VERMONT
AGENCY OF EDUCATION

Results Report

2023 Annual Technology Survey

March 8, 2024

Issued by the Vermont Agency of Education, Student Pathways Division

State of Vermont

Agency of Education

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Executive Summary

The Annual Technology Survey gathers information about education technology in Vermont supervisory unions/districts (SU/SDs) and schools. The survey is a tool for the Agency of Education (AOE) to collect information on how schools are using technology and the challenges they are facing in providing the infrastructure and equipment needed to equitably and effectively utilize technology to support student-centered learning. The survey also enables the AOE to observe patterns of technology use and infrastructure across SU/SDs and explore opportunities to leverage state investments to support coherence and access across the state. The FY23 survey (reflecting 2022-2023 academic year) was opened in July 2023 and closed in October 2023.

Survey results are reported both by SU/SD and by schools. SU/SD responses represent 53 districts—50 SU/SD and three regional technical center school districts. School responses represent 296 public schools, including 13 career technical education (CTE) centers that reported as separate schools.

Summary of Key Findings

One-to-One Device Use: One-to-one computing is defined as a program where each student has a computing device dedicated to them over the course of a year, or multiple years, at their school. This year's survey indicated some Vermont schools were scaling back their one-to-one programs as students had access to devices in their classroom or brought their own device to school. Previously, all schools reported having one-to-one computing in place mainly due to the pandemic and the need to accommodate remote learning. Emergency federal funding enabled schools to purchase devices. As this funding sunsets, schools cited reduced funding as a reason for discontinuing the program. Some schools also have shifted homework requirements such that having a school device to take home for work is not needed.

"Internet and computer use is important for students, but we do not require students to use it at home." – Survey Respondent

Dominance of Google Workspace for Education (GWfE): GWfE remains the dominant online application suite used by Vermont schools. Consistent with previous survey trends, all Vermont SU/SDs report that Google Docs is used on a school-wide basis and is an integral part of day-to-day operations.

"Google is used as the core for most all learning activities and is the primary technology tool used in most of our schools." – Survey Respondent

Educators are Cautious About Artificial Intelligence (AI): Survey respondents reported teachers and administrators were cautiously investigating the use of AI

technology within the educational environment. Concerns exist regarding AI facilitating student cheating on assignments. However, educators are investigating AI applications and are using such in their teaching. AOE responded to the need for professional learning in AI by executing a contract for and launching a statewide professional learning series on the technology through the International Society for Technology in Education (ISTE). Fifty-eight educators from 30 Vermont SU/SDs participated in the series.

"(We need) better training with applications and devices to bring everyone's basic skills up to par . . . ChatGPT and AI for educators." – Compilation from Survey Respondents

Gains in Cybersecurity Measures: Notable gains were made in the number of SU/SDs that have data breach response plans in place. These plans outline how a SU/SD will respond if such a security incident occurs. This year's survey showed 42 percent of SU/SDs had a plan in place, a 15 percent increase from the previous survey. More districts also reported having multi-factor authentication (MFA) in place. In this year's survey, 75 percent of SU/SDs had MFA in place compared to 58 percent in the previous survey. Lack of staff time to compose and implement a data breach response plan remained a top barrier to putting a plan in place. AOE continues to provide SU/SD with resources to strengthen their cybersecurity work. Currently, all SU/SD may utilize the Infosec+ application for no-charge cyber safety training for employees because of a State Homeland Security Grant award to AOE.

"Lack of available IT staff is a real problem. [School] Boards are not willing to spend on additional IT staff so we can only do what we can do with the resources we have. We have rudimentary plans in place that would hopefully get us out of trouble, but nothing officially written." – Survey Respondent

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Broadband Connectivity

Since the inception of this report, AOE has surveyed SU/SDs on their broadband connections to their schools. Broadband connectivity is essential to schools. Robust and reliable connectivity enables schools to run a multitude of programs and systems that are used for operational, business, safety, and educational processes.

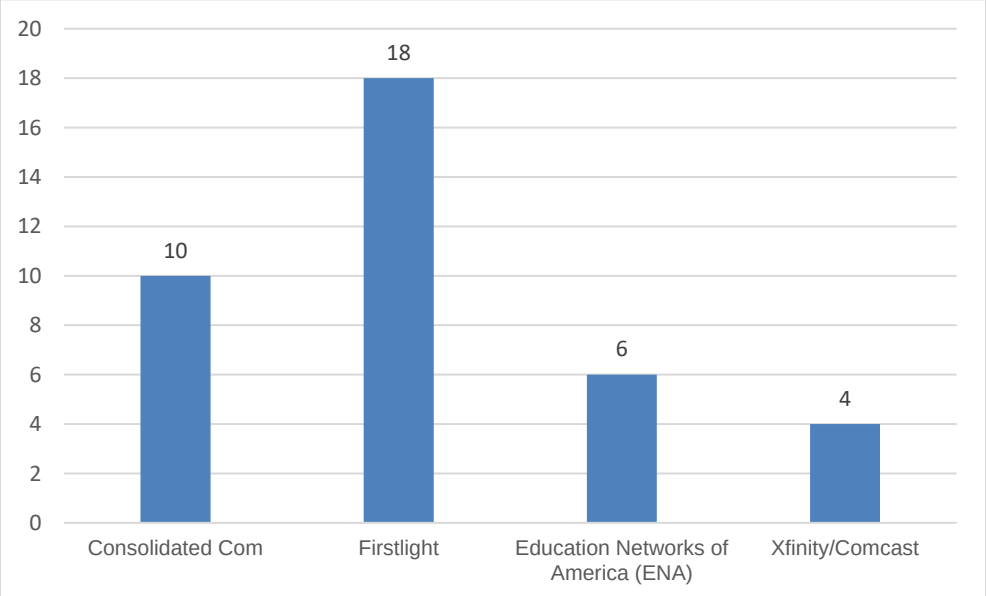
This section of the report includes questions and responses related to broadband connectivity. To provide clarity for the information that follows, this report provides the following definitions and concepts. Bandwidth is the rate at which the network can transmit information. Generally, a higher bandwidth is desirable. The amount of bandwidth available to you can determine whether you download a photo in two seconds or two minutes. Bandwidth is traditionally expressed in bits per second (bps). Modern network links now have far greater capacity, which is why bandwidth is now more often expressed as megabits per second (Mbps) or gigabits per second (Gbps). The more bandwidth a data connection has, the more data it can send and receive at one time. In concept, bandwidth can be compared to the volume of water that can flow through a pipe. The wider the pipe's diameter, the more water can flow through it at one time. Bandwidth works on the same principle. The higher the capacity of the communication link, the more data can flow through it per second.

Internet Service & Connection

Question: Who is the primary Internet Service Provider (ISP) for this school?

Figure 1: Primary Internet Service Providers

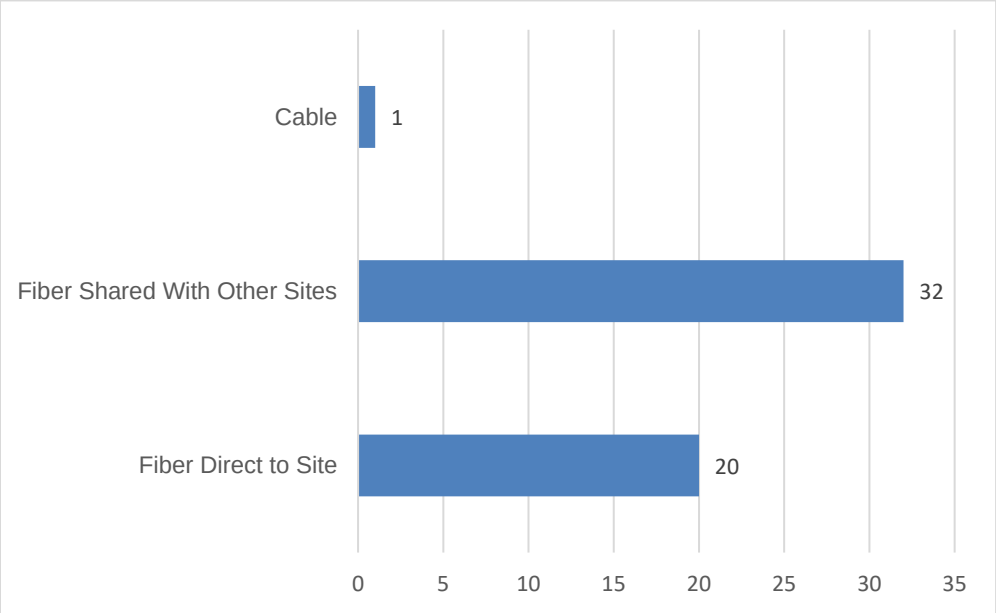
Providers with less than three subscribing SU/SDs are not listed in this chart.



While FirstLight and Consolidated Communications maintained their positions as the primary internet service suppliers to schools, there were some changes from the previous survey among secondary providers. ENA gained subscribing SU/SDs to become the third most popular ISP. Other providers listed were EC Fiber, Green Mountain Access, Lumen, Spectrum, and Waitsfield Telecom. There is more information on internet access in Vermont on the Public Service Department website, Public Service Department Interactive Broadband Map.

Question: What is the primary connection type for schools in your SU/SD to connect to the internet?

Figure 2: Primary Connection Type



Fiber remains the primary connection type for schools. A direct fiber connection serves a single customer and provides the highest level of bandwidth and guaranteed speeds. A shared fiber connection supports multiple destinations and/or customers. Typically, the cost for a shared connection is less than a direct fiber connection.

Upload and Download Speeds

Both the download and upload speeds are important. Internet Service Providers (ISPs) offer different bandwidth limits for downloading and uploading. In many cases, the upload bandwidth is typically less than the download bandwidth as most user activities require downloading of data from the internet. However, video conferencing requires both robust upload and download speeds to ensure a good connection and video quality. According to the Federal Communications Commission (FCC), high speed internet is defined as a download speed at or above 25 Mbps and an upload speed not less than 3 Mbps. It should be noted that this definition is disputed by many groups. New technological developments and changes in internet use necessitate much higher speeds than those set by the FCC.

Vermont SU/SD broadband speeds increased slightly from the previous survey. Upload speed gains were noted first in the number of districts who reported advancing from 1 Gbps upload speeds to 2 to 5 Gbps speeds. In the previous survey, seven SU/SDs reported upload speeds of 2 Gbps compared to this survey where 10 SU/SDs reported that speed. In the previous survey, eight SU/SD reported upload speeds of 5 Gbps compared to this survey where 12 SU/SDs reported that speed. A similar trend was noted in download speed advances. In the previous survey, six SU/SDs reported download speeds of 5 Gbps. In this survey there were 12 SU/SDs that reported download speeds of 5 Gbps.

Question: What is the current upload speed for schools in your SU/SD as advertised by your provider?

Figure 3: Upload Broadband Speeds

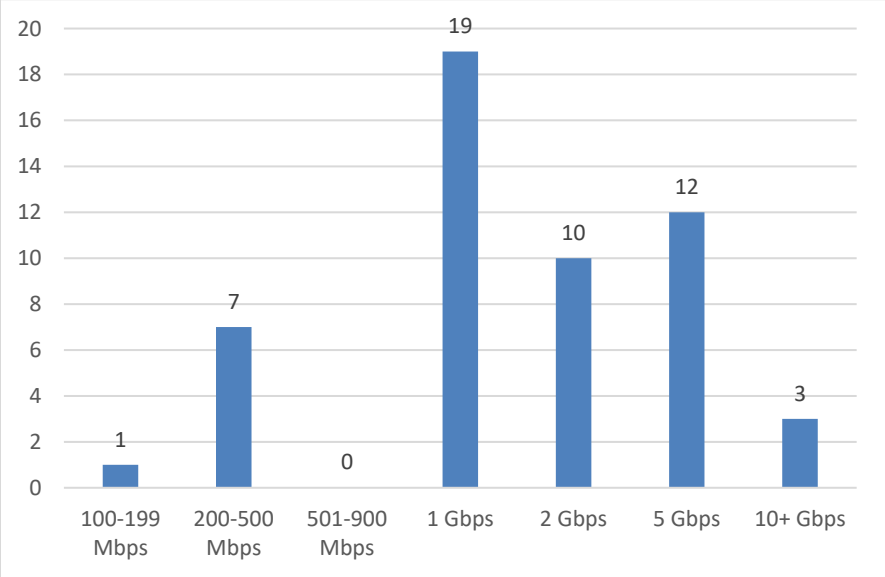


Table 3: Upload Broadband Speeds

Broadband Speed (Upload)	Number of SU/SD
100-199 Mbps	1
200-500 Mbps	7
501-900 Mbps	0
1 Gbps	19
2 Gbps	10
5 Gbps	12
10+ Gbps	3

The Vermont Department of Public Service maintains data on broadband high-speed internet availability in the state. To review their data, go to [Broadband High-Speed Internet Availability in Vermont | Department of Public Service](#).

Question: What is the current download speed for schools in your SU/SD as advertised by your provider?

Figure 4: Download Broadband Speeds

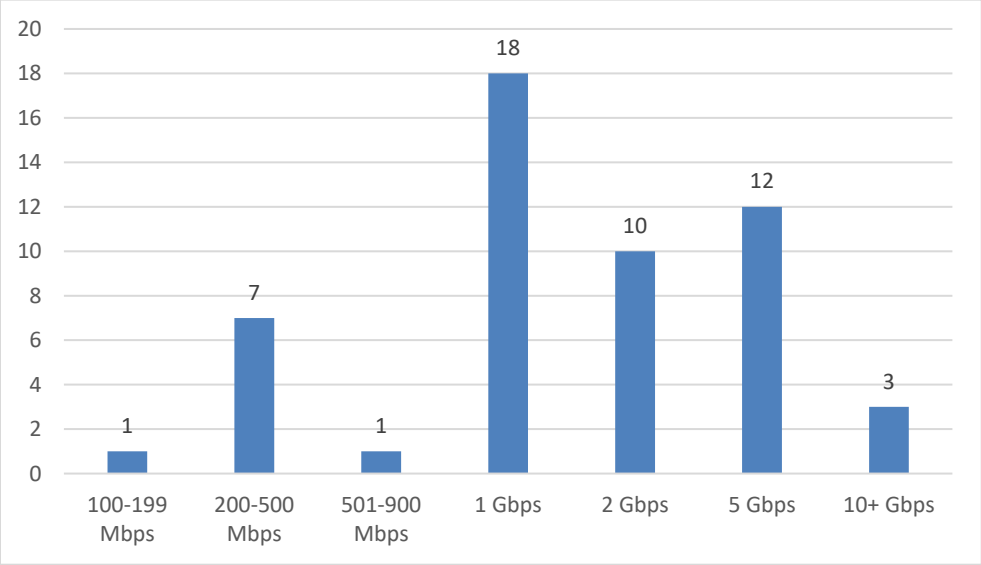


Table 4: Download Broadband Speeds

Broadband Speed (Download)	Number of SU/SD
100-199 Mbps	1
200-500 Mbps	7
501-900 Mbps	1
1 Gbps	18
2 Gbps	10
5 Gbps	12
10+ Gbps	3

Home Broadband

Fewer SU/SDs than the last survey reported surveying students about their home broadband access. In the past, schools have reported that they keep lists of student addresses with low/no broadband access. It is assumed such lists are kept up-to-date and referenced as needed.

Question: Does your SU/SD or individual schools track student home broadband access?

- 36 SU/SDs reported they **do not** survey students for home broadband access.
- 17 SU/SDs reported they **do** survey students for home broadband access.

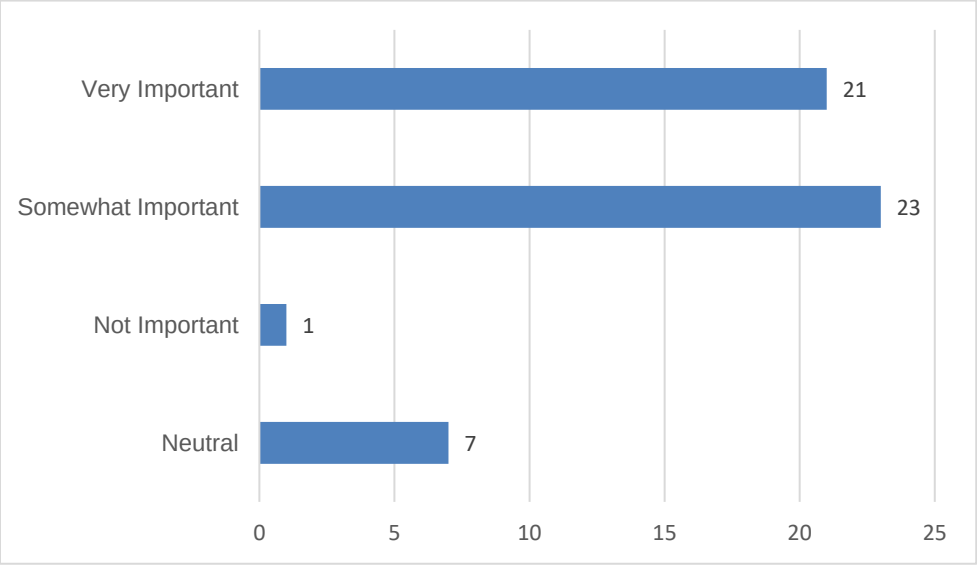
Question: If yes, you do track home broadband access, select the option that best describes how your SU/SD or individual schools learn about this lack of connectivity.

Table 5: Options for Learning About Lack of Connectivity

Options	Number of SU/SD
Written or electronic parent survey	11
Request from student or family for assistance	4
Anecdotal accounts	0
Other	2

Question: Post-pandemic, rate how important home internet access is in your school communities for your schools to fulfill their educational mission.

Figure 5: Importance of Home Internet Access



A slight majority of school districts rated home internet as "somewhat important" to fulfill their educational mission. Teachers and staff were able to provide alternative solutions if there was no home internet access to enable students to complete their schooling without compromising educational quality. Below are several responses from districts that choose this rating.

- "Home broadband allows access to ed opportunities but is not required."
- "We accommodate any families who have no or poor internet access by providing communication and records by other means. We don't have too many families in that situation. We've just moved to a communication system that works well on mobile phones and that takes care of most of the known situations."
- "Our high school heavily relies on student access to the Internet. We work with Xfinity to provide internet access to families that do not have the resources to get it by themselves. This is a primary need for our high school but not middle or elementary."

Among those districts that rated home broadband as very important, the consensus was that home broadband is essential for full access to educational opportunities. Below are several responses from districts that choose this rating.

- "Due to the inequity of broadband access at home, we are not able to send devices home for required schoolwork because of lack of access."
- "Home internet access for students was a critical resource for learners before the pandemic. During the pandemic it was an absolute requirement. Pandemic aside, students must have access to fully participate in their own development and interaction with society as a whole. Lack of reliable, quality Internet is a significant disadvantage for any student."
- "If home internet access is poor or not available students cannot continue learning at home."

Those districts that were neutral or viewed home broadband as not important cited the reasons listed below.

- "Post pandemic the majority of our schools require students do their work at school on issued devices. Only the high school has students taking devices home to do additional work. I have not had any reports of students being incapable of doing work outside of school due to lack of access to sufficient broadband."
- "Teachers are no longer "expected" to provide the students with homework or academic work that should be done at home."

Wi-Fi Access

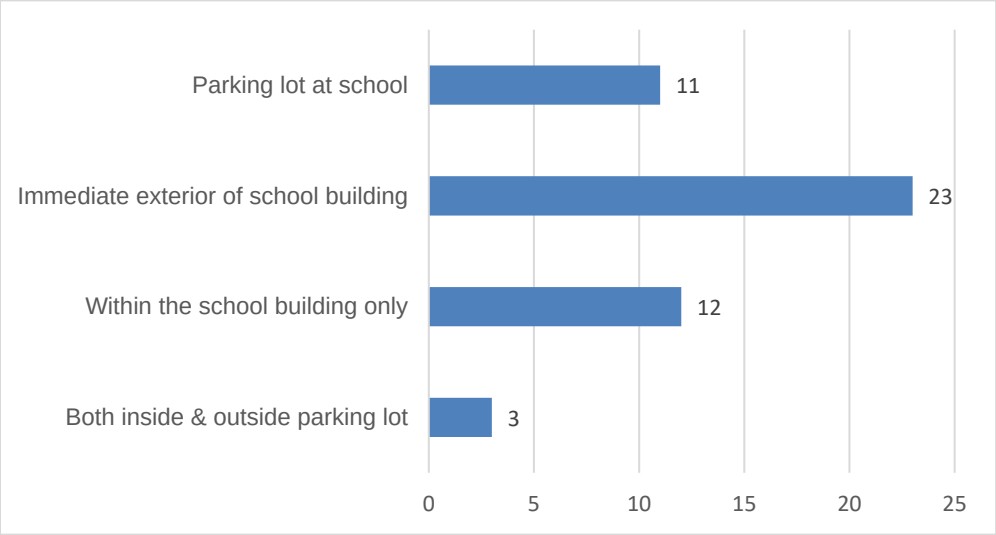
During this survey period, students had routinely returned to in-person learning within the school building. Consequently, providing Wi-Fi access outside of the school became less of a priority for SU/SDs. Data from this survey is similar to last year's results in that the number of SU/SDs that reported there was guest or public Wi-Fi available at locations in the community other than the local school remained level. The sustained presence of local internet connectivity is good news for Vermont communities. The specific answers to the Wi-Fi survey questions are provided below.

Question: Do the schools in your SU/SD provide "guest" or "public" Wi-Fi access?

- 4 SU/SDs reported there **was no** public Wi-Fi access provided by district schools.
- 45 SU/SDs reported there **was** public Wi-Fi access provided by district schools.

Question: If schools in your SU/SD provide "guest" or "public" Wi-Fi, please select the option below that best describes the area served by the Wi-Fi.

Figure 6: Geographic Area Served by School Wi-Fi



Question: Is there another location in the community to access free Wi-Fi?

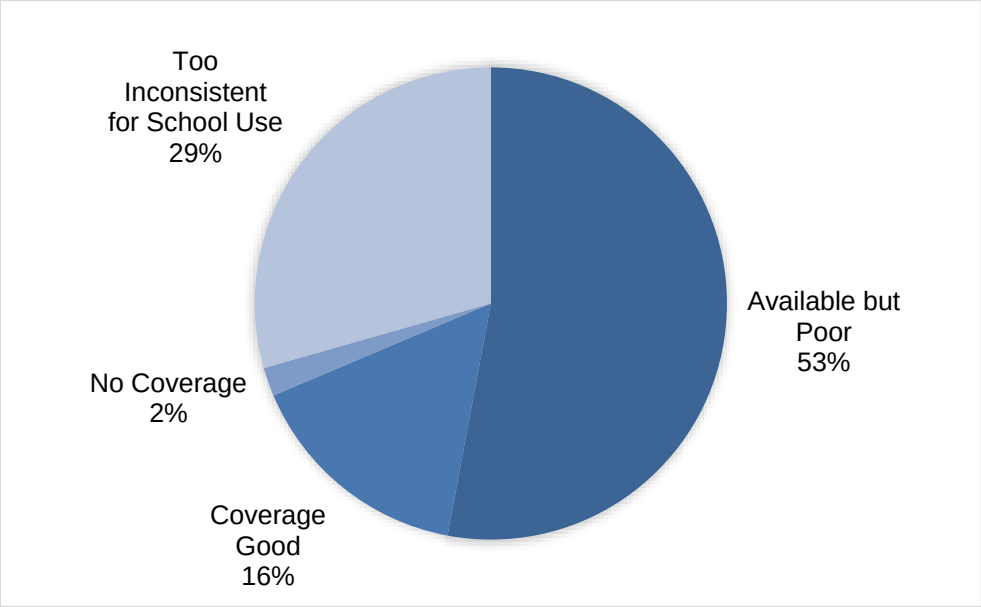
- 48 SU/SDs indicated there **was** other free Wi-Fi in their school communities.
- 5 SU/SDs indicated there **was no** free Wi-Fi in their school communities.

Cell Phone Service

AOE surveys schools on the presence and quality of their cell service to ascertain the viability of phones being used as instructional tools or resources. The question of cell phone coverage also gives a sense of the viability of using cell towers as access to the internet for schools and students. As in previous surveys, the majority of Vermont SU/SDs indicated their schools had cell phone coverage but that coverage is described as too inconsistent for school use or available but poor. Sixteen percent of the SU/SDs described their cell phone coverage as good.

Question: What is the typical cell phone coverage at the schools in your SU/SD?

Figure 7: Cell Coverage Descriptive Categories



For more information on cell coverage in Vermont, the Department of Public Service has an interactive mobile wireless map on their website.

School Technology & Device Availability

This section of questions focuses on the individual school device profile, one-to-one status, school device policies and classroom capabilities. There are responses from 296 individual public schools, including 13 CTE centers that reported as separate schools.

Student Devices

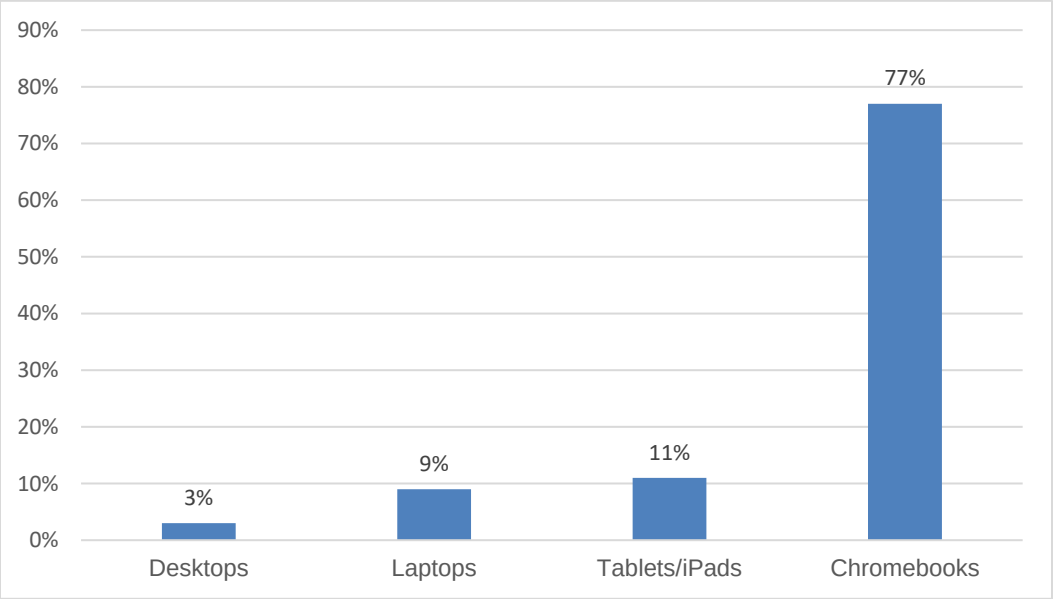
Question: How many total devices are currently available for school use?

The number of devices available system-wide for school use remained greater than the number of K-12 student enrollment, underscoring the commitment by schools to provide students with access to technology tools for educational purposes. Schools reported there were 93,138 devices available for school use. The most recent enrollment for K-12 students was 74,567. At the height of the pandemic Vermont public schools reported a total of 108,471 devices available for school use. Since then, schools have better determined the number and type of devices best utilized by their educational communities. The lower device numbers reported for the 2022-2023 school term likely reflects the aging out of devices that were not replaced because of lack of need. It is anticipated there will be a continued refinement downward in the number of devices

Vermont schools purchase and maintain, particularly as federal relief dollars dissipate and funding for device purchases decreases.

Question: Please provide an estimated percentage by type of device that your school has for student use.

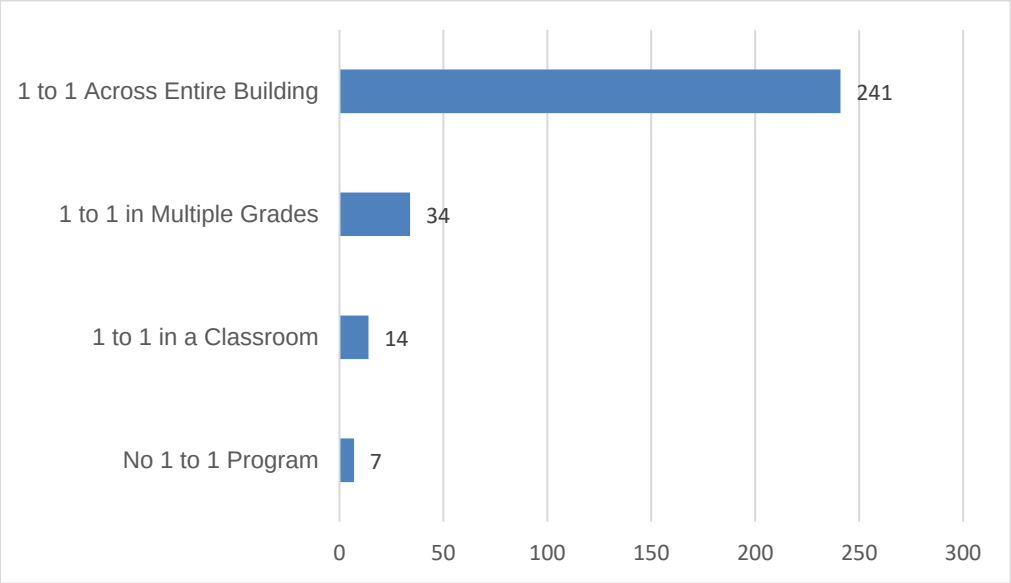
Figure 8: Percentage of Device Type for Student Use



The dominant device provided by schools to students remained Chromebooks. The 77 percent use reported in this survey is the same percentage as reported in the previous survey. There was a one percent decline in the use of tablets and iPads with a slight increase in use for laptops and desktops.

Question: Which option most accurately describes the one-to-one status in your school?

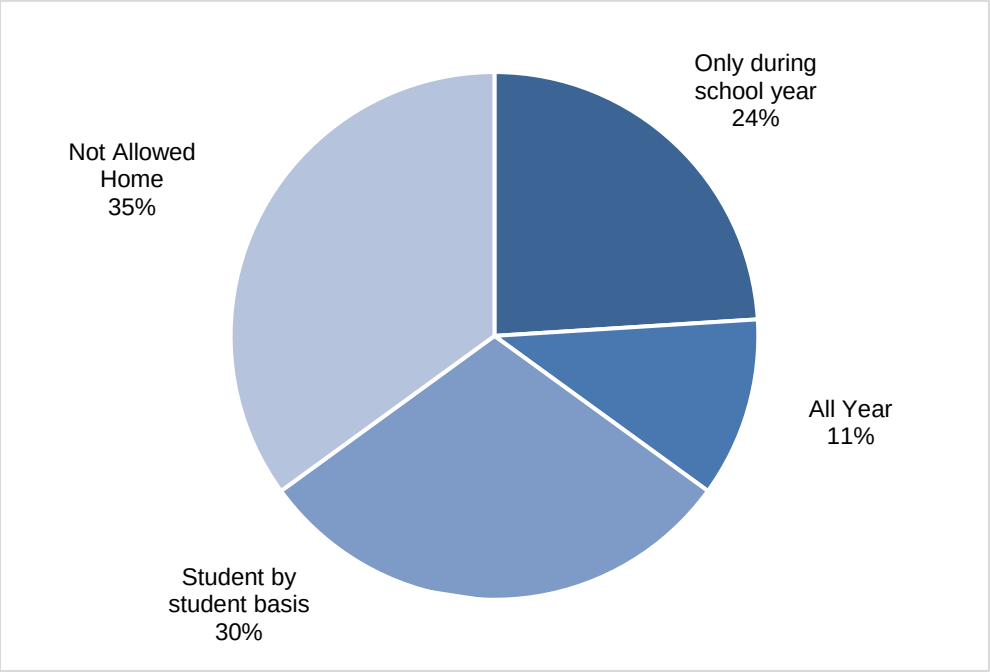
Figure 9: 1-to-1 Status as Reported by School



One-to-one computing is defined as a program where each student has a computing device dedicated to them over the course of a year, or multiple years, at their school. This year, seven schools reported they no longer supported a one-to-one program. Reduced funding was cited by most of these schools as the reason for discontinuing the program. One school noted that a one-to-one program was not needed as students had access to devices in their classroom or brought their own device to school. For the past two school terms, every responding Vermont school had reported having a one-to-one program. With the end of the pandemic, schools no longer had to implement emergency remote and hybrid learning on an ongoing basis. Consequently, the need for one-to-one programs to ensure access is lessened. Schools also leveraged federal funding to purchase needed devices and related technology during the pandemic. They are now adjusting their budgets to meet the current needs of students.

Question: Does your one-to-one program allow students to take a device home?

Figure 10: Device Take-Home Policy by School



Compared to last year, schools are becoming more selective regarding allowing students to take school devices home. Last year, 31 percent of schools reported they did not allow students to take home devices. That percentage grew to 35 percent in this survey. The percentage of schools making device take home decisions on a student-by-student basis grew by 6 percent from last year's survey. This trend may reflect the shift schools are making in how devices are used in educational practice. For example, if a school shifted instructional approaches to require less frequent homework, the need for students to take home a school device would be less. This will be an area for further inquiry in the next survey.

Question: Does your school currently have a Bring Your Own Device (BYOD) policy?

Fewer schools reported having a BYOD policy than last year. BYOD policies allow a school to clarify when and how a student may use a personal device during the school day. In the current survey, 64 percent of schools reported they did not have such a policy compared to 48 percent in the last survey. This shift suggests that BYOD policies may be flexibly applied to respond to the current student culture and device use. For example, if a school found personal device use had become non-disruptive to the educational process among the current study body, the application of a policy would not be needed. Prior to the pandemic, the majority of schools reported they did not have a BYOD policy. AOE will monitor to see if this trend continues in the next survey.

Classroom Capabilities

Question: What capabilities are there in your school for in-classroom video/audio?

Table 6: Classroom Technology Capabilities

Classroom Capabilities	Number of Schools
Technical Support to Navigate AV or New Platform	280
Streaming Video + Audio via Projector	264
Streaming Video + Audio via Smart Board	222
Television Broadcast Feed	46
Teacher Microphone + Audio System	156
Limited/No Capability	22

Question: Does your school have the technology to support your academic programming?

For the second straight survey, 100 percent of schools responded “yes” to this question.

Technology Platforms and Functions

Questions in this section explore those learning and information platforms schools rely on to stay connected and deliver instruction. Responses in this section are by SU/SD.

Student Information Systems (SIS)

A Student Information System (SIS) is a software platform used to manage student data. Student information systems provide capabilities for registering students for courses; documenting grading, transcripts, results of student tests and other assessment scores; building student schedules; tracking student attendance; and managing many other student-related data needs in school.

Question: What technology platform(s) do the schools in your SU/SD use for an SIS?

PowerSchool remained the leading platform used by Vermont SU/SD for their SIS. Of the 53 SU/SD that responded to this question, 74 percent (39 SU/SD) reported they used PowerSchool. Eight SU/SD indicated they were using Infinite Campus, and four SU/SD were using Alma. There were three “other” responses. The three platforms mentioned in this category were JumpRope, MMS, and Web 2 School.

Question: Do the schools in your SU/SD currently utilize your SIS to monitor when students may need additional support?

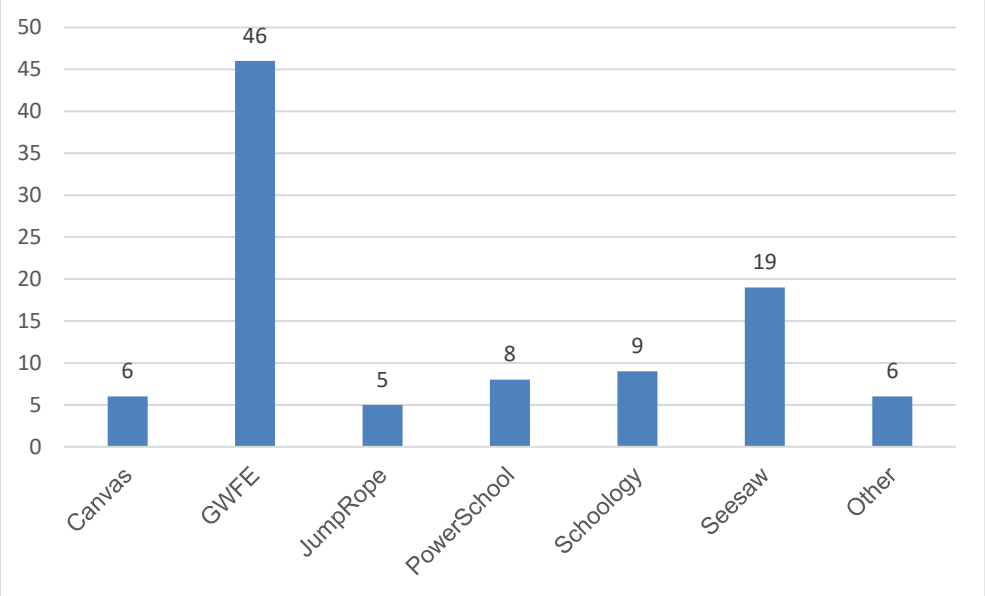
SU/SD were almost evenly split on this question. Twenty-four SU/SD indicated they do use their SIS to monitor students for additional support, while twenty-nine SU/SD indicated they do not use their SIS for this purpose. In 2023, AOE offered SU/SDs a professional learning series on Early Warning Systems and SIS platforms. The Agency is now working to make recordings of these training courses available to interested districts.

Learning Management Systems (LMS)

A Learning Management System is a software application for the administration, documentation, tracking, reporting, automation, and delivery of educational courses or learning and development programs.

Question: Which technology platform(s) do the schools in your SU/SD use for an LMS?

Figure 11: LMS Use Reported by SU/SD



In past surveys, Google Workspace for Education was omitted from this question because the company does not refer to its suite of tools and services as an LMS. However, the ongoing integrated use of these applications by SU/SD warranted listing it as an option on this question. GWFE far outpaced any other LMS listed with 87 percent of all districts responding to this survey indicating their use. Beyond GWFE, Seesaw remained the leading platform with 36 percent of districts reporting their use. Other

systems listed by SU/SD as in use include Dreambox, Brainpop, Courseware, Toddle, and Managebac.

Question: Google Workspace for Education is a popular application used by many Vermont schools. Please indicate for each application the PRIMARY use of each program by schools in your SU/SD.

Table 7: Primary Use of GWFE in Schools as Reported by SU/SD

Google Applications	Number of SU/SD Use on a School-Wide Basis
Google Docs	54
Google Sheets	51
Google Slides	51
Google Forms	40
Google Sites	22
Jamboard	24

Comments offered by respondents indicated that GWFE was now an essential tool for sharing and collaboration within school communities.

- "Google is used as the core for most all learning activities and is the primary technology tool used in most of our schools."
- "We rely heavily on Google Workspace for Education in both our everyday education environment and for our faculty and staff email communications (through Gmail). Being such an integral part of our day-to-day operations, it is concerning that Google may at some point decide to either revise or outright disable the many services offered under Google Workspace for Education. This isn't an immediate worry, but it is something to be cognizant of due to large tech companies' track record of offering free or low-cost services and then deciding to terminate or limit functionality with little to no warning."

Question: Which technology platform(s) are students in your SU/SD using to develop their Personalized Learning Plans (PLPs)?

Table 8: PLP Platform Use Reported by SU/SD

PLP Platform	Using for PLPs*
Google Workspace for Education	49
Naviance	7
PowerSchool	5
Other	6

** SU/SD could indicate more than one platform.*

A Personalized Learning Plan (PLP) is a plan created by a student, with the support of parents/guardians, teachers/mentors, and peers, that defines the scope and rigor of academic and experiential opportunities that will lead to secondary school completion, postsecondary readiness, and civic engagement. In Vermont, Act 77 requires that every publicly funded Vermont student in grades 7-12 participate in the personalized learning planning process. Platform use data reported by SU/SD for PLP development is largely unchanged from the last survey. GWFE remains the top application, followed by Naviance and PowerSchool. Other platforms listed included Seesaw, LiFT, and FastBridge.

Online Learning

Online learning is defined for this survey as an online or blended course that has been purposely designed for online teaching using online learning design principals and teachers trained in the delivery of online instruction. Computer applications, supplementary services, and platforms are not online learning providers.

Question: Have schools in your SU/SD invested in Online Teaching Specialist Certification for teachers?

- 6 SU/SD indicated they **had** invested in this certification.
- 47 SU/SD indicated they **had not** invested in this certification.

As with previous surveys, the majority of SU/SD indicated they did not invest in Online Teaching Specialist Certification for their teachers. One reason for this may be that SU/SD are investing in online learning providers to provide such instruction. AOE asks this question to determine how schools are supporting professional standards for this area. All Vermont educators facilitating online course work with Vermont students must obtain the 5440-25 Online Teaching Specialist (OTS) endorsement. The holder of an OTS endorsement is authorized to teach students from a distance who are enrolled in

online coursework. The endorsement is an add-on endorsement only and is limited to holders of PK-12 teaching endorsements.

Question: Do you use an online learning provider to support your educational process? If so, list your provider.

- 15 SU/SD indicated they **do not** use an online learning provider.
- 31 SU/SD indicated they **do** use an online learning provider.
- 6 SU/SD indicated they did not know.

Table 9: Online Learning Providers Used by SU/SDs
School districts could select more than one online learning provider.

Online Provider	Use
Brigham Young University Online	1
Community College of Vermont	1
Edmentum	4
Khan Academy	2
Virtual High School	5
VT Virtual Learning Cooperative (VTVLC)	20

VTVLC remained the top online learning provider listed by SU/SDs. Of the 31 SU/SDs that reported using an online provider, 65 percent listed VTVLC as a provider. The Vermont Agency of Education (AOE) provides state funding to support SU/SD in providing online learning through VTVLC as a flexible pathway. An online learning provider offers a breadth of curricular choices that a student may choose to enroll in, similar to an in-person class. The second most utilized provider was Virtual High School and third was Edmentum. Five SU/SDs listed online applications rather than a provider when asked this question. An online learning application offers more singular options that allows a student to just practice a particular skill or acquire knowledge through a gaming process.

Question: If you do use an online learning provider, how are you using the provider?

- 7 SU/SDs were using the provider for full-time learning.
- 12 SU/SDs were using the provider for hybrid learning with on-site staff.
- 12 SU/SDs were using the provider for limited targeted intervention.

Question: Below are characteristics of online learning providers. Select "agree" for each characteristic that describes your provider.

Table 10: Online Learning Providers Characteristics

Characteristics	2023 Response	2022 Response
Provided by Licensed Educators	29	18
Provider is In-State	22	14
Provider is Out-of-State	13	7
Provider Accredited or Nationally Recognized	21	13
Provider Curriculum Aligns with State & Local Standards	23	15

Positive responses to quality indicators for online learning providers were higher than the previous year's survey. More SU/SD were engaging providers with licensed educators, were accredited, or nationally recognized, and offered curriculum aligned with state and local standards. However, SU/SD responses indicated there was still a lack of knowledge among some responders on the specific attributes of the online learning providers used by their district. Approximately 21 percent of the SU/SDs responding to each characteristic question indicated they did not know the answer. This lack of knowledge may simply reflect that the person answering the survey question was not the person who actually acquired the service for the district. The respondent knew the district was using the provider but did not know the details of that use.

Question: The State of Vermont provides grant funds to the Vermont Virtual Learning Cooperative (VTVLC) to support online/blended flexible pathways to SU/SDs. Do you currently use VTVLC services to support online learning opportunities and programs?

- 36 SU/SDs indicated they **did use** VTVLC services.
- 11 SU/SDs indicated they **did not know** whether their district used VTVLC services.
- 6 SU/SDS indicated they **did not use** VTVLC services.

The answers to this question do not align with an earlier question asking SU/SDs to indicate which online service providers they use. In the earlier question, 20 SU/SDs indicated they used VTVLC. The discrepancy may indicate that some districts may not know what services VTVLC offers but they are familiar with the provider's name. Enrollment data provided by VTVLC to AOE indicates that students from 43 SU/SD were participating in online classes.

Question: Vermont SU/SD can partner with VTVLC. Teaching partner districts agree to have at least one teacher facilitate a VTVLC course each year. Non-teaching partner districts do not commit a teacher but partner with VTVLC and receive 10 no-cost student enrollments. Does your SU/SD have a Teaching Partnership Agreement or a Non-Teaching Partnership with VTVLC?

The majority of the SU/SDs responding (24) indicated they did not know the answer to this question. Nineteen SU/SDs indicated they had a teaching partnership agreement with VTVLC and 10 responded that they did not have such an agreement in place.

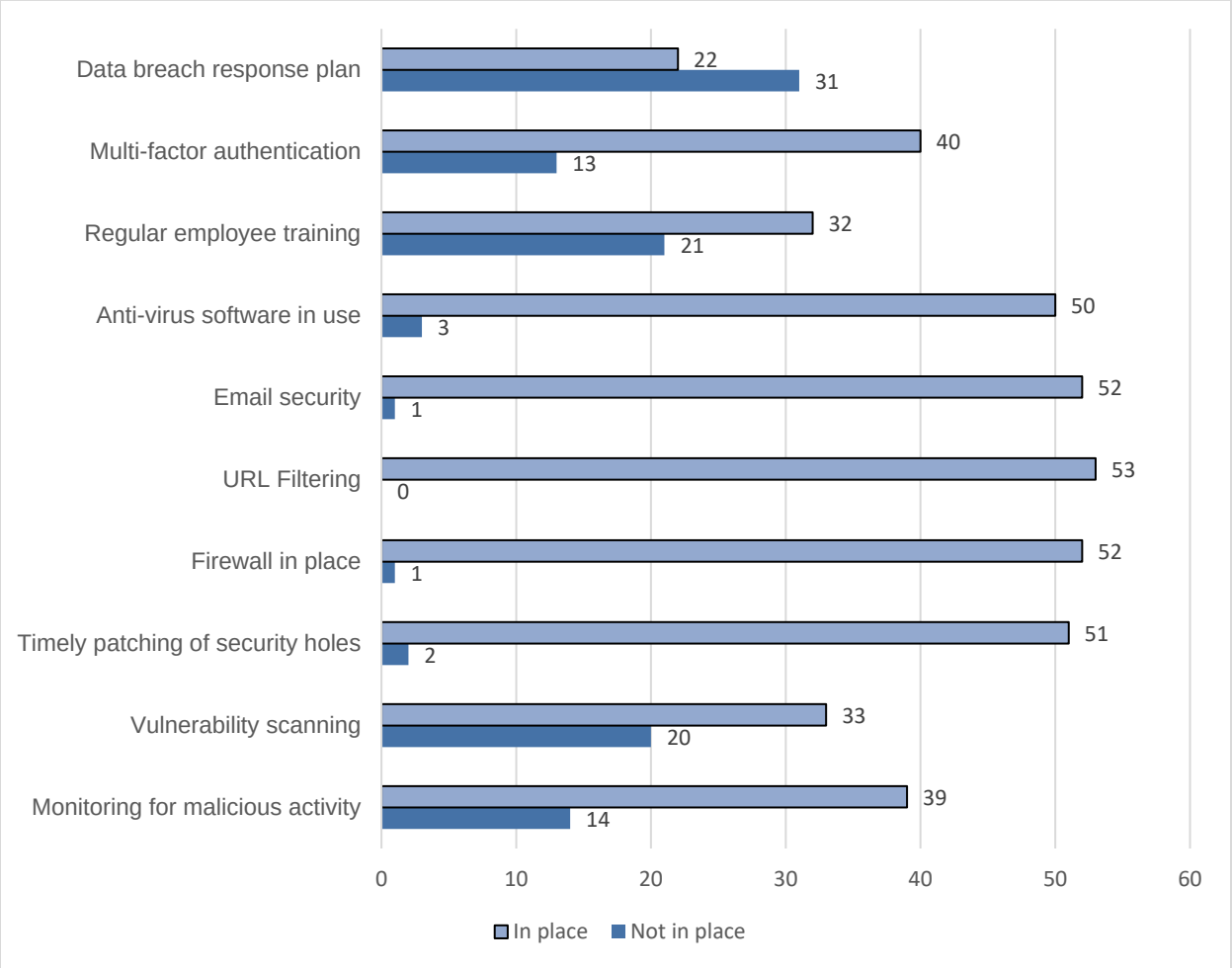
Technology Administration

Questions in this section explore issues and functions that pertain to cybersecurity, student data privacy practices, digital learning plans, and assistive technology.

Cybersecurity and Data Privacy

AOE continues working with Vermont SU/SDs to prepare for cyber incidents. The K12 Security Information Exchange cyber incident map cataloged 1,619 publicly disclosed cyber incidents from 2016 to 2022 involving 1,360 U.S. public K-12 organizations from every state, DC, and American Samoa. Vermont SU/SD are aware of the threat to school networks and are working to secure their systems. The graph below lists industry best practices for creating secure networks and the number of SU/SD who report they have such measures in place.

Figure 12: Cybersecurity Measures Used by Vermont SU/SD



Graph above based on 53 of SU/SD responding.

Table 12: Cybersecurity Measures

Cybersecurity Measures	In Place	Not in Place
Data breach response plan	22	31
Multi-factor authentication	40	13
Regular employee training	32	21
Anti-virus software in use	50	3
Email security	52	1
URL filtering	53	0
Firewall in place	52	1
Timely patching of security holes	51	2
Vulnerability scanning	33	20
Monitoring for malicious activity	39	14

Similar to last year's survey, nearly all SU/SD reported they had anti-virus software, in use, had email security in place, had URL filtering, a firewall in place, and patched security holes in a timely manner. Notable gains were made in the number of SU/SD that had data breach response plans in place. This year's survey showed 42 percent of SU/SD had such plans in place compared to 27 percent in the previous survey. More SU/SD also reported having multi-factor authentication in place. In this year's survey 75 percent of SU/SD had MFA in place compared to 58 percent in the previous survey. The results for vulnerability scanning and monitoring for malicious activity remained proportionally the same from last year.

Question: If you indicated that your SU/SD does not have a data breach response plan, please indicate the barriers to putting such a plan in place. Select "agree" if the barrier listed is preventing your plan.

Table 13: Barriers to a Data Breach Response Plan

Possible Barrier	Is a Barrier	Not a Barrier	Don't Know
Lack of expertise	14	14	3
Lack of funding	13	12	6
Lack of staff time to execute a plan	28	4	1
Lack of administrative support for a plan	8	17	6
There is no need for a plan	2	26	2

AOE continues to work to identify and provide resources to SU/SDs to create a data breach response plan. The first round of an ARP ESSER cybersecurity planning grant, awarded to ten SU/SDs, concluded in December 2023. Policies and plans developed by these districts were shared at a statewide education technology conference. AOE hopes

to release a second round of planning grants to assist more districts in completing a cybersecurity planning process.

Question: If you have a reason why your SU/SD does not have a data breach response plan that was not listed in the previous question, please provide it here.

The responses below reflect common responses to this question but is not a list of all responses.

- "Lack of available IT staff is a real problem. Boards are not willing to spend on additional IT staff so we can only do what we can do with the resources we have. We have rudimentary plans in place that would hopefully get us out of trouble, but nothing officially written."
- "IT Staff for this SU consists of a single person and as such is not able to solely focus all the time on cybersecurity projects and planning--resulting in slowed progress on such projects."
- "The majority of our data is on hosted cloud services, and so there is no need for localized data security. We rely on the hosting company to provide security for our data on their servers."

Question: How important are professional learning and cybersecurity resources to your work to enhance the cybersecurity posture of your SU/SD?

The majority of SU/SD indicated that professional learning and cybersecurity resources were very important to their cybersecurity posture. Ninety-two percent of SU/SD ranked this as "very important." Only three SU/SD indicated this was "somewhat important" and one SU/SD was neutral on this question.

Question: What is the greatest need your SU/SD has in the area of cybersecurity?

Table 14: Greatest Need in Cybersecurity

Greatest Need in Cybersecurity	Greatest Need
Lack of training on security practices for teachers, staff & students	17
Lack of funding for equipment & applications	11
Lack of funding for IT staff	8
Lack of training for IT staff	2
Other (see below)	10
No responses	5

It should be noted that for the area of greatest need, AOE applied for and received a state homeland security grant to provide a training platform for free to all SU/SD. The employee cybersecurity training system will be available to SU/SD in February 2024.

"Other" responses included:

- "Funding, funding, funding ... we just do not have the capability to respond to an intrusion like other private enterprise organizations would."
- "Staffing and budget for security staff. These positions are typically expensive. Without a staff member, a managed SOC would be the next best option, but those are expensive as well."
- "We are set up in the best way to provide security for our network. We have annual upkeep."

Question: Federal laws mandate the protection of student data. In Vermont, AOE supports the Vermont Student Privacy Alliance (VSPA), a collaborative group of SU/SD representatives sharing common concerns around student privacy. Is your SU/SD a member of the VSPA?

The majority of SU/SD indicated they were members of the Vermont Student Privacy Alliance. Eighty-five percent of SU/SD responded were members of the VSPA. Eight SU/SD indicated they were not members. AOE pays the yearly membership fee to the national Student Data Privacy Consortium to enable all Vermont SU/SD who are members of the VSPA to use the national data privacy agreement. This is a legal agreement districts may require software and application vendors to sign before using their product. The agreement establishes rules for collecting any personally identifiable information on students in accordance with federal law.

Question: Does your SU/SD request online application vendors to sign a student data privacy agreement?

Sixty-four percent or 34 of the responding SU/SD indicated they do require vendors to sign an agreement. The remaining 19 SU/SD do not require such signed agreements from vendors before using their applications with students. This response reflects the difficulty some SU/SD have in allocating staff time to manage data privacy agreements. An SU/SD may be a member of the VSPA but not be able to systematically pursue signed agreements with all their vendors. Currently, 27 SU/SD are members of the non-profit organization called The Education Cooperative (TEC). TEC provides schools and districts with administrative and legal support to negotiate privacy terms with their software vendors. TEC charges a per-student fee for their services. SU/SD who use TEC services report greater ease and efficiency in securing signed agreements with vendors and keeping such agreements up to date.

Digital Learning and Digital Literacy

Digital learning plans are no longer required by the state or other entities. However, AOE supports the creation of such plans by SU/SDs and monitors such planning among the districts.

Question: A digital learning plan is a guide for how your SU/SD will support digital learning. Digital learning is any instructional practice that effectively uses technology to strengthen a student's learning experience. Does your SU/SD have a digital learning plan in place?

- 18 SU/SDs **have** a digital learning plan in place.
- 35 SU/SDs **do not have** a digital learning plan in place.

Question: If you have a digital learning plan, how often is the plan updated?

Among those SU/SDs that reported having a digital learning plan in place, below is how often those plans are updated.

Table 15: Digital Learning Plan Update Timeframe

Timeframe	Number SU/SDs
Every year	4
Every 2-3 years	10
Longer than 3 years	5
Never updated	1

Digital literacy is the ability to navigate, consume, create, and communicate online information appropriately in the digital world. Recently, applications using artificial intelligence (AI) have spurred conversation regarding its use in education. Applications utilizing AI include ChatGPT and Google Workspace's Duet AI.

Question: Have the schools in your SU/SD released any policies or notices regarding the use of AI in instruction? If yes, what has been released?

- 50 SU/SDs **did not** have policies on the use of AI in instruction.
- 3 SU/SDS **did have** policy on the use of AI in instruction.

SU/SDs that did have a policy or notice had incorporated the information within existing policies and documents. One district included AI use information into their acceptable use policy that is signed by anyone within the school with an assigned device. Another district places AI use information in their student handbook under student conduct and in academic integrity.

Question: How are schools in your SU/SD approaching AI?

Below is a list of the presented options and the number of responses.

Table 16: How SU/SD Approaching AI

Approach	Agree	Disagree
Educators & administrators are enthusiastic.	12	32
Educators & administrators are proceeding cautiously.	40	7
There are concerns regarding AI facilitating student cheating.	43	3
Individual educators are using AI applications for instruction.	24	21
New programs are planned to use AI applications.	8	34
Professional learning is planned for educators on the use of AI applications.	11	32
AI applications are banned from school devices.	5	39

The data reflects a cautious investigation by teachers and administrators of the responsible use of AI technology within the educational environment. It should be noted that this data is from the 2022-2023 school term, a time when generative AI applications such as Chat GTP were garnering headlines with concerns regarding student cheating and misinformation. While a minority of SU/SD were instituting training in AI applications in 2022-2023, more training resources have emerged nationwide and within the state. As of the writing of this report, AOE is working with the International Society for Technology in Education (ISTE) to facilitate a statewide educator cohort to complete an eight modular course titled “Artificial Intelligence Explorations and Their Practical Use in Schools.” Other Vermont education organizations are also offering sessions within state conferences on AI as educators continue to build their teaching expertise in this area.

Assistive Technology

Question: Recently, a new statewide assessment platform was introduced. (Cognia) Based on this first administration, what suggestions might you make to improve next year's administration of the state summative assessments in regard to assistive technology and student access?

The education technology directors and IT managers within SU/SD play a key role in administering the assessment within their schools each year. AOE wanted to solicit additional feedback from this group regarding improvements that could be made for the upcoming administration of the summative assessment. Twenty-seven SU/SD offered feedback and suggestions. General areas of note were:

- Training and testing should be provided earlier to SU/SD;

- Plan now for an earlier rollout of credentials;
- Investigate how to streamline the use of passwords;
- Limit SU/SD viewing of students to only those students within the assigned district;
- Additional information is needed on how the assistive technology works with the system and time to practice using the needed tools; and
- Improved support and communication from the test vendor.

Technology Standards

In 2017, the Vermont State Board of Education adopted the International Society for Technology in Education (ISTE) Standards for Student Learning. These standards focus on student-driven processes that empower a student to take an active role in using technology and become a knowledgeable digital citizen, computational thinker and innovative designer, and a creative global communicator and collaborator. The questions in this section examine how schools continue to work to embed ISTE standards into curriculum and solicits experiential comments illustrating technology use. ISTE standards may be viewed at ISTE Standards for Students | Agency of Education (vermont.gov).

Question: How are the schools in your SU/SD integrating ISTE standards into the curriculum? Below are options. Please indicate for each option whether it is something your schools are commonly doing.

Table 17: ISTE Standards Use in Schools as Reported by SU/SD

ISTE Standards Use in Schools by SU/SD	Done Routinely	Not Done	Don't Know
Schools have a specific technology curriculum with ISTE standards.	16	23	14
Teachers encouraged to incorporate ISTE standards into class curriculum.	23	17	13
Instructional coaches help teachers incorporate ISTE standards into their lessons.	15	19	19
ISTE standards are embedded in the instruction on new devices & platform uses.	9	24	20
Schools offer teachers professional development on ISTE standards.	7	28	18

This survey noted some gains in ISTE standards integration. More SU/SDs indicated their schools had specific technology curriculum that incorporated ISTE standards than the previous year's survey. This survey, 16 SU/SDs indicated such ISTE integrated technology curriculum compared with 13 SU/SDs last survey. However, there remained a large number of SU/SD respondents that did not know the answers to these

questions. AOE will examine whether these questions would be better directed to curriculum directors rather than education technology directors for future surveys.

Question: How has technology education been leveraged in your SU/SD to teach students how to use technology in meaningful ways?

Below are some of the responses to this open-ended question. Similar answers were only shared once.

- "For the 22/23 school year there is a refreshed attempt to leverage technology education in the regular classroom rather than through dedicated technology classes. The idea is that students will learn technology skills in the context of the content they are learning and will see the benefits of learning technology alongside the core curriculum."
- "Most technology education occurs during library/media class and electives in middle school."
- "Meaningful ways are based on the principles of Digital Citizenship."
- "ISTE standards are incorporated into both regular classroom instruction and Library/Media class that students have K-6. For grades 7 and up, students have ISTE standards as supporting standards in their content classes."

Computer Science

Computer science addresses the theory and methods of processing information in digital computers, the design of computer hardware and computing applications. AOE will use the following information to better understand the work and needs of schools for further instruction in this area.

Question: Regarding computer science and STEAM activities, please indicate what activities the schools in your SU/SD provide.

Table 18: School Activities in Computer Science & STEAM as Reported by SU/SD

Activities	Offer	Do Not Offer
After school computer club or related club	31	16
Computer club during school	13	32
Extended learning opportunities	31	10
FIRST Lego League Challenge	19	22
Hour of Code activities	42	8
Other coding activities during the course of the year	42	4
Makerspace (in school or community)	47	3
Robotics	40	8
Summer offerings-camps	27	16

Like previous surveys, the most popular activities offered within schools were Hour of Code, robotics programs and makerspaces. Hour of Code is promoted annually in December by AOE as part of the nationally observed Computer Science Education Week. Hour of Code is sponsored by the non-profit Code.org organization, whereby educators are encouraged to hold a one-hour coding activity to introduce students to computer science. A makerspace is a collaborative workspace inside a school, library or separate public/private facility for making, learning, exploring and sharing that uses a wide range of technical and non-technical materials for creative projects.

Question: Does your SU/SD offer computer science courses as defined as the science that deals with the theory and methods of processing information in digital computers, the design of computer hardware and computing applications? If so, what grade ranges are computer science courses available?

As has been in previous surveys, a majority of SU/SDs indicated schools in their districts offered computer science courses. Fifty-seven percent of SU/SDs reported offering courses and 43 percent indicated their districts did not offer such courses. The most common grade level where students were offered computer science courses was at the high school level. Twenty SU/SDs indicated such courses were available at the high school level. Seven districts indicated they offered computer science courses at the middle school level and two districts reported courses were offered at the elementary level. Only one SU/SD indicated they offered computer science courses to students at all grade levels.

Question: Would educators and administrators in your SU/SD be supportive of computer science standards to guide (not mandate) instruction for those schools offering computer science classes? Why or why not?

The majority of SU/SDs favored having computer science standards in place to guide instruction. Seventy-two percent indicated they would be supportive of having such standards established, not as a mandate, but as a guide. Reasons for this support are indicated in the following remarks.

- “We use standards to drive all of our instruction and absent standards provided by the state, we look to national standards.”
- (Standards would) “help ensure we are administering best practices.”
- “Standardization across schools could increase opportunities.”
- “Teachers would be fine with it, so long as they have the support, knowledge, and confidence to implement these standards into their own classes. . . Using Code.org's CS Discoveries or the like (free w/training) teachers would feel competent to teach standards.”

Question: What professional learning or other resources would assist your SU/SD in the area of technology?

This open-ended question garnered a wide variety of responses. Below are some of the remarks. Comments that were repeated are listed only once.

- "Anything that lightens the load and builds statewide knowledge of a platform or solution."
- "Additional funding to support Digital Citizenship and safe online practices for students and employees."
- "A lot of device specific work and technology integration PD."
- "More standardization, with deep supports, on foundational tools and resources: state-wide SIS, state-wide finance software, purchasing contracts with Dell and Apple."
- "Cybersecurity training."
- "Funding for additional staff would greatly increase our ability to proactively assist learning AND administration."
- "Integrating computer science across the curriculum."
- "The biggest leverage point would be a more targeted effort in terms of PD for incorporating technology standards into their curriculum and instruction."
- "ChatGPT and AI for educators."
- "There is a concern that many educators are not digitally literate or digitally competent. Some struggle with classroom management when students have devices. They request that IT put restrictions and blocks in place which is not usually effective."

Appendix A: Annual Technology Survey Questions

AOE utilizes a survey platform called Cognito. Cognito enables online surveys to be coordinated at the SU/SD level. The format of the survey does not lend itself to a simple numerical progression of questions. Rather, depending on the response to certain questions, a respondent would be directed to a different screen to continue the survey. Below are the questions presented within the survey. Not all drop-down options are listed. Where applicable, drop-down options are represented in the main body of this report as the results are reported.

AOE Tech Survey 2023 – (Fall 2022 through September 2023)

Please complete by September 1, 2023. This survey gathers information about education technology in supervisory unions/districts and schools for the just concluded 2022-2023 school year. The information is a tool AOE uses to determine how technology is supporting student-centered learning. The survey is in five main parts: school specific data; district-wide connectivity information; tech platform functions; tech administration; and survey conclusion. For the school specific data, please add as many schools per supervisory union as you are speaking to.

- Name
- Email
- Phone
- What is your Supervisory Union or District?
- What is your title?
- Are you the primary contact for technology related matters at your SU/SD?

School specific data (Complete this section for All Schools in your SU by clicking “Add School”)

- What is the name of your school?
- Which option most accurately describes the one-to-one status in your school?
- Does your one-to-one program allow students to take a device home?
- Does your school have the technology to support your academic programming?
- If you answered no, your school does not have the technology to support your academic programming, please indicate what technology is needed.
- How many total devices are currently available for school use?
- Please provide an estimate percentage (%) by type of devices your school has for student use. (Please note that this question asks for percentages as opposed to whole numbers and the percentages need to add to 100%)
- What capabilities are there in your school for in-classroom video/audio?
- Does your school currently have a Bring Your Own Device (BYOD) policy?

District Wide Information: Internet Service Provider, Wi-Fi, Connectivity Information

The remaining questions speak to district wide information.

- Who is the primary Internet Service Provider for this school?
- What is the primary connection type for schools in your SU/SD to connect to the Internet?
- What is the current upload speed for schools in your SU/SD (as advertised by your provider)?
- What is the current download speed for schools in your SU/SD (as advertised by your provider)?
- Do the schools in your SU/SD provide "guest" or "public" Wi-Fi access?
- If schools in your SU/SD provide "guest" or "public" Wi-Fi, please select the option below that best describes the area served by the Wi-Fi.
- Is there another location in the community to access free Wi-Fi?
- What is the typical cell phone coverage at the schools in your SU/SD?
- Post-pandemic, rate how important home internet access is in your school communities for your schools to fulfill their educational mission?
- Please provide the reason for your ranking here.
- Does your SU/SD or individual schools track student home broadband access?
- If yes, you do track home broadband access, select the option that best describes how your SU/SD or individual schools learn about this lack of connectivity.

Technology Platforms & Functions

- Which technology platform do the schools in your SU/SD use for an SIS? A Student Information System is a software platform used to manage student data. Listed below are online platforms previously reported to the AOE as in use within Vermont schools. Please indicate by each platform whether your school is using it as an SIS. If you are not using an SIS indicate that in the next question.
- If you indicated “other” for your SIS, please enter the platform name.
- Do the schools in your school district currently utilize your SIS to monitor when students may need additional support?
- Which technology platform(s) do the schools in your SU/SD use for an LMS? A Learning Management System is a software application for the delivery of educational courses or learning and development programs. Listed below are online platforms previously reported to the AOE as in use within Vermont schools. Indicate by each platform whether your school is using it as an LMS.

Google Workspace for Education is now listed as an LMS option.

- If you indicated “other” for your LMS, please enter the platform name.
- Google Workspace for Education is a popular application used by many Vermont schools. Please indicate for each application the PRIMARY use of the program by schools in your SU/SD.
- Please share any additional information you would like about your SU/SD use of Google Workspace for Education.
- Which technology platform(s) are students in your SU/SD using to develop their Personalized Learning Plans (PLPs)? Listed below are online platforms previously reported to the AOE as in use within Vermont schools. Please indicate by each platform whether your school is using it to manage PLPs.
- If you indicated “other” for your PLP development, please enter the platform name.
- Have schools in your SU/SD invested in Online Teaching Specialist certification for teachers?

Defining Online Learning

For this survey, online learning is defined as an online or blended course that has been purposely designed for online teaching using online learning design principals and teachers trained in the delivery of online instruction. NOTE: Applications, supplementary services, and platforms are not online learning providers. (*Centre for Innovation in Teaching and Learning: Remote vs. Online Instruction*)

- Do you use an online learning provider to support your educational process?
- If you do use an online learning provider, list your provider.
- If you do use an online learning provider, how are you using the provider?
- Below are characteristics of online learning providers. Select “agree” for each characteristic that describes your provider.
- The State of Vermont provides grant funds to the Vermont Virtual Learning Cooperative (VTVLC) to support online/blended flexible learning pathway to SU/SDs. Do you currently use VTVLC services to support online learning opportunities and programs?
- Vermont SU/SD can partner with VTVLC. Teaching partner districts agree to have at least one teacher facilitate a VTVLC course each year. Non-teaching partner districts do not commit a teacher but partner with VTVLC and receive 10 no-cost student enrollments. Does your SU/SD have a Teaching Partnership Agreement or a Non-Teaching Partnership with VTVLC?

Technology Administration

Cybersecurity & Data Privacy

- Schools are increasingly the focus for attacks by cyber criminals. Listed below are measures SU/SD can take to improve their cybersecurity posture. Please indicate your SU/SD actions for the following measures.
- If you indicated that your SU/SD does not have a data breach response plan, please indicate the barriers to put such a plan in place. Select "agree" if the barrier listed is preventing your plan.
- If you have a reason why your SU/SD does not have a data breach response plan that was not listed in the previous question, please provide it here.
- How important are professional learning and cybersecurity resources to your work to enhance the cybersecurity posture of your SU/SD?
- What is the greatest need your SU/SD has in the area of cybersecurity?
- Federal laws mandate the protection of student data. In Vermont, AOE supports the Vermont Student Privacy Alliance (VSPA), a collaborative group of SU/SD representatives sharing common concerns around student privacy. Is your SU/SD a member of the VSPA?
- Does your SU/SD request online application vendors to sign a student data privacy agreement?

Digital Learning & Digital Literacy

- A digital learning plan is a guide for how your SU/SD will support digital learning. Digital learning is any instructional practice that effectively uses technology to strengthen a student's learning experience. Does your SU/SD have a digital learning plan in place?
- If you have a digital learning plan, how often is the plan updated?

Digital literacy is the ability to navigate, consume, create and communicate online information appropriately in the digital world. Recently, applications using artificial intelligence (AI) have spurred conversation regarding its use in education. Applications utilizing AI include ChatGPT and Google Workspace's Duet AI.

- Have the schools in your SU/SDs released any policies or notices regarding the use of AI in instruction?
- If yes, what has been released?
- How are the schools in your SU/SD approaching AI? Below is a list of options.

Assistive Technology

- Recently, a new statewide assessment platform was introduced (Cognia). Based on this first administration, what suggestions might you make to improve next year's administration of the state summative assessments in regard to assistive technology and student access?

Technology Standards & Computer Science

In 2017, the Vermont State Board of Education adopted the International Standards for Technology Education. These standards outline what Vermont students should know and be able to do with respect to information technology and will guide and inform the work of schools as they prepare students for college and careers that have been dramatically transformed by information technology.

- How are the schools in your SU/SD integrating ISTE standards into the curriculum? Below are options. Please indicate for each option whether it is something your schools are commonly doing.
- How has technology education been leveraged in your SU/SD to teach students how to use technology in meaningful ways?
- Regarding Computer Science and STEAM activities, please indicate what activities the schools in your SU/SD provide.
- Does your SU/SD offer computer science courses as defined as the science that deals with the theory and methods of processing information in digital computers, the design of computer hardware and computing applications?
- What grade ranges are computer science courses available?
- Would educators and administrators in your SU/SD be supportive of computer science standards to guide instruction for those schools offering computer science classes?
- Please provide a brief answer as to why your SU/SD would/would not be supportive of CS standards to guide instruction.
- Who is the primary contact for computer science curriculum in your SU/SD?

Concluding Comments

- What professional learning or other resources would assist your SU/SD in the area of technology?