

Annual Technology Survey Results 2019

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The Annual Technology Survey, administered statewide each year in June, gathers information about schools' technology programs, and provides vital data that informs legislative and ongoing media requests, various reporting within school systems, and general information for schools and the public on the current state of technology in Vermont schools. Data are collected via a simple survey tool and respondents are asked to anticipate this "current state" as of September 1 of the collection year. The collection regularly gathers a large amount of data, and typically gets over 98% of targeted entities reporting, with only a small handful of entities not submitting data. The survey results below represent all public schools, and the majority of the regional CTE centers. For this year, 11 CTE centers and 259 schools reported. This report summarizes the data for combined 270 schools and CTE centers in Vermont who responded. Typically, this survey is completed by either a Principal at the school, a Technology Director/Coordinator at the school, or at the SU level.

Please refer to Appendix for the actual survey deployed.

The results are reported in the order they occur in the survey. The areas of the survey have been organized into sections; Broadband Connectivity, One to One Program Status, Overall Devices for Student Use, and Other.

The results in this report are statewide, aggregate results. Interested parties may request the individual school/CTE center data results in spreadsheet format. Personal data is not included in this report. That data is maintained by the Agency for reference and program development purposes only. The Vermont Agency of Education considers the SETDA standards, originally released in 2012, and updated in 2019, the goal for available broadband, that we would like all schools to reach. The SETDA standards (both past and present sets) are as follows:

Broadband Access for Teaching, Learning and School Operations	2014-15 School Year Target	2017-18 School Year Target
An external Internet connection to the Internet Service Provider (ISP)	At least 100 Mbps per 1,000 students/staff	At least 1 Gbps per 1,000 students/staff
Internal wide area network (WAN) connections from the district to each school and among schools within the district	At least 1 Gbps per 1,000 students/staff	At least 10 Gbps per 1,000 students/staff

2019 Updated Targets:

2023-24 Targets	
Small Districts	At Least 2.8 per User (Min 300 Mbps per District)
Medium Districts	At least 2 Mbps per User
Large Districts	At least 1.4 Mbps per User

This year's survey results indicate we are getting very close to meeting the SETDA standards. The SETDA standards are nationally based and while some of our small schools may feel the standards are challenging, the Agency of Education continues to advocate meeting these standards. The Vermont Agency of Education, observing recent national trends and reflecting on the data within this report, urges *all* schools in Vermont to focus their energies on the acquisition of the highest speed broadband data that is possible in their region or community. We have already seen more services and software moving to a "cloud-based" environment and technology continues the trend of moving away from the reliance on powerful desktop machines, to mobile devices using powerful Internet connections to access software, tools, resources, and services. The reliance on streaming video, real-time data, and other cloud-based information continues to grow and will continue to do so into the future. We encourage schools to prepare for that future and avoid limits on instructional activities to promote, ultimately, student success.

Questions about information contained in the other sections of this report should be directed to Peter Drescher, State Director of Education Technology, at the Vermont Agency of Education, peter.drescher@vermont.gov, or 802-828-6956.

Broadband Connectivity

This first section of results are in response to survey questions regarding broadband connectivity.

1. Survey Question: *What is the primary Internet Service Provider (ISP) for this respondent?*

Figure 1: *What is the primary Internet Service Provider (ISP) for this respondent?*

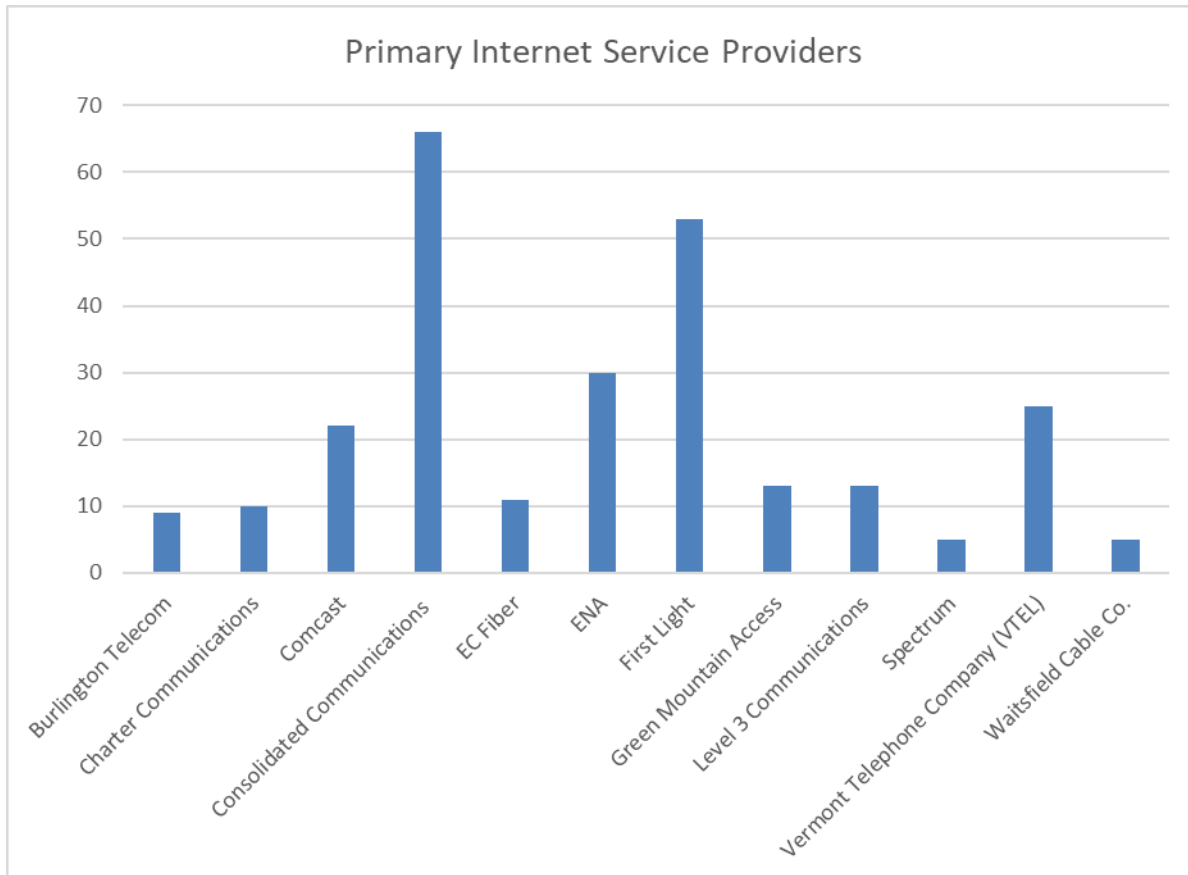


Chart represents ISP categories with over 3 responses. Total number of respondents (n) = 270

2. Survey Question: *What is the primary connection type this respondent uses to connect to the Internet?* (Note: We ask this question because Fiber connections represent the highest quality for connection for respondents.)

Results:

- 249 respondents report Fiber as their primary connection type.
- 15 respondents report Cable as their primary connection type.
- 2 respondents report DSL (or Digital Subscriber Line) as their primary connection type.
- 3 respondents reported "Other"

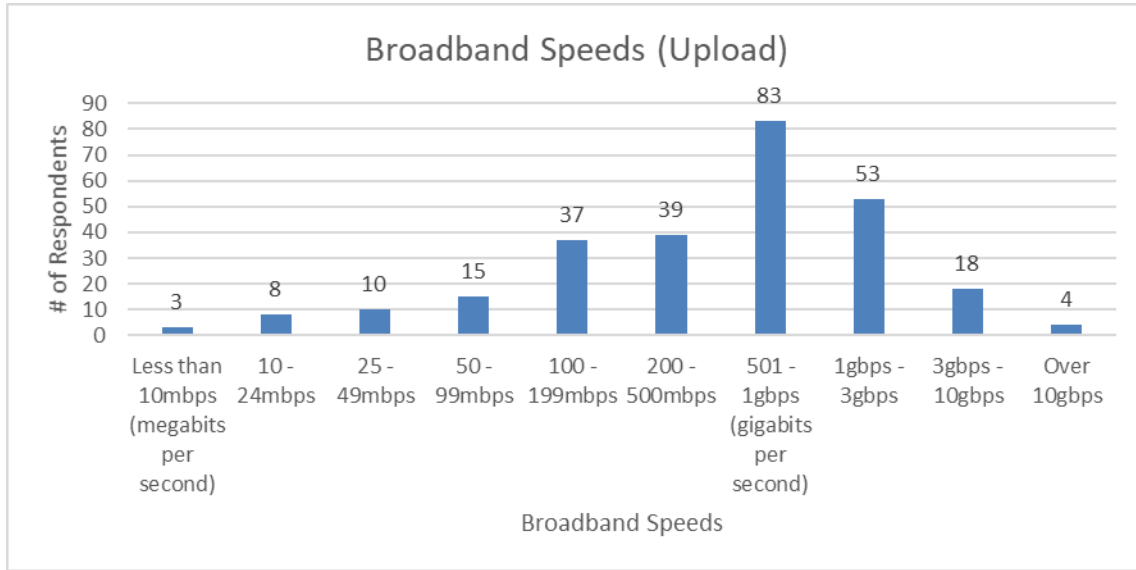
Further analysis shows the Fiber category breaks down in this manner:

- 120 respondents report Direct Fiber to the building
- 129 respondents report Shared Fiber indicating a shared connection between buildings.

As more Fiber becomes available in more rural locations, we anticipate the number of Fiber connections to increase.

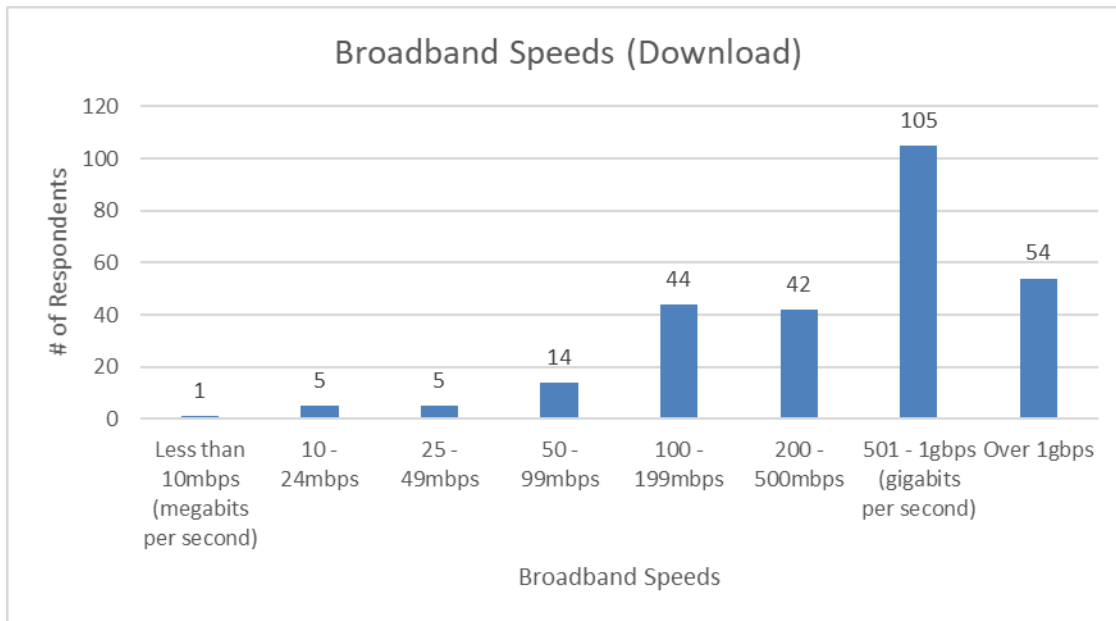
3. Survey Question: *What is your current upload speed (as advertised by your provider?)*

Result:



4. Survey Question: *What is your current download speed (as advertised by your provider)?*

Result:



5. Survey Question: *Is your connection shared?*

Results:

157 respondents report a shared connection with multiple schools (at least the reporting school and one other).

The remaining respondents have a dedicated connection to the building.

6. Survey Question: *Does your school provide "Guest" or "Public" WiFi access? (As of 2016 we know that all VT schools have WiFi access for students)*

Results:

- 28 reported they had no Guest or Public Wifi access
- 18 reported "yes," but only in selected parts of the building
- 224 reported they had Guest or Public WiFi access throughout the building

7. Survey Question: *What is the typical cell phone coverage at the school?*

Note: This question is asked to ascertain the viability in the future of phones being used as instructional tools or resources. It also gives a sense of the viability of using cell towers as access to the Internet for schools. This in turn relates to addressing the "homework gap" whereby students can gain access to the Internet from home on school devices via a local cell tower signal. Four schools did not respond to this question.

Results (organized by answer choices made available in survey):

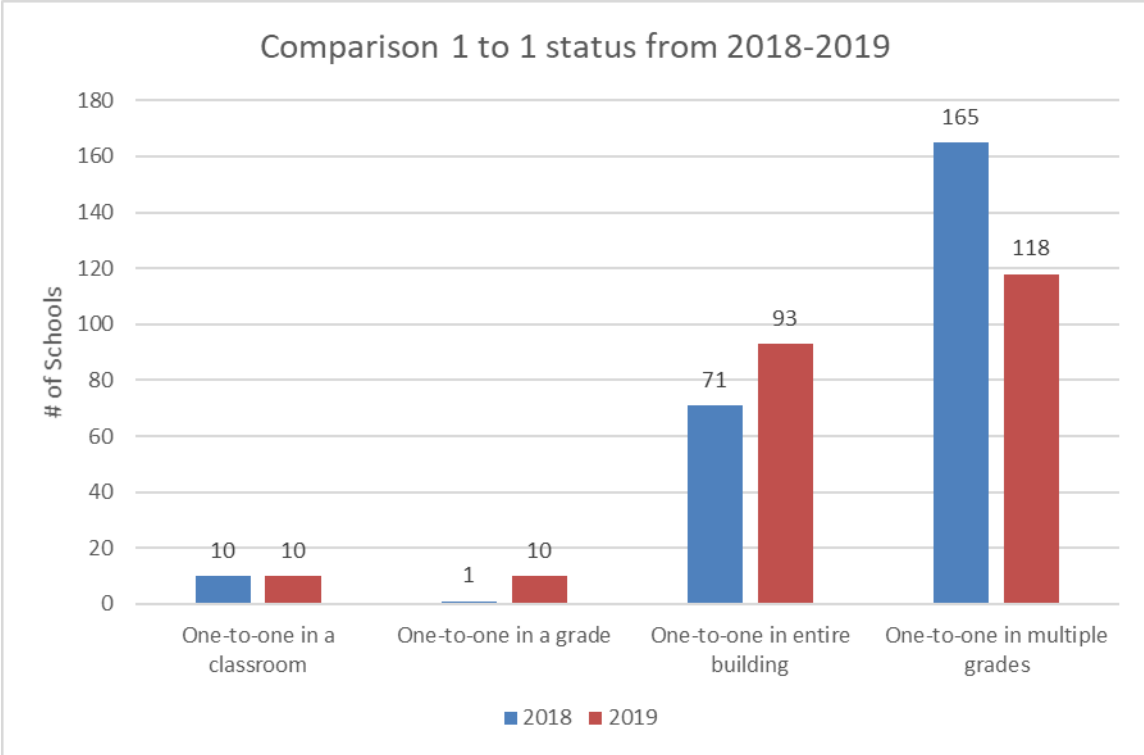
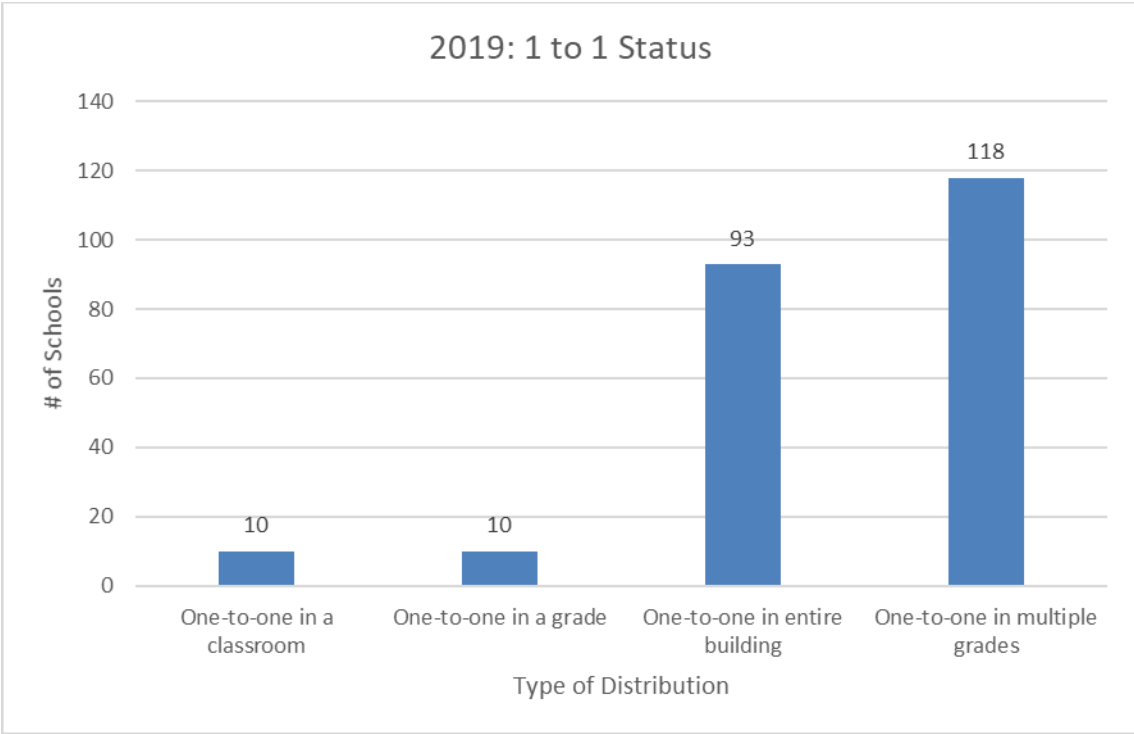
- 97 respondents reported that cell phone coverage is "spotty" at the location. Various networks have accessibility but throughout the location are "dead spots."
- 31 respondents reported that cell phone coverage is available but consistently poor. Coverage is there, but not relied upon. May mean there are days when it is completely unavailable.
- 34 respondents reported that cell phone coverage is good for certain networks only. AT&T, Verizon, or Sprint may exclusively be the most reliable.
- 52 respondents reported that cell phone coverage is good throughout the building. Can be relied upon.
- 52 respondents reported that cell phone coverage is regularly unavailable. For the most part cell coverage is not viable in these locations.

One-to-One Program Status

One-to-one (1:1) 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 device may or may not go home with the students depending on the individual school policy. The advent of Chromebooks -- inexpensive, cloud-based machines that are easily managed -- has helped to expand one-to-one computing at schools.

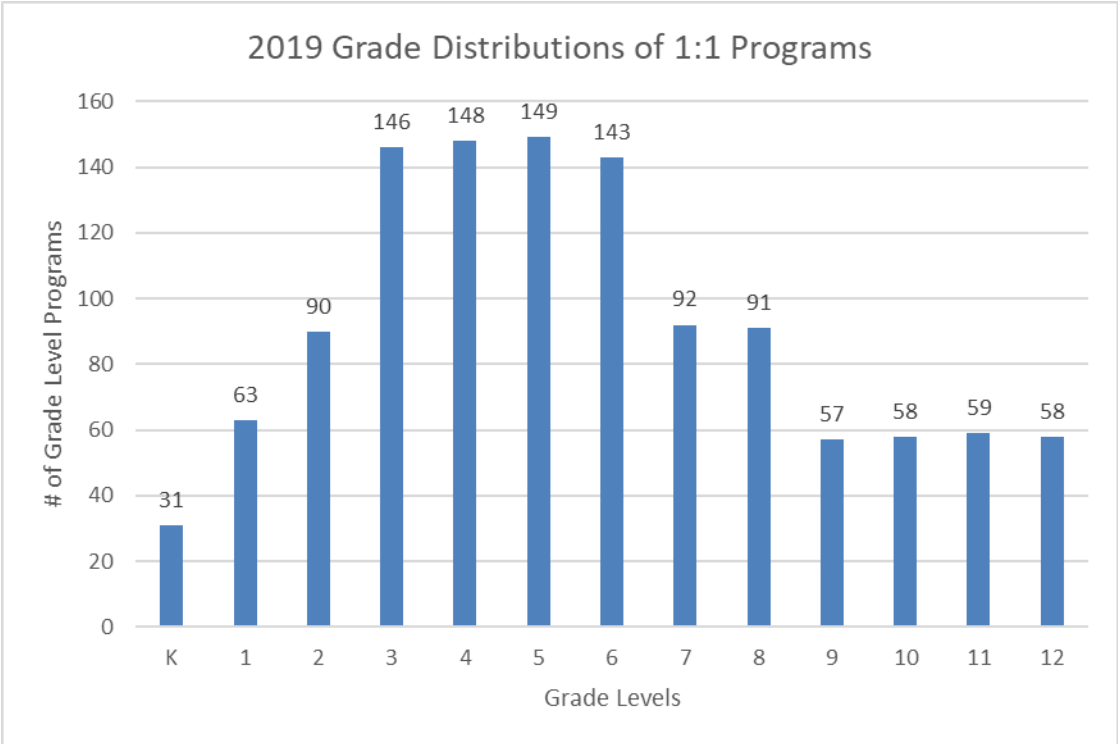
1. Survey Question: *Please select all grade levels where one-to-one activities are in place.*

Within this question, there was a breakdown for participants to indicate the extent to which this was present in their school. That data is represented in the graph below. (A further question had respondents indicate in which individual grade levels one-to-one was taking place. Those data are represented further along in this report.)



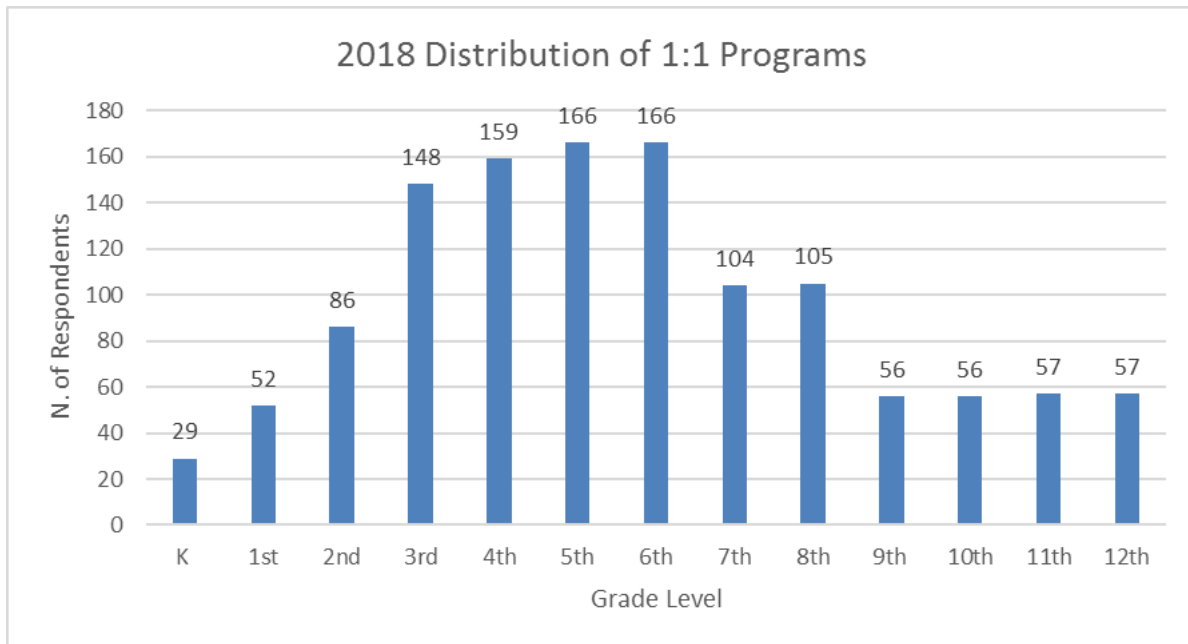
Comparison status from 2018 to 2019

Growth of 1:1 programs has remained fairly consistent, with nominal growth in situations where the entire building was impacted. We had fewer respondents in our latest collection, and deduce that the lower numbers correlate with the number of schools not reporting. Overall, the trend is that growth of 1:1 programs is leveling off or that we are seeing saturation of devices (see overall device count).



Grade Distribution of 1:1 programs

Not surprisingly, most of the 1:1 programs fall in the Middle grades, a segment of schooling that often allows for flexibility in scheduling and overall program scope. Overall, a consistent pattern of more 1:1 programs being added is evident compared to 2018 (below).



Overall Devices for Student Use

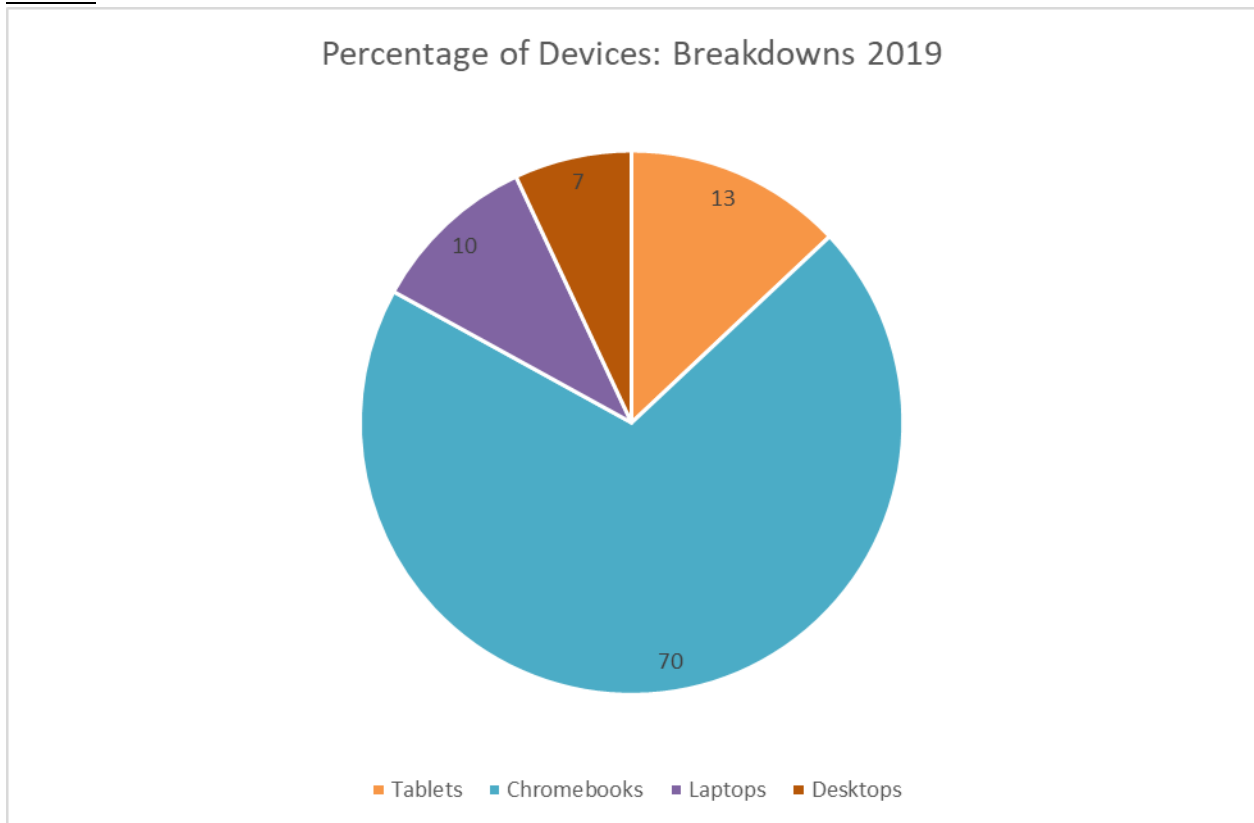
2. Survey Question: *How many TOTAL devices are currently in place at the school for student use?*

Results: In 2019, 84,857 devices for student use were reported.

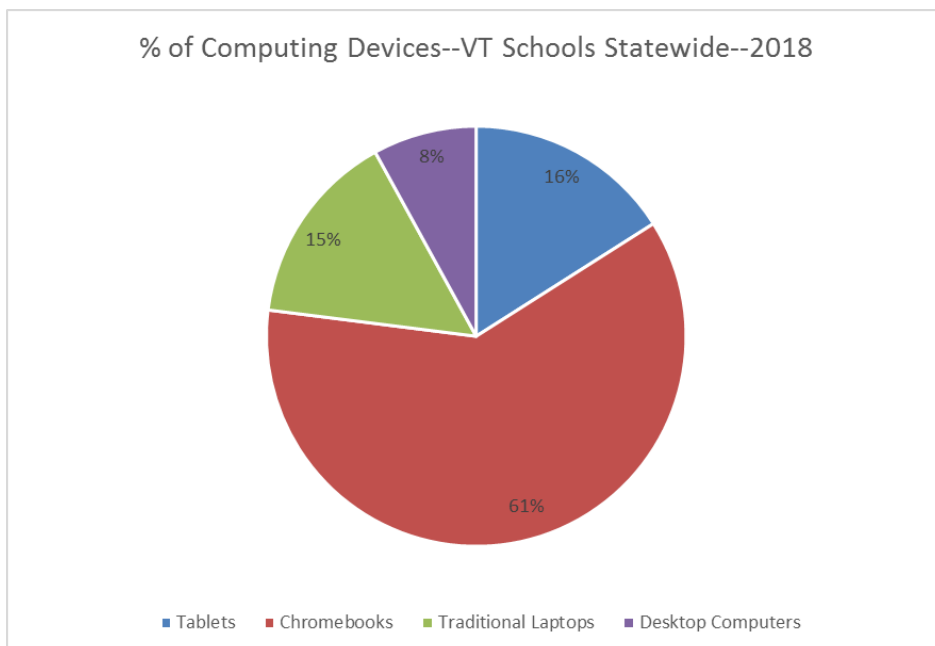
This number has essentially leveled off, as 2018 results indicated approximately 87,000 devices. School year 2016 marked the point where our device count exceeded the student population in our K-12 public schools. Our public school population for 2019 is approximately 84,000 students.

3. Survey Question: *Please estimate the total percentage (%) of devices your school has for student use in each category.*

Result:



Note that almost three quarters of the computing devices available to students are Chromebooks. Since the advent of these devices, their steady increase in numbers has been significant. Several factors came into place in Vermont that increased their use and acceptability; broadband access to schools had a significant boost in 2014-15, remote management of the devices helped streamline updates, repairs, and Smarter Balanced Assessments (SBAC) deployment, and the price point is attractive to schools. The continued reliance and acquisition of these devices is reflected when comparisons are made to 2018 data below:



Additional Questions related to Educational Technology Program

4. Survey Question: *Does your location currently have a Bring Your Own Device (BYOD) policy?*

Results:

- 184 respondents report “No”
- 71 respondents report “Yes”
- 14 respondents report “Unknown”

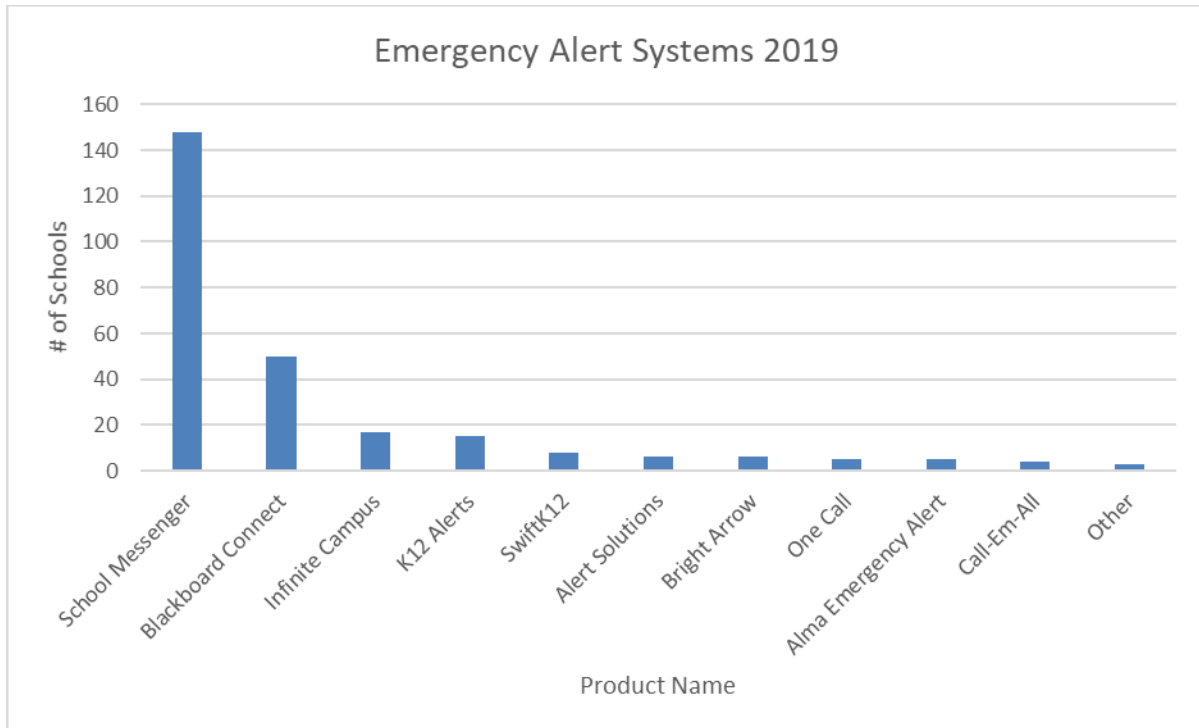
5. Survey Question: *Approximately what percentage (%) of your IT services are currently situated in the cloud?*

Results:

- 88 respondents report between 50 and 75% of IT services reside in the cloud
- 147 respondents report between 80 and 100% of IT service reside in the cloud
- 10 of the 147 reporting above say they are at 100%

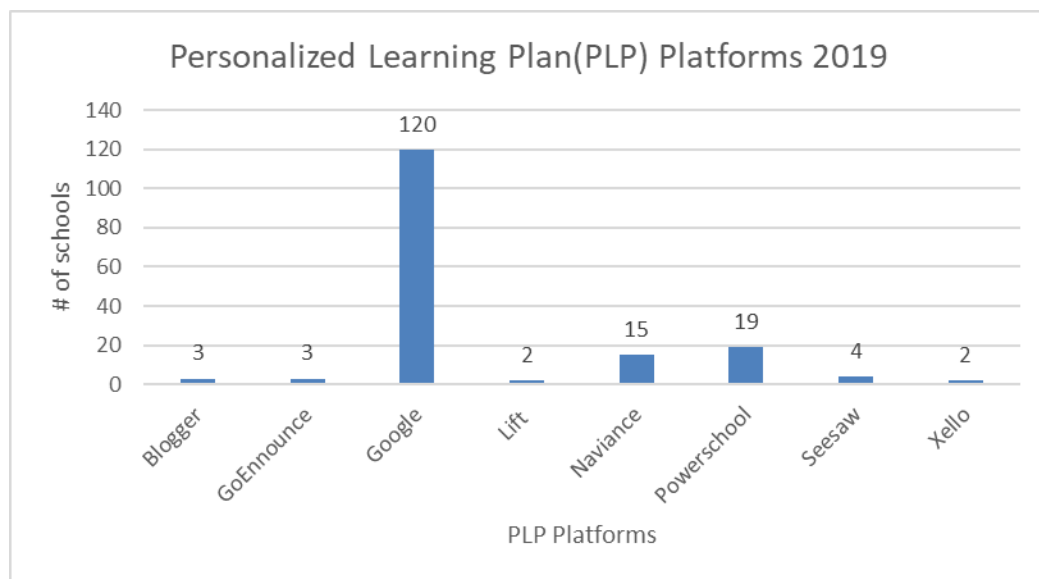
6. Survey Question: *What commercial tool, if any, do you use for communication with your community in the event of an emergency?*

Results:



1. Survey Question: *What technology platform is your school using to support your work with Personalized Learning Plans?*

Results:



Not all respondents are represented here, as they may be a school not mandated at this time through Act 77 to develop Personalized Learning Plans with students. Schools represented by data above are likely to be schools that have begun or are in the process of adhering to Act 77 or the Flexible Pathways legislation of 2013.

Virtual Learning

7. Survey Question: *How many students take online courses through a provider other than Vermont Virtual Learning Cooperative? Note: Approximately 1150 students take online courses outside of the Vermont Virtual Learning Cooperative. Most of those take courses through Virtual High School, based in Maynard, MA*

Results:

Other online providers indicated include the following:

- Edgenuity
- Edmentum
- Khan Academy
- PLATO
- Modern State
- E-Achieve
- Keystone
- Brigham Young University (BYU Online)
- Odysseyware
- Middlebury Interactive Languages
- Virtual Learning Academy Charter School (VLACS)

8. Survey Question: *What support would be helpful to you/your staff in continuing to develop the connections between personalized learning and technology?*

Possible responses	Number of respondents
A PLP Platform Fair at which participants could preview products and interact with vendors	113 indicated this response
An online/face-to-face/hybrid Professional Learning Community or network	108 indicated this response
Focus groups organized by region or other means to inform/co-develop resources and technical assistance	119 indicated this response

Other comments included:

- Provide a common platform that is selected by the State
- Select a platform that syncs with Student Information Systems
- Samples via the AOE of the way PLP’s can be presented and curated.
- Survey Question: *In 2017, the Vermont State Board of Education adopted the International Society for Technology in Education (ISTE) Standards for Students for Education Technology. This “adoption” of those standards allows schools the flexibility to utilize those standards however, it sees fit in strengthening an education technology program. It is recommended that schools make those standards available and encourage the use of them by educators as they work with students. In 2018, there are plans to move forward with adopting the ISTE Teacher (released in 2017) and Administrator (released in June of 2018) standards with the same intent (this was NOT accomplished in 2018); use and adoption at the local level. The State Board of Education wishes to understand if schools are currently using the ISTE standards as their local standards. Please indicate below the current situation at your school.*

Results:

Possible responses	Number of respondents
My school has ALWAYS relied on the ISTE standards in all of its iterations	34 indicated this response
My school is taking steps and developing Prof. Dev. to make students and educators aware of the ISTE standards	128 indicated this response
My school uses other standards or the Transferable Skills in lieu of using/introducing ISTE standards as well	97 indicated this response
My school is not using any ISTE standards	15 indicated this response
What are the ISTE Standards?	5 indicated this response

9. Survey Question: *Regarding Computer Science and STEM activities, please check all that apply in terms of activities the school provides for students:*

Results:

- 176 respondents took part in Annual Hour of Code activities
- 139 respondents took part in Other coding activities over the course of the year
- 106 respondents took part in Lego Robotics
- 134 respondents took part in Makerspace activities (in the school or in the community)
- 19 respondents took part in Computer Club during school
- 55 respondents took part in After school Computer Club or related "club"
- 26 respondents took part in FIRST Lego program
- 108 respondents took part in STEM or STEAM, (or even STREAM) courses
- 55 respondents took part in Tech Ed and Design offerings
- 33 respondents took part in summer offerings - camp, extended learning opportunities, etc.

10. Survey Question: *If you checked off Makerspace in the preceding question, tell us more about what is in place at your school with regard Makerspaces:*

Results:

Possible Responses	Number of Respondents
We have created a Makerspace in our library/media space	48 indicated this response
We are doing some “making” but do not have a designated space	41 indicated this response
We have built/repurposed a room within our building to use as a dedicated Makerspace	62 indicated this response
We are planning a Makerspace within the next year	13 indicated this response
Our school uses a space outside of the school, (through a partnership or other relationship) to engage in “making” with our students	2 indicated this response
No Makerspace exists at the school as of yet	117 indicated this response

11. Survey Question: *In your Makerspace, please indicate what equipment is available to students: (check all that apply)*

Results:

Response choices	Number of respondents
3D Printer(s)	125
Laser cutter	44
Vinyl cutter	45
CNC Drilling/routing equipment	31
Power hand tools – drills, circular saws, scroll saw, etc.	55
Soldering or welding kits/materials	48
Papermaking or cutting materials	85
Sewing machines	36
Robotics – Dash and Dot, B-Bots, other robot kits	94
Little Bits kits	40
Arduino and/or related tools	54
Not applicable or don't know	133

12. Survey Question: *What computer languages (if any) are taught at your location?*

Results:

- Java
- Python
- C
- C++
- Scratch
- HTML
- Swift
- Visual Basic
- LEGO NXT
- G-Code/M-Code
- PHP
- Blockly

Questions pertaining to the questions on the preceding pages should be addressed to Peter Drescher at the VT Agency of Education: peter.drescher@vermont.gov or (802) 828-6956.

APPENDIX A

Annual Technology Survey List of Questions

The following Annual Technology Questionnaire (ATQ) will be administered to all Vermont schools during the months of July and August 2019. The data collected plays a vital role in keeping the Agency of Education (AOE) and other public entities informed of the status of school-based education technology and accessibility across the state. The survey contains questions related to three main topic areas: (1) Internet access, (2) one-to-one computing, and (3) cloud-based storage. In addition, there are some questions related to professional development and some new questions on Makerspaces.

The AOE requests that schools provide the information requested to the best of their ability and as completely as possible. Keep in mind the following: Responses must be made for each individual school, NOT for the Supervisory Union. Please use the most recent school year (2018-2019) as your reference point when responding to questions regarding personnel actions (e.g., professional development, etc.).

Realizing that often there are updates/upgrades done over the summer, for Internet access-related questions please indicate the service level you anticipate will be available at your school on September 1, 2019. If that is not known, simply indicate the current state. For student device related questions please use the estimated numbers you anticipate when school opens in August/September of 2019. Again, if that is not known, use current numbers.

Number of Questions: 43

Estimated Time: 38 minutes

Due Date: August 31, 2019

Note: The survey works on your IP address of your computer. If you leave the survey and come back, do so on the same machine and you should be fine. The best scenario to complete the survey is to review all of the questions from the .pdf version, make a few notes, and then complete it in one sitting.

Survey Questions

1. What is the name of your school? –DROPDOWN available
2. What is your Supervisory Union or District? –DROPDOWN available
3. What is your title?
4. What is your first name?
5. What is your last name?
6. What is your work email address?
7. What is your work phone number?
8. Are you the primary contact for technology-related matters at your school?
 - a. YES? –goes to question 12
 - b. NO? goes to the following:
9. What is the name of the primary technology contact?
10. What is the phone number of primary technology contact?

11. What is the email address of the primary technology contact?
12. Who is the primary Internet Service Provider for this school? —DROPDOWN list below
- Burlington Telecom
 - Charter Communications
 - Comcast
 - Consolidated Communications
 - Green Mountain Access
 - EC Fiber
 - Franklin Telephone Co.
 - Level 3 Communications
 - Shoreham Telephone Co.
 - TDS Telecom
 - Teljet
 - Topsham Telephone Co.
 - Vermont Telephone Company (VTEL)
 - Waitsfield Cable Co.
 - Education Networks of America
 - OTT Communications
 - First Light
 - WiValley
 - Other (please specify)
13. (Or 10) What is the primary connection type this school uses to connect to the Internet?
—DROPDOWN list below
- DSL (Computers or devices are connected to a DSL modem, which is plugged into a phone line)
 - Cable (Computers or devices are connected to a cable modem, which is plugged into a TV cable jack).
 - Other copper wireline such as T1.
 - Satellite (Computers or devices connect through a signal from a satellite company).
 - Fixed Wireless or WISP (Computers or devices use an offsite wireless signal).
 - Mobile Wireless (Computers or devices use a cell phone signal to connect to the Internet such as a 3G connection).
 - Fiber Optic line directly to your site.
 - Fiber Optic line shared with other site(s)
 - Other (please specify)
14. (11) What is your current upload speed (as advertised by your provider)?
15. (12) What is your current download speed (as advertised by your provider)?
16. (13) Is your connection shared?
17. (14) How many schools share the connection?
18. (15) Does your school provide "Guest" or "Public" WiFi access?

19. (16) What is the typical cell phone coverage at the school? —DROPDOWN list below
- Cell phone coverage is good throughout the building
 - Cell phone coverage is good for certain networks only.
 - Cell phone coverage is "spotty" at the school.
 - Cell phone coverage is available but consistently poor.
 - Cell phone coverage is regularly not available.
 - Other Response?
20. (17) Does your school survey students as to their home broadband access?
- Yes
 - No
21. (18) If Yes, where or how could others get access to that data? (Please provide email of a relevant contact or a URL to a webpage or other resource).
22. (19) Whether or not you survey your students, can you make an *educated guess* as to how many of your students have Broadband Internet at home? Please provide a percentage you believe indicates the students WITH Broadband Internet service at home, (this means, service is available AND they avail themselves of it).
23. (20) Which option most accurately describes the one-to-one status in your school? — DROPDOWN list below
- No one-to-one program
 - One-to-one in a classroom
 - One-to-one in a grade
 - One-to-one in multiple grades
 - One-to-one in entire building
24. (21) Does your school allow students to take the device home?
25. (22) Please select all grade levels where one-to-one activities are in place. —Listing of choices
26. (23) How many TOTAL devices are currently in place at the school for student use?
27. (24) Please provide a ROUGH estimate of the percentage (%) of devices your school has for student use in each category. (Please note that this question asks for percentage as opposed to whole numbers and the figures need to add to 100)—BREAKDOWN provided---PLEASE NOTE % not #
28. (25) Does your school currently have a Bring Your Own Device (BYOD) policy?
29. (26) Approximately what percent (%) of your IT services are currently situated in the cloud?
30. (27) What commercial tool, if any, do you use for communication with your community in the event of an emergency? —DROPDOWN list below
- Blackboard Connect
 - School Messenger
 - Call-Em-All
 - Alert Solutions
 - Bright Arrow
 - K12 Alerts
 - Infinite Campus
 - One Call
 - AP Notify

- j. We currently do not have an emergency communication tool
 - k. We use a custom solution in-house, not a pre-packaged product
 - l. Other commercial vendor
 - m. Other (please specify)
31. (28) What technology platforms are students using to develop their Personalized Learning Plans (PLP's)? (Check all that Apply)
- a. None
 - b. Classcraft
 - c. Epiphany Learning
 - d. GoEnnounce
 - e. Google Sites
 - f. LiFT
 - g. Naviance
 - h. Nureva Troove
 - i. Powerschool
 - j. Project Foundry
 - k. Protean
 - l. Researching Options
 - m. Summit Basecamp
 - n. Other
32. (29) What support would be helpful to you/your staff in continuing to develop the connections between personalized learning and technology? Check all that apply: -- SOME choices provided
- a. A PLP Platform Fair at which participants could preview products and interact with vendors
 - b. An online/face-to-face/hybrid Professional Learning Community or network
 - c. Focus groups organized by region or other means to inform/co-develop resources and technical assistance
 - d. Other (please specify)
33. (30) How many students take online courses through a provider other than Vermont Virtual Learning Cooperative?
34. (31) What provider(s) do you use? (Please enter N/A if no other provider is used)
35. (32) Please provide the contact information of the individual responsible for your school's telephone system(s). —Fill in blanks
36. (33) In 2017, the Vermont State Board of Education adopted the International Society for Technology In Education (ISTE) Standards for Students for Education Technology. This “adoption” of those standards allows schools the flexibility to utilize those standards however it sees fit in strengthening an education technology program. It is recommended that schools make those standards available and encourage the use of them by educators as they work with students. In 2018, there are plans to move forward with adopting the ISTE Teacher (released in 2017) and Administrator (released in June of 2018) standards with the same intent; use and adoption at the local level. The State Board of Education wishes to understand if schools are currently using the ISTE

standards as their local standards. Please indicate below the current situation at your school: --- Choices provided

- a. My school has ALWAYS relied on the ISTE standards in all of its iterations
 - b. My school is taking steps and developing Prof. Dev. to make students and educators aware of the ISTE standards.
 - c. My school uses other standards or the Transferable Skills in lieu of using/introducing ISTE standards as well
 - d. My school is not using any ISTE standards
 - e. What are the ISTE standards?
 - f. Other:
37. (34) What support do you need to implement or make educators more aware of the ISTE standards?
38. (35) What professional development or other need do you have at your school that would support your education technology program? (Something you are not able to provide locally).
39. (36) Are you utilizing a technology tool or platform to track proficiencies in your school? Please indicate briefly how this is accomplished:
40. (37) Regarding Computer Science and STEM activities, please check all that apply in terms of activities the school provides for students: --Listing provided
- a. Annual Hour of Code activities
 - b. Other coding activities over the course of the year
 - c. Lego Robotics
 - d. A Maker space (in the school or in the community)
 - e. Computer Club during school
 - f. After school Computer Club or related "club"
 - g. FIRST Lego program
 - h. STEM or STEAM, (or even STREAM) courses or curricular strands?
 - i. Tech Ed and Design offerings
 - j. Summer offerings - camp, extended learning opportunities, etc.
 - k. Other (please specify)
41. (38) If you checked off Makerspace in question #37, please check the appropriate boxes below to tell us more about it:
- a. We have created a Makerspace in our library/media space
 - b. We are doing some "making" but do not have a designated space
 - c. We have built/repurposed a room within our building to use as a dedicated Makerspace
 - d. We are planning a Makerspace within the next year
 - e. Our school uses a space outside of the school, (through a partnership or other relationship) to engage in "making" with our students
 - f. N/A (please select this if you have NOT selected Makerspace in #37)
42. (39) In your Makerspace, please check the boxes to help us understand what equipment is available to students: (check all that apply)
- a. 3D Printer(s)

- b. Laser cutter
 - c. Vinyl cutter
 - d. CNC Drilling/routing equipment
 - e. Power hand tools – drills, circular saws, scroll saw, etc.
 - f. Soldering or welding kits/materials
 - g. Papermaking or cutting materials
 - h. Sewing machines
 - i. Robotics—Dash and Dot, B-Bots, other robot kits
 - j. Little Bits kits
 - k. Arduino and/or related tools
 - l. N/A (please select this if you have NOT selected Makerspace in #37)
 - m. Other (please list larger items missed from our list above)
43. (40) Computer languages taught, please list below

<END OF SURVEY>