentages go down as the budget allocations go up. Sixteen percent (16%) of districts allocate 6-10% of their budget, 6% allocate 11-15%, and just 3% of districts allocate 16% or more.

Budget Allocation for Cybersecurity Defense*



* *Calculations exclude labor costs*

Across the board, there is a noticeable year-over-year increase of districts employing practices to improve cybersecurity. For the past two years, training practices rank as the top methods. The most common cybersecurity practice is IT staff training with 76% this year, a significant increase from last year's 65%. End-user training grew to 74% from 63% in 2022. The greatest increase, by more than 20%, is seen in the use of two-factor authentication. The significant increase in this method is likely tied to insurance requirements as "MFA [Multi-Factor Authentication] has become a minimum necessity for obtaining cyber coverage."[3] This year 61% of respondents require two-factor authentication for district accounts, compared to 40% last year. Adoption of cybersecurity practices is likely to only increase—especially if E-Rate is expanded to allow

[3] AM Best's Market Segment report, US Cyber, June 20, 2022

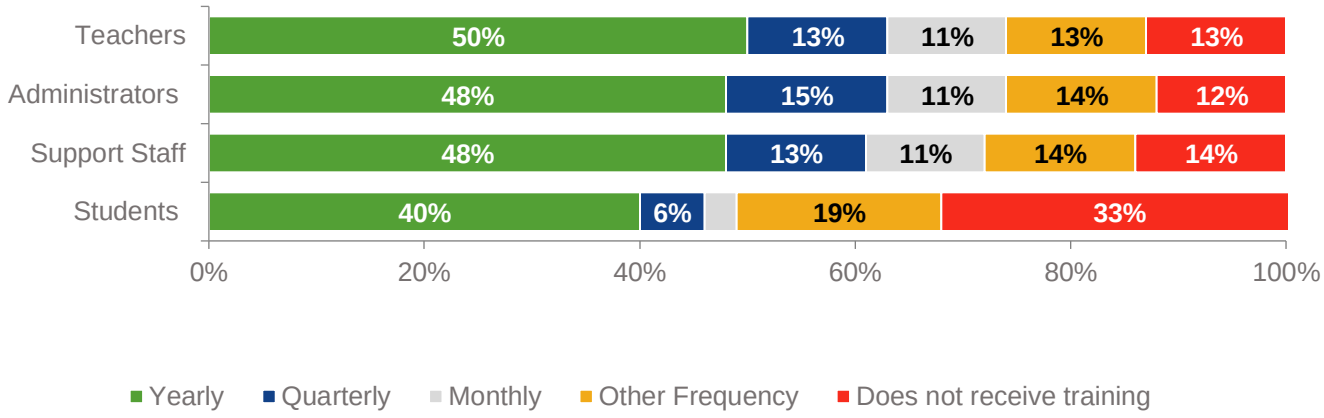
school systems to use the funds for modernizing firewalls, a baseline in cybersecurity protection. For now, the good news is that increased use of cybersecurity practices is trending up. Even the small percentage (2%) of respondents that reported their districts have not taken any steps to improve cybersecurity represents an improvement over last year's 3%.

2023	Practices to improve Cybersecurity	2022
76%	▲ IT staff training	65%
74%	▲ End-user training	63%
65%	▲ Backing up all information and storing it off site in case of an attack	55%
64%	▲ Encouraging staff to upgrade passwords	54%
61%	▲ Requiring two-factor authentication for district accounts	40%
58%	▲ Purchasing specific cybersecurity products and services	47%
46%	▲ Real-time monitoring for network intrusions	42%
42%	▲ Implementing a cybersecurity plan	37%
41%	▲ Implementing an incident response plan	34%
38%	▲ Increasing use of encryption for data in transit	32%
30%	▲ Having cybersecurity practices audited by an outside group	22%
28%	▲ Adding security safeguards to vendor negotiations	26%
25%	▲ Increasing use of encryption for data at rest	19%
20%	▲ Using more complex encryption	15%
15%	▲ Convening a cybersecurity team	13%
14%	▲ Conducting an incident response tabletop training exercise	8%
12%	▲ Creating a line item in school district budget for cybersecurity	10%
2%	▼ My district has not undertaken steps to improve cybersecurity	3%
2%	■ Other	2%

A recent data breach study found “the human element continues to drive breaches.”[4] Which means the 13% of districts that do not provide cybersecurity training to their teachers, the 12% who do not provide to administrators, the 14% who do not provide to support staff, and the 33% who do not provide training to students are essentially increasing their cybersecurity risk.

When asked about the frequency of training, yearly was by far the most common response. Half (50%) provide yearly training for teachers, 48% for admins and support staff, and 40% for students. Most stakeholders received quarterly training at about the same rates: 13% of teachers and support staff, 15% of admins. However, with 6%, students were least likely receive quarterly training. At 11% teachers, admins, and support staff were equally likely to receive monthly training with 2% of students. Nineteen percent (19%) of students received training at other frequencies not listed on the survey, as did 14% of admins and support staff and 13% of teachers.

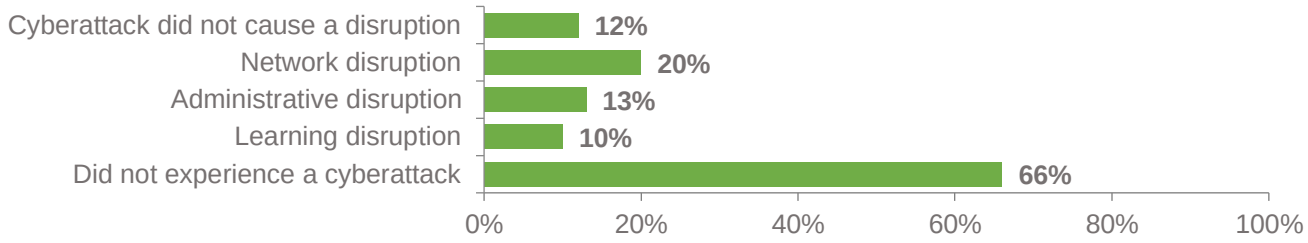
Cybersecurity Training Frequency



[4] https://www.verizon.com/business/resources/reports/dbir/2022/master-guide/

Of the third of respondents whose districts were the subject of a cyberattack, 12% indicated the attack did not cause a disruption. A fifth (20%) experienced a network disruption, 13% an administrative disruption, and 10% a learning disruption.

Disruptions Caused by Cyberattacks



Despite the reported increase of cyberattacks targeted at school systems, perceptions of risks to network security have not significantly changed year over year. Respondents rating threat types as low and low/medium risk are comparable to the rates in 2022, with only 1% or 2% change. Most threat types (five of the seven) are considered a minor risk by at least half of the respondents. The only threat type with a notable change in perception was malware. More respondents consider malware a lower risk than the previous year—50% this year compared to 43% in 2022. Phishing scams are considered the most at risk, with 29% considering them low risk.

Year-Over-Year Comparison of Perceived Network Security Risk for Threat Types

2023	Low Risk to Low/Med Risk	2022
55%	Unauthorized disclosure of teacher data	53%
54%	Unauthorized disclosure of student data	52%
50%	Malware/viruses	43%
51%	Identity theft	52%
29%	Phishing scams	31%
44%	Ransomware attacks	42%
52%	DDoS attacks	53%

Overall, cloud-hosted solutions were perceived at be at a lower risk for cybersecurity attacks than locally hosted network solutions. The risk to teacher data in cloud-hosted systems is considered low by 64% of respondents compared to 55% on locally hosted networks. Student data in the cloud is considered low risk by 61% versus 54% in a local network. Sixty-one percent (61%) perceive the risks to student data from ransomware attacks in the cloud as low compared to 54% for data within a local network.

Year over year, there was an increase in perceptions of low risk for four of the five cloud risk types. Only DDoS attacks had fewer respondents considering the threat low risk, down 8% from 60% in 2022 to 52% this year. However, most (more than 50%) of respondents do not consider DDoS attacks and the other threats to cloud hosting to be a major concern.

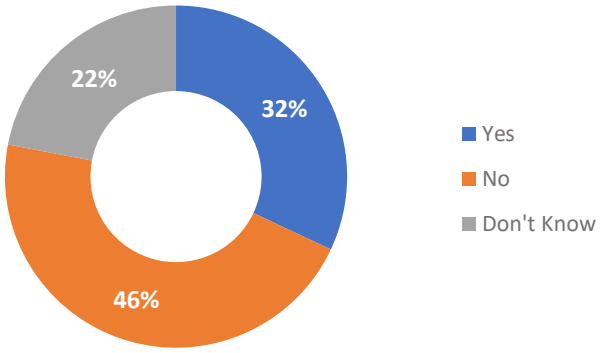
Year-over-Year Comparison of Perceived Cybersecurity Risk for Systems and Data Hosted in the Cloud

2023	Low Risk to Low/Med Risk	2022
62%	Unauthorized access to cloud systems	59%
64%	Unauthorized disclosure of teacher data	60%
61%	Unauthorized disclosure of student data	59%
61%	Ransomware attacks	57%
52%	DDoS attacks	60%

The large percentage of respondents who perceive cybersecurity risks to be relatively low does not align with the results regarding the resources necessary to address cybersecurity. More than half of respondents perceived relatively low risks for five of the seven cybersecurity threats to local networks, with a majority perceiving all threat types in the cloud to be low or low/medium risk. However, less than a third (32%) feel their school system

has sufficient cybersecurity resources to combat risks. with less than half (46%) reporting insufficient resources. The remaining 22% don't know.

Sufficient resources to address cybersecurity issues



Cybersecurity insurance is purchased by 89% of all districts, an increase from 81% the prior year. Umbrella policies are the most common type, which account for 43%. The remaining balance of districts (31%) purchase cyber insurance as a separate policy. Districts that do not purchase insurance account for 11%, down from 19% in 2022. The percentage of EdTech Leaders who are not sure if their district has a policy is also down year over year: 11% from 16%. This is an encouraging sign, as it suggests more EdTech leaders are part of the cybersecurity insurance discussion in their districts. Increasingly, insurance companies have prerequisites for purchase and requirements for payout. EdTech Leaders need to know the details to ensure the district can comply.

Year-Over-Year Comparison of Cyber Insurance Policy Purchases

2023	Policy Purchased	2022
31%	Yes, separate	24%
43%	Yes, umbrella	38%
11%	No	19%
3%	Planning	3%
11%	Not sure	16%

For a decade, CoSN has been asking EdTech Leaders about their top priorities. Although the number of options provided on the survey has increased from 16 to 26, comparisons provide insight into just how much has changed over the years. Cybersecurity is the number-one priority this year and has been in the top slot since 2018. However, it was a low priority in 2013, ranked 13 out of 16. Network infrastructure and data privacy and security, which round out the top three in 2023, were not even on the list 10 years ago. IT crises preparedness shot up in the list from 14 to 4. This climb is even more pronounced considering it was competing against 10 more priority options this year, compared to 2013. While parental engagement has been a recognized factor in student performance, parent-school communications were not considered a top IT priority. The pandemic changed that view and parental communications was added to the survey as a priority answer option last year, where it debuted at 9. This year it moved up to 5.

Mobile learning was the number-one priority 10 years ago, in this year's ranking it is 23 out of 26, indicating just how much progress has been made in this area. Another major shift has been with the bring-your-own-device (BYOD) strategy. It was the second top priority in 2013. Due to increased device affordability and the rising complexity of managing disparate devices, that approach for addressing mobile learning has been largely abandoned and was removed as an option from the top priorities list after sinking to last place on the 2021 survey.

Assessment readiness was ranked third on the 2013 priority list. Online testing was not commonplace in 2013 and districts needed to gear up for the 2014 Common Core assessments that would only be conducted online. While the ability to provide an optimum and secure online testing experience is still important, it is notably a lower priority this year—ranked 20 out of 26—suggesting districts are now mostly online assessment ready. Broadband access has also dropped in the priority rankings from the number 4 slot to 22, reflecting that more districts now have access to broadband than 10 years

ago. Rounding out the 2013 top five was cost- effective/smart budgeting. Its position at the number seven slot in 2013 makes it the only priority to be a top-10 priority in both years. This makes sense, as the need to manage funds wisely is an ongoing priority for EdTech Leaders.

10-Year Comparison of Top Priorities

2023 Rank (of 26)	Priorities	2013 Rank (of 16)
# 1	▲ Cybersecurity	# 13
# 2	Network Infrastructure	*
# 3	Data Privacy & Security	*
# 4	▲ IT Crisis Preparedness	# 14
# 5	Parent School Communications	*
# 23	▼ Mobile Learning	# 1
*	BYOD	# 2
# 20	▼ Online Assessment Readiness	# 3
# 22	▼ Broadband Access	# 4
# 7	■ Cost-Effective / Smart Budgeting	# 5

** This answer option was not included on the survey*

What has not changed in 10 years is the struggle with insufficient resources. Budget constraints remain the number-one challenge facing EdTech Leaders. Although budgets have increased over the years, so have the IT areas that budgets must fund. Districts' funding formulas are not able to keep up. Related to the budget are staffing issues that were ranked as the number-two priority this year, debuting at number three on the list last year. District struggles in hiring staff with the right skills is in part due to their inability to offer IT salaries that are

competitive with the private sector (although the recent downsizing in the IT sector might help alleviate that issue.)

Lack of professional learning opportunities for current staff is also likely tied to budgets, though survey respondents indicated that time was the biggest challenge to upskilling and reskilling IT staff. Whatever the cause, training is an ongoing problem for EdTech Leaders, consistently appearing as one of the top three challenges since 2017. The number-two challenge of 2013, 1-to-1 ubiquitous computing, was largely addressed during the pandemic as districts provided devices for remote schooling. Last year, the problem of district silos dropped off the top three challenges list, where it had previously appeared in the number-two or -three slot since 2013.

Top Technology Challenges

Rank	2023	2013
#1	**Budget constraints & lack of resources**	**Budget constraints & lack of resources**
#2	Inability to hire skilled staff	1-to-1 ubiquitous computing
#3	Relevant training & PD unavailable	Breaking down silos

Procurement

While formal approval procedures exist for procurement, not all districts have a process to address the use of free tools. When tools are free, the users pay for access not with money but with access to their data. While in the private sector this might be acceptable to a degree, in school systems it is not.

All products, including those that do not cost money, need to be vetted to meet a district's cybersecurity, student data privacy, and interoperability requirements. Overall, there is year-over-year improvement in the adoption of practices regarding the use of free tools. The majority (60%) of districts require review by the IT department, an increase from 56% the prior year. The use of other best practices has also increased, though they still are used

by less than half of districts. The most popular of those at 42% is the creation of an “approved” app list. Forty percent (40%) also established a process for adding to that approved list. These processes show a usage increase of 3% and 5% respectively. School-level review of all licenses increased to 22% from 20% in 2022. And more respondents—18% versus 13%—work in states that require vendors to sign data processing agreements. Although the percentage of districts without a process for allowing the use of free tools is lower this year (20% compared to 22% last year), it is still unacceptably high. Unvetted tools put districts’ data and systems at risk.

Process for Allowing the Use of Free Tools

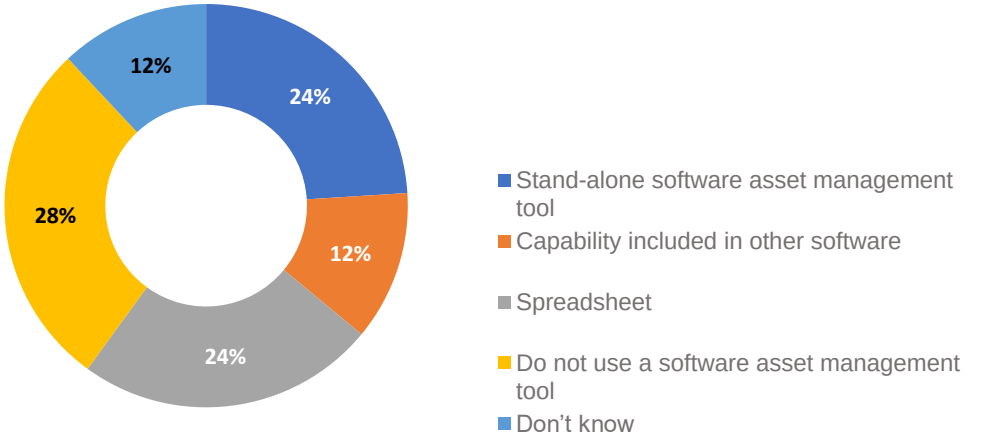
2023	Process	2022
60%	Require review by IT	56%
42%	Have a list of "approved" apps	39%
40%	Have an established process for adding to "approved" list	35%
30%	Have a designated person with authority to approve	28%
22%	Review all license renewals at the school level	20%
20%	Do not have a process	22%
18%	State law requires a Data Processing Agreement to be signed by software vendors	13%
2%	Other	2%

Nearly a quarter (24%) of districts use a standalone tool to manage their software or data privacy agreements, with an equal percentage (24%) using spreadsheets. Half as many (12%) take advantage of management features in other software they use. However, the largest percentage of respondents (25%) do not use software to manage their software or privacy agreements. With an estimated 2,000 apps used in each school district[5] it is hard to imagine an efficient process to manage them manually. If these resources are not tracked accurately, unnoticed changes in vendor privacy policies could put data at risk. And without a software solution to monitor software

[5] 2022 Edtech App Report https://s3.amazonaws.com/files.lightspeedsystems.com/collateral/Ebook/2022+Edtech+App+Report+-+Lightspeed+Analytics_F.pdf

usage, districts will likely pay for more licenses than necessary or pay for multiple licenses for similar solutions, needlessly overburdening their network and budgets.

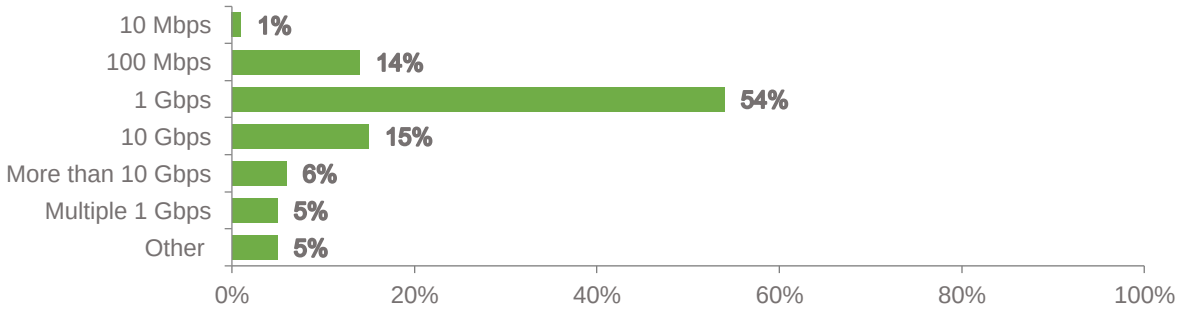
Data Privacy Agreement Management



Infrastructure

The majority (54%) of districts have a 1 Gbps typical connection speed between the wireless access point (WAP) and the local area network (LAN). Five percent (5%) of districts have multiple 1 Gbps. Faster speeds are realized by 15% at 10 Gbps and 6% with more than 10 Gbps. Slower speeds of 100 Mbps were reported by 14% of districts, with just 1% reporting a speed of 10 Mbps. Of the 5% of respondents who specified "other" speeds, most stated uncertainty regarding their district's connection. Of respondents who provided a different speed than listed on the survey, the ranges fell between 100 Mbps and 10 Gbps, except for two that cited speeds under 100 Mbps.

Typical Connection Speed Between WAP and LAN Switch



Initiatives

School systems started offering new services during the pandemic. Though contact tracing and device cleaning are no longer needed, the 2023 survey asked about other services now provided that were not offered prior to the pandemic. A third (33%) are not offering any new services this year compared to 3% in 2021, indicating a return to pre-Covid norms.

This trend is apparent in the rates of the other services, most notably in the decline of districts offering remote counseling to address students' social and emotional learning, down to 25% from 53%. This reveals a disconnect with monitoring for student safety/harm, the most commonly provided new service, with 42%. This suggests more districts will be able to identify potential student issues but will have fewer options to help address them. Less than half of districts offer remote counselling today than in 2021, 11% versus 23%. Telehealth options are offered by 28% this year compared to 34% in 2021. Covid testing is still offered by 22% of districts, down from 34%.

2023	Service	2021
33%	No new service	3%
25%	Remote counseling to address students' social and emotional learning	53%
42%	Monitoring for student safety/harm	*
11%	Remote counseling for teachers	23%
22%	Covid testing	29%
28%	Telehealth Options	34%

** This answer option was not included on the 2021 survey.*

Overall, districts are increasingly able to address the challenges posed by video conferencing. Currently, 25% of respondents do not have any video conference challenges—a huge improvement over the 6% rate in 2021. Training remains the top challenge with 43%, but that is an improvement from 50% the prior year. Marked improvement has been made in bandwidth, the top issue in 2021, with 66% compared to 42% this year. Challenges from privacy and security breaches are both down to 16% this year from their 2021 highs of 38% and 43% respectively. Software installation problems are down

to 8% compared to 21% in 2021 and “other” challenges are down to 7% from 22% in the same time frame.

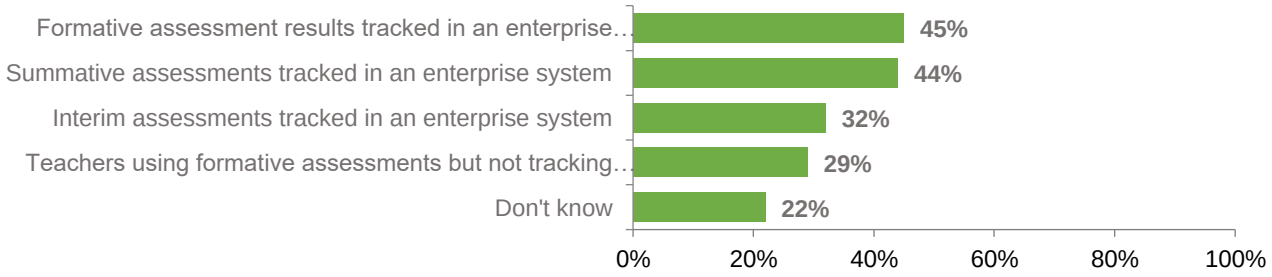
Challenges with Video Conferencing

Challenge	2023	2022	2021
No challenges ▲	25%	15%	6%
Training	43%	50%	*
Bandwidth ▼	42%	58%	66%
Privacy ▼	16%	22%	38%
Security breaches (e.g.: Zoombombing) ▼	16%	20%	43%
Software installation ▼	8%	11%	21%
Other ▼	7%	6%	22%

** This answer option was not included on the 2021 survey.*

Data from formative assessments and summative assessments are tracked in enterprise systems at similar rates, at 45% and 44% respectively. Formative assessments are also used by an additional 29% of districts that do not record results in an enterprise system for reporting purposes. Interim assessments are tracked in enterprise systems by 29%. EdTech leaders that do not how their district tracks the various types of assessments account for 22% of respondents.

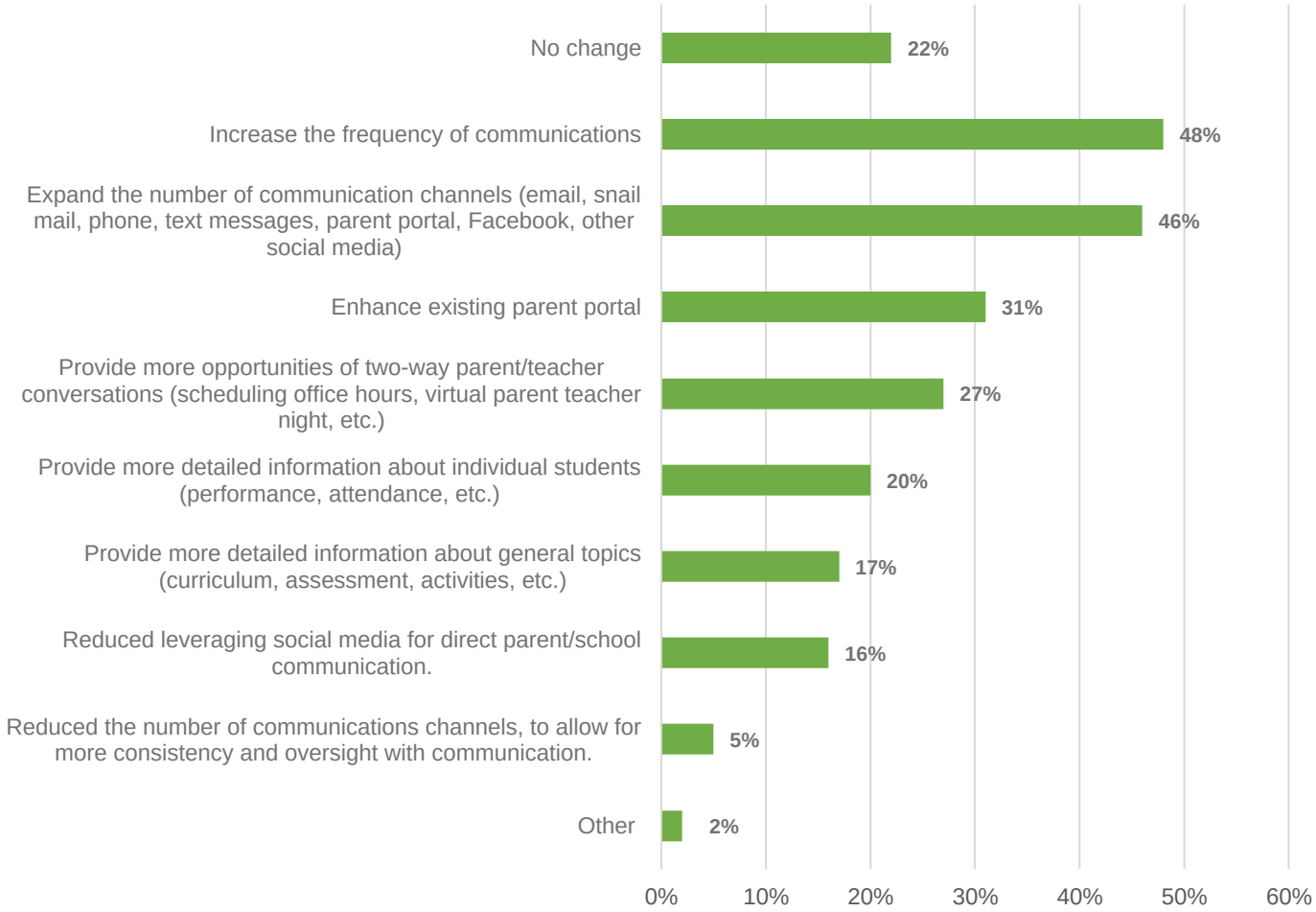
District Assessment Data Usage



The vast majority (78%) of districts made changes to their parental engagement practices over the past two years. The most common practice, at 48%, was to increase the frequency of communications, followed by

expanding the channels used for communication, with 46%. About a third (31%) enhanced their existing parent portal. More than a quarter (27%) expanded efforts to enable more two-way communication between parents and their child's teacher. Providing more detailed information was another practice, with 20% providing the details on the individual student and 17% on general topics such as the curriculum and activities offered by the district. Some districts (16%) reduced their social strategies to reach parents, with 5% reducing the number of channels used overall, to allow for more consistency and oversight.

District Changes to Parental Engagement Over the Past 2 Years



Interoperability

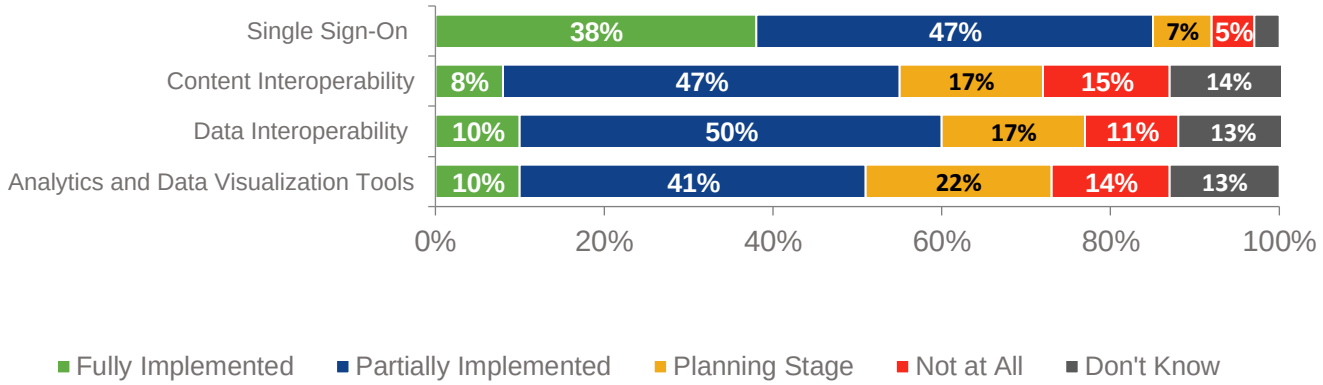
Since CoSN starting tracking interoperability initiatives in 2017, significant gains in full implementation have been made in only one area: single sign-on (SSO). More than a third (38%) of districts have fully implemented SSO in 2023, twice the rate of the 19% reported 6 years ago. However, it is important to note that as districts modernize their systems and increase the number of digital tools used, the goal for "fully implemented" can become a moving target. In the past six years, teaching and learning environments have become more digital. If a district's procurement process does not address interoperability requirements, newly acquired resources and tools added to a digital ecosystem could impact the ability for an interoperability initiative to become fully implemented—leaving a district in a perpetual state of "partially implemented." To avoid districts becoming *less* interoperable over time, assessing the ease with which new products can integrate into their digital ecosystem needs to happen *before* adoption.

Interoperability | Full Implementation Comparison

2023	Fully implemented Interoperability Initiative	2017
38%	▲ Single Sign-On	19%
8%	Content Interoperability	5%
10%	Data Interoperability	8%
10%	Analytics & Data Visualization Tools	10%

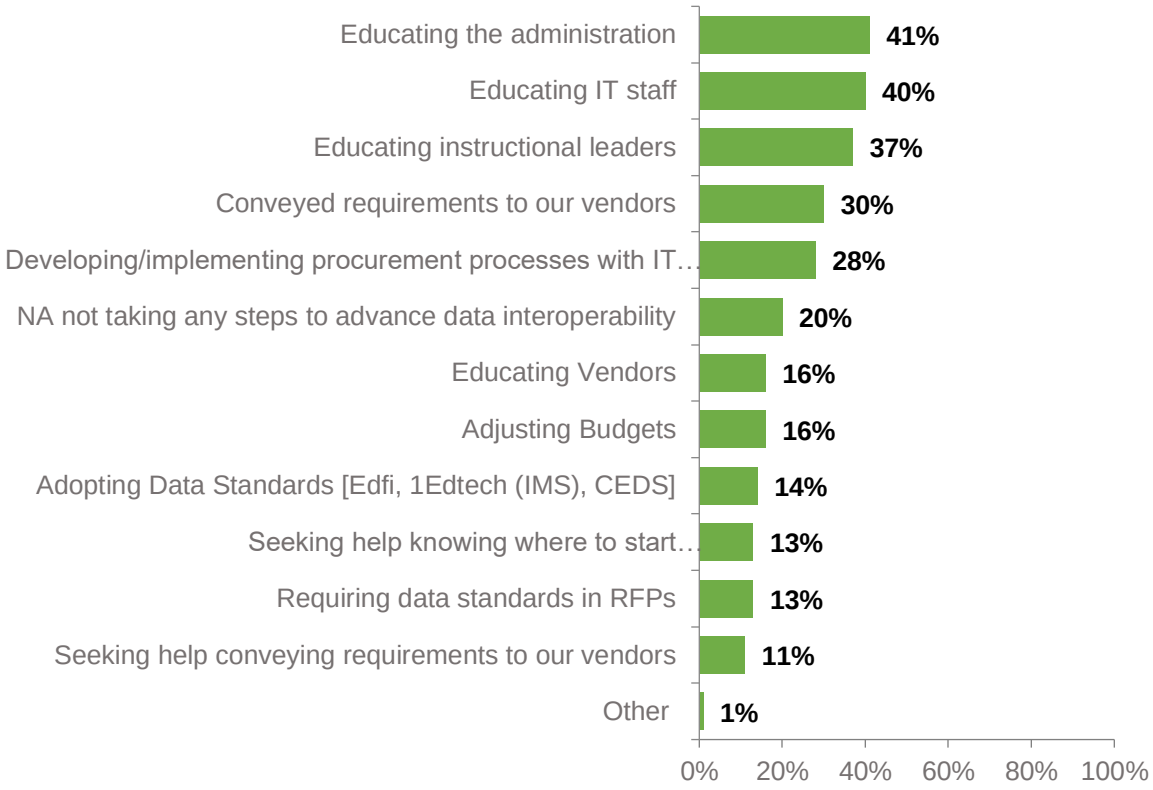
When adding partially implemented rates to fully implemented, SSO is still the top interoperability initiative at 85%. This is not surprising, as the lack of SSO is a pain point recognized by every education stakeholder and is a high priority for districts to address. The majority of districts have achieved at least partial implementation of other initiatives. With a combined fully and partially implemented rate of 60%, data interoperability follows SSO as the most implemented. Content interoperability is next, at 55%, and analytics tools are the least implemented at 51%.

Implementation of Interoperability Initiatives



EdTech Leaders employ myriad methods to improve data interoperability in their districts. The top three results point to the importance of professional learning for district stakeholders. For 41%, educating the administration was the most common method, closely followed by educating IT staff (40%) and educating instructional leaders for 37%. EdTech Leaders cannot achieve interoperability goals all on their own; they need buy-in from their administrators, their counterparts in instruction, and their own staff. Vendors, of course, are also key to interoperability efforts, and 30% of districts have vendor requirements. Another 28% are developing steps to ensure IT involvement during the procurement of vendor products and services.

Steps to Improve Data Interoperability



Over time these steps for improvement have started to remove some of the barriers to interoperability. Although cited as the top barrier this year, there is a 4% improvement in instructional leaders' understanding of interoperability—it was a problem for 41% this year compared to 45% in 2021. Budgets are no longer cited as a problem by most districts, down to 40% from 54%. There has also been marked improvement in staff expertise, with a third (36%) reporting lack of expertise as a barrier compared to half (50%) of respondents in 2021. Procurement practices are also improving. A quarter (25%) of districts do not involve IT departments, down from 32%. The lack of widely agreed-upon technical standards is significantly less of an issue, with half as many respondents citing it a problem in this year than in 2021—20% versus 40%. There is a 5% decrease in vendor resistance, with 19% reporting the problem this year, down from 24% in 2021.

The biggest rate change is seen in the response to challenges in creating a district-wide data strategy. This year 18% of respondents listed it as a barrier, a significant decrease from 47% in 2021. Since a district-wide data strategy is integral to advancing interoperability across all school systems, this is a positive indicator of a district's ability to achieve interoperability goals. Privacy issues are less of a concern this year, with 14% citing it as a barrier compared to 24% in 2021. It is important to note that in addition to enabling data to flow between systems, interoperability protocols are also used determine where data *cannot* flow, a critical component to data privacy.

Less than a tenth (9%) of respondents struggle with the lack of standards alignment, compared to 23% in 2021. Resistance from staff continues to be the least concern with only 3% of respondents citing it as a barrier, a percentage point lower than the 2021 rate of 4%. There were several interoperability challenges asked about on this year's survey that did not appear in 2021. Of those, limited FTE staff capacity (35%) and complexity of the work (33%) rounded out the top five barriers this year. The competition with other priorities and not knowing where to start were cited as barriers by 24% and 20% respectively. Ten percent (10%) of respondents struggled with their district's outdated data architecture.

Barriers to Improving Data Interoperability

2023	Interoperability barriers	2021
41%	Lack of awareness/understanding by instructional leaders	45%
40%	Budget constraints	54%
36%	Lack of staff expertise	50%
35%	Limited FTE staff capacity	*
33%	Complexity of the work	*
25%	Procurement without IT involvement/alignment	32%
24%	Other/higher priorities	*
20%	Not knowing where to start	*
20%	Lack of widely agreed-upon technical standards	40%
19%	Resistance from vendors	24%
18%	Challenges in creating a district-wide data strategy	47%
14%	Privacy concerns	24%
10%	Outdated data architecture	*
9%	Lack of learning standards alignment	23%
3%	Resistance from IT staff	4%

** This answer option was not included on the 2021 survey.*

Summary

Over the past decade, EdTech Leaders' efforts to modernize their districts' digital ecosystems are reflected in faster connection speeds, ubiquity of mobile learning, and increased adoption of technology purchasing best practices. However, the increase in cybersecurity threats, the development of internet of things (IoT), and the speed in which new technologies emerge have created a K-12 environment that is drastically different than 10 years ago. Districts, especially small and rural ones, struggle to keep pace with the changing demands. As expressed by one respondent:

> *"Technology moves at a high-speed rate where small districts are not able to keep up and as a result, fall short in ensuring measures are in place to move the district forward while maintaining the safety and security of all users."*

Many small school districts do not have a full-time IT person, let alone an FTE for cybersecurity. Even districts that budget for those positions cannot offer salaries competitive with the private sector. Lack of funding not only affects districts' ability to offer salaries sufficient to attract and retain talent, but also underpins most other EdTech challenges: cybersecurity, achieving digital equity, maintaining a modernized infrastructure, and providing professional learning opportunities. Technology has become integral to today's educational landscape and should be funded accordingly.

About the Survey

Results from this year's survey were compiled from over 1,200 surveys. With the help of our partners CDW Education, AASA, K12 Insight, and MCH, the 53-question survey was mailed to EdTech Leaders in U.S. school systems and data collected January 10 through February 28, 2023. Findings for each item in the report exclude participants who did not answer a specific question. Percentages in graphs may not total 100 due to rounding.

CoSN is the premier professional association for school system technology leaders and educational leaders to leverage technology to realize engaging learning environments. Visit cosn.org or email membership@cosn.org to find out more about CoSN's focus areas, annual conference and events, advocacy and policy, membership, and the CETL™ certification exam.

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AASA, The School Superintendents Association, founded in 1865, is the professional organization for more than 13,000 educational leaders in the United States and throughout the world. AASA's mission is to support and develop effective school system leaders who are dedicated to equitable access for all students to the highest quality public education. For more information, visit www.aasa.org.

K12 Insight has helped over 400 school districts across the nation adapt to the digital transformation with its comprehensive suite of customer service solutions for schools—including a powerful customer service platform and chatbot, research, and professional development. Visit k12insight.com to learn more.

MCH Strategic Data is a pioneer and innovator in educational marketing data. For nearly a century MCH has helped businesses reach administrators and educators within school districts nationwide and of all sizes. Trusted by the CDC, National Institutes of Health, and Harvard to provide the most up-to-date school district data during the pandemic, they offer national data coverage, invaluable expert insights and top-tier personal service to help clients reach their customers with pinpoint accuracy.

About the Survey Report Author

Paula Maylahn is an education consultant with 38 years' experience across K-20. She is a project director for CoSN's interoperability initiatives, contributing author on "The Experts' Guide to the K-12 Market" and "The Experts' Guide to the Postsecondary Market", and the author of "Interoperability: Definitions, Expectations, and Implications." Paula is a council member of the Women's Education Project, a twice-elected board member of the Software & Information Industry Association Education Division, former executive council member of the PreK-12 Learning Group of the Association of American Publishers, and former board member of the United Design Guild where she chaired the education council.

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