



Memorandum

Date: January 7, 2019
To: Senate Committee on Early Learning and K-12 Education
From: Ben Omdal, Staff, Senate Committee on Early Learning and K-12 Education
Re: Broadband Technology in WA K-12 Education

As a project for the 2018 interim, staff to the Senate Early Learning and K-12 Education Committee compiled data relating to broadband technology in Washington K-12 education. This memorandum contextualizes and summarizes that information, and provides information on various other state and federal efforts relating to broadband technology in education.

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I. Introduction

As educational methods and curriculum have evolved, technology and technology standards have become an issue in educational policy. Within this area, internet connectivity has been a focus, as greater speeds, data, and technological capabilities are often needed for educational purposes.

Washington faces many of the same issues as other states with respect to educational technological capabilities. While every school within the state has some form of Internet connectivity,¹ differences in geography, infrastructure development, and local funding have resulted in differences between school districts both in terms of their internet speeds and the technology

¹ EducationSuperHighway, *2018 State of the States: Washington State Snapshot* (Oct. 2018), https://s3-us-west-1.amazonaws.com/esh-sots-pdfs/Washington_Snapshot_2018.pdf [hereinafter "Washington State Snapshot"].

available to students.² Data have shown that these discrepancies are especially acute for rural students and students that come from low-income or less-educated families.³

Various government agencies, publications, and organizations have compiled broadband data over the years, including the Federal Communications Commission (FCC), the Washington State Office of the Superintendent of Public Instruction (OSPI), and others. However, the resources required and the ever-changing capabilities and standards in technology have produced mixed data, often focused on different subjects.

This memorandum compiles data from various sources to provide a detailed overview of broadband technology and usage in K-12 education in Washington State. In addition, this report looks at previous and ongoing state and federal efforts to improve broadband access and technological implementation in K-12 public schools.

It should be noted that technology benchmarks are rapidly shifting with increased development and innovation. As a result, it is recommended that readers consult the sources listed in Appendix A for the most up-to-date data and resources. Furthermore, while data provide great insight into technological capabilities, individual experience can vary widely at the school or classroom level depending on such factors as current users, bandwidth needs, and infrastructure condition.

II. Uses for Broadband

Terminology. "Broadband" commonly refers to high-speed internet. The FCC measures this high-speed standard as the capability to download 25 megabytes per second (mbps) and upload 3 mbps, a standard often denoted as "25/3."⁴ For educational purposes, the FCC recommends a standard of 100 kilobytes per second (kbps) per student.⁵ EducationSuperHighway, a nonprofit organization that assists schools and governments in procuring federal grants for broadband improvements, explains that the new standard for education may soon be 1 mbps, or 10 times the current standard—the current 2018 goal for the FCC.⁶ "Scalable broadband" is broadband that meets current standards, also referred to as "fiber" connections.

Educational Application. There are numerous educational uses for broadband internet. Classroom applications include internet academic research, data backup, and greater access to online instructional and educational materials. OSPI's Washington Broadband Initiative⁷ states that increased broadband access helps students develop language skills and proficiency, expands curriculum capabilities, and facilitates professional development. Student assessments are also

² Angelina KewalRamani et al., *Student Access to Digital Learning Resources Outside of the Classroom*, Nat'l Center for Education Statistics. (April 2018), <https://nces.ed.gov/pubs2017/2017098.pdf>.

³ Pew Research Center, *Internet/Broadband Fact Sheet* (Feb. 5, 2018), <http://www.pewinternet.org/fact-sheet/internet-broadband/>.

⁴ FCC, *2015 Broadband Progress Report* (Feb. 4, 2015), <https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2015-broadband-progress-report>.

⁵ FCC, *Summary of the E-rate Modernization Order* (adopted July 11, 2014), <https://www.fcc.gov/general/summary-e-rate-modernization-order>.

⁶ EducationSuperHighway, *2018 State of the States 6* (Oct. 2018), <https://s3-us-west-1.amazonaws.com/esh-sots-pdfs/2018%20State%20of%20the%20States.pdf>.

⁷ *Broadband for Washington State*, OSPI (May 5, 2018), <http://www.k12.wa.us/EdTech/broadbandforwa.aspx>.

increasingly performed online.⁸ In addition, districts throughout the state use the internet daily in instruction, such as posting supplemental material online, administering quizzes, and having students collaborate online.⁹

Another area in which broadband plays a large educational role is at the home of students. Home internet is frequently used by students to complete homework assignments, as well as to perform research projects and communicate with other students. While the overall numbers of homes connected to the internet have increased, internet connection and speed vary widely by geographic location, income, and race.¹⁰ As a result, student access to certain educational opportunities and materials also depends upon these factors. Some studies indicate that the lack of home access negatively impacts students and their test scores.¹¹ Even where connections exist, rural areas may also have lower speeds due to the lack of existing infrastructure.

III. Existing Data on Broadband Access in Washington State

Data on existing broadband connections and schools' technological capabilities primarily come from three main sources: internet broadband deployment data, federal "E-rate" filings, and OSPI's annual Technology Survey.

Federal Broadband Data. The FCC for several years has used broadband provider filings to determine connectivity levels, which it then publishes on an interactive map on its website.¹² The data demonstrates the number of providers accessible to residents in a given census block, as well as the maximum speeds available from those providers in that area. Until 2016, the FCC also updated a map of connectivity data for individual school districts.¹³ However, this map is no longer maintained on the FCC's website and contains incomplete data.

E-rate. With respect to educational access, the available public information comes from filings for the federal "E-rate" program. E-rate, officially called the Universal Service Program for Schools and Libraries, uses federal funds to match investments in broadband infrastructure ("Category I" funds) and equipment upgrades ("Category II"). School districts and libraries do not receive funds directly through this program, but rather receive discounts for services performed through local providers. Districts often utilize the help of non-profit organizations, such as EducationSuperHighway, which also summarizes federal filing data to identify and apply for E-rate funds.

OSPI Annual Technology Survey. Each year, OSPI conducts a survey of all 295 school districts in Washington on technology status.¹⁴ This includes internet connectivity and the number and types of devices, device capabilities. OSPI's data differs from federal data in that the data is broken

⁸ *Id.*

⁹ *Id.*

¹⁰ Pew Research Center, note 3.

¹¹ See KewalRamani et al., note 2, at 93.

¹² See *FCC Broadband Map* (last updated June 2017), <https://broadbandmap.fcc.gov>.

¹³ *FCC E-rate maps of Fiber Connectivity to Schools and Libraries* (last updated June 6, 2015), <https://www.fcc.gov/reports-research/maps/e-rate-fiber-map/>.

¹⁴ See *Annual Technology Survey*, OSPI (May 1, 2018), <http://www.k12.wa.us/EdTech/TechSurvey.aspx>.

down at the school level and includes equipment specifications. In 2017—the most recent year in which data is available—293 of 295 districts responded.¹⁵

Survey Conducted by Senate Staff. In the spring and summer of 2018, staff to the Senate Early Learning & K-12 Education Committee performed a survey of school districts on a range of subjects, including school and classroom technology. The surveys were sent out via educational service districts (ESDs), with 64 district responses. While not a statistical survey, the responses provide anecdotal evidence and context to the other data utilized for this report.

IV. Compilation of Existing Data

Overview. As of October 2018, 99 percent of K-12 students in Washington State have access to the internet at speeds recommended by the federal government.¹⁶ This is an increase from 97% in 2017, and 88% in 2015.¹⁷ In addition, 287 of the 295 school districts have fiber broadband connections that allow for scalable connections that can handle increasing workloads, and 292 of 295 districts have connections that meet high-speed internet standards of 100 kbps per student.¹⁸ According to OSPI's technology survey for the 2017-18 school year, 13 schools in Washington do not have access to Wi-Fi; these schools have a total enrollment of 615 students¹⁹. See Fig. 3, Appendix B for a list and map of these schools.

Broadband Access (Bandwidth and Fiber). According to 2018 federal filings, nine schools in eight districts in Washington lack access to fiber connections. Schools without fiber connections have an estimated total student enrollment of 965 (0.09% of all Washington students).²⁰ See Fig. 2, Appendix B for a map of district locations. These districts include:

District	Schools Impacted	Students Impacted
Blaine School District 503	1	15
Damman School District	1	39
Ferndale School District 502	1	43
Naches Valley School Dist Jt 3	1	419
North Beach School District 64	2	404
Orcas Island School District	1	8
Stehekin School District	1	3
Steilacoom Hist School Dist 1	1	34
Total	9	965

¹⁵ 2017-18 Annual Technology Survey Snapshot, OSPI (May 1, 2018), <http://www.k12.wa.us/EdTech/Snapshot.aspx>.

¹⁶ Washington State Snapshot, note 1.

¹⁷ *Id.*

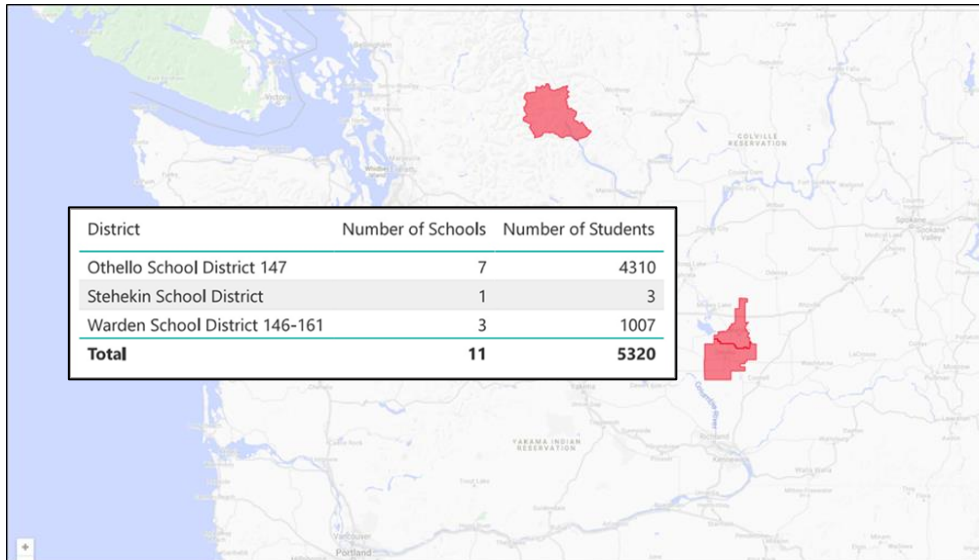
¹⁸ *Id.*

¹⁹ See School District Technology Survey, DATA.WA.GOV (last updated Dec. 28, 2017), <https://data.wa.gov/Education/School-District-Technology-Survey/ienj-63xj>.

²⁰ *Id.*

The FCC currently has speeds of 100 kbps per student as its internet connection standard. According to OSPI, three districts do not meet this standard. Districts that do not have speeds of 100 kbps per student have an estimated total student enrollment of 5320 (0.49% of all Washington Students).

Fig. 1: Districts with Bandwidth <100 kbps/student (see Appendix for more maps)



Beginning in 2018, the FCC has had an aspirational goal of 1 mbps, 10 times the current standard.²¹ Per federal filings, 200 of the 295 school districts do not meet this standard.²² These districts have an estimated total student enrollment of 1,004,297, 93.1% of all Washington students.²³ See Appendix C for a list of these schools.

Funding Status. For every school, the FCC calculates a budget of Category II funds using a formula based on student population and inflation.²⁴ Using this information as well as federal filings and state budgetary data, EducationSuperHighway and OSPI have calculated remaining budgets of Category II funds for each school district in Washington. Because 2019 is the last funding year in which these funds may be utilized, OSPI has produced a list of districts that are at-risk of losing the remaining portion of their potential funds.²⁵

Equipment Access. Technology equipment availability is measured each year by OSPI's annual technology survey. The survey asks a variety of questions on district technology capabilities,

²¹ See *EducationSuperHighway*, note 6.

²² *Id.* (utilizing federal filings as the dataset).

²³ *Id.*

²⁴ See FCC, *E-rate Modernization: Progress and the Road Ahead 2–4*, 10 (Jan. 18, 2017), <https://www.fcc.gov/document/e-rate-progress-report>.

²⁵ A compiled list of districts can be found on OSPI's website using the link "Available Category 2 Funds." *Washington's Digital Learning Access Grant Program*, OSPI, <http://www.k12.wa.us/EdTech/digitalaccessgrants.aspx> (last updated Nov. 6, 2018).

equipment inventory, and technical specifications.²⁶ The 2018 survey reports, among other findings, that about 99.8% of classrooms have internet access (61,839 of 61,965). In addition, about 23% of all schools report having some sort of 1:1 student access to a laptop or tablet. The survey performed by Senate staff also received a variety of responses on equipment availability and concerns, which are summarized below.

School District Survey Performed by Senate Staff. At the end of the 2017-18 school year, staff of the Senate Early Learning & K-12 Education Committee coordinated with Educational Service Districts (ESDs) to conduct a survey of district technology personnel. The survey asked a variety of questions concerning technology funding, training, needs, and implementation. Staff received responses from 64 districts of various sizes and locations. Responses were categorized by staff, and can be found in Appendix D.²⁷ Selected responses include:

- Connecting technology to education goals: When asked how technology is integrated into educational goals, 32% of responding districts stated that integration occurs through curriculum, while comprehensive planning and 1:1 devices came in second and third with 30% and 17%, respectively.
- Funding: The main funding sources reported for broadband and technology were levy funds (35% of respondents) and E-rate (33%). Funding was also listed as the top suggested effort to address tech inequalities (35% of respondents).
- Training Strategies: Districts reported a range of training strategies to ensure that staff knows how to integrate new and existing technologies into their work. The top responses were formal professional development/trainings (60%) and resident experts/IT staff (20%).

V. Recent and Current Efforts to Address Broadband Infrastructure, Funding

Washington State. In recent years, the Legislature and various state government agencies have made efforts to address various aspects of broadband infrastructure and educational access. These include:

- CERB Rural Broadband Program (ESB 6095 (2018) Capital Budget)²⁸: The 2018 Supplemental Budget appropriated \$10 million to the Community Economic Revitalization Board (CERB) for broadband development programs by local governments and tribes via low-interest loan or grant packages. Eligible government entities must work with local providers and funding may be applied to variety of project types.
- OSPI Digital Learning Access Grant (SB 6032/2018 Supp. Budget)²⁹: Appropriated \$900,000 to OSPI to leverage federal funding from the E-rate program. Priority in this program is given to projects that provide broadband connectivity for schools that currently lack access to adequate bandwidth.

²⁶ OSPI, *2017-18 School Technology Survey Questions* (May 1, 2018), <http://www.k12.wa.us/EdTech/pubdocs/TechSurveyQuestions2017-18.pdf>.

²⁷ Thanks to Margaret Douglas, Senate Committee Services Intern, for her help in analyzing and categorizing this data.

²⁸ [2018 c 298 § 1008](#).

²⁹ [2018 c 299 § 501\(67\)](#).

- SHB 2312 (2018)³⁰: This bill which did not pass sought to create a reverse auction process to reward bidders willing to build last-mile broadband access.
- SB 5935 (2018)³¹: This bill which did not pass intended to create the Governor's Office on Broadband Access and a competitive grant process for broadband infrastructure.
- ESSB 6034 (2018)³², SHB 2664 (2018)³³: Expanded the ability of public utility districts and ports, respectively, to provide telecommunication and broadband services within their districts.

United States Federal Government. In 2018, the federal government took several actions with respect to broadband development and access. These include:

- Broadband for All Act (H.R. 6442, 2018 - Introduced)³⁴: Sponsored by Rep. Derek Kilmer (WA-06), this Act provides a tax credit for individuals and business that create limited broadband districts to increase broadband access.
- Presidential Executive Order on Streamlining and Expediting Requests to Locate Broadband Facilities in Rural America (Exec. Order No. 13,821)³⁵: The order states that the executive branch shall use all viable tools to accelerate broadband development. It also states that federal departments and agencies should seek to reduce barriers to capital investment and remove obstacles to broadband services, and requires federal agencies to review the effectiveness of the application process for wireless service antenna structure siting.

Other State and Local Efforts. Numerous other states have introduced legislation or created groups on broadband infrastructure, development, and educational implementation. Several types of efforts include:

- Working groups and committees (Arizona and Louisiana)³⁶;
- Task forces (Alabama, and Rhode Island)³⁷;
- Survey of student home access to the internet (Tennessee)³⁸.

At local levels, student access to high-speed internet is an issue faced by districts in locations all across the country. Local school authorities have tried a wide range of solutions to address internet availability, including personal hotspots for low-income students, Wi-Fi access on school buses,

³⁰ [SHB 2312](#), 65th Leg. (2018).

³¹ [SB 5935](#), 65th Leg. (2018).

³² [2018 c 186](#).

³³ [2018 c 169](#).

³⁴ Broadband for All Act of 2018, H.R. 6442, 115th Cong. (2018), <https://www.congress.gov/bill/115th-congress/house-bill/6442>.

³⁵ Executive Order No. 13,821, 83 Fed. Reg. 1507 (Jan. 11, 2018), <https://www.federalregister.gov/documents/2018/01/11/2018-00553/streamlining-and-expediting-requests-to-locate-broadband-facilities-in-rural-america>.

³⁶ See, e.g., 2014 Ariz. Sess. Laws 17, § 18 (establishing the Arizona Joint Committee on Broadband Expansion and Education Technology); 2014 La. Acts 722 (requiring that the Louisiana Department of Education develop and implement a statewide educational technology plan).

³⁷ See, e.g., Alabama Ahead Act, Ala. Code § 16-16B (2018); Spec. Leg. Commission to Study Broadband Services and Accessibility in the State of R.I., Final Report (June 2015).

³⁸ 2014 Tenn. Pub. Acts 848 (repealed 2018). In 2017, Tennessee passed a comprehensive broadband package. Tennessee Broadband Accessibility Act, 2017 Tenn. Pub. Acts 228.

extending wireless connections to all public libraries and government buildings, and partnerships with local service providers to advance special programs for low-income families.³⁹

VI. Summary

This report attempts to provide and contextualize current data on broadband access and technology implementation in Washington State's K-12 public schools. Committee Staff is available to answer any questions; contact information can be found at <http://leg.wa.gov/Senate/Committees/EDU/Pages/default.aspx>.

³⁹ Emily Tate, *From Hotspots to School Bus Wi-Fi, Districts Seek Out Solutions to 'Homework Gap'*, EdSurge (Oct. 15, 2018), <https://www.edsurge.com/news/2018-10-15-from-hotspots-to-school-bus-wi-fi-districts-look-for-solutions-to-homework-gap>.

Appendix A: For Further Information

Pew survey on internet usage trends: <http://www.pewinternet.org/fact-sheet/internet-broadband/>

OSPI Technology Survey: <http://www.k12.wa.us/EdTech/TechSurvey.aspx>

2018 EducationSuperHighway *State of the States* Report: <https://s3-us-west-1.amazonaws.com/esh-sots-pdfs/2018%20State%20of%20the%20States.pdf>

CERB Rural Broadband Program: <https://www.commerce.wa.gov/building-infrastructure/community-economic-revitalization-board/rural-broadband/>

OSPI Digital Learning Access Grant Program:

<http://www.k12.wa.us/EdTech/digitalaccessgrants.aspx>

Appendix B: Maps of Broadband Access in WA K-12 Schools (Dec. 2018)

Fig. 1: Districts with Bandwidth <100 kbps/student

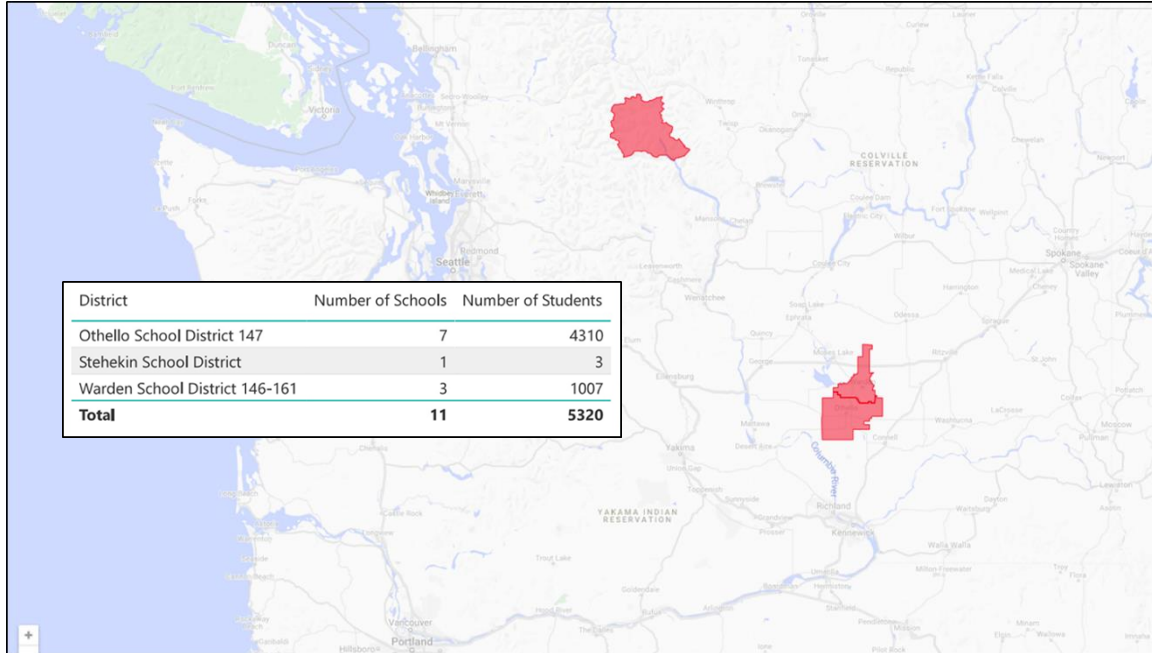


Fig. 2: Districts without Fiber scalable to 10 Gbps

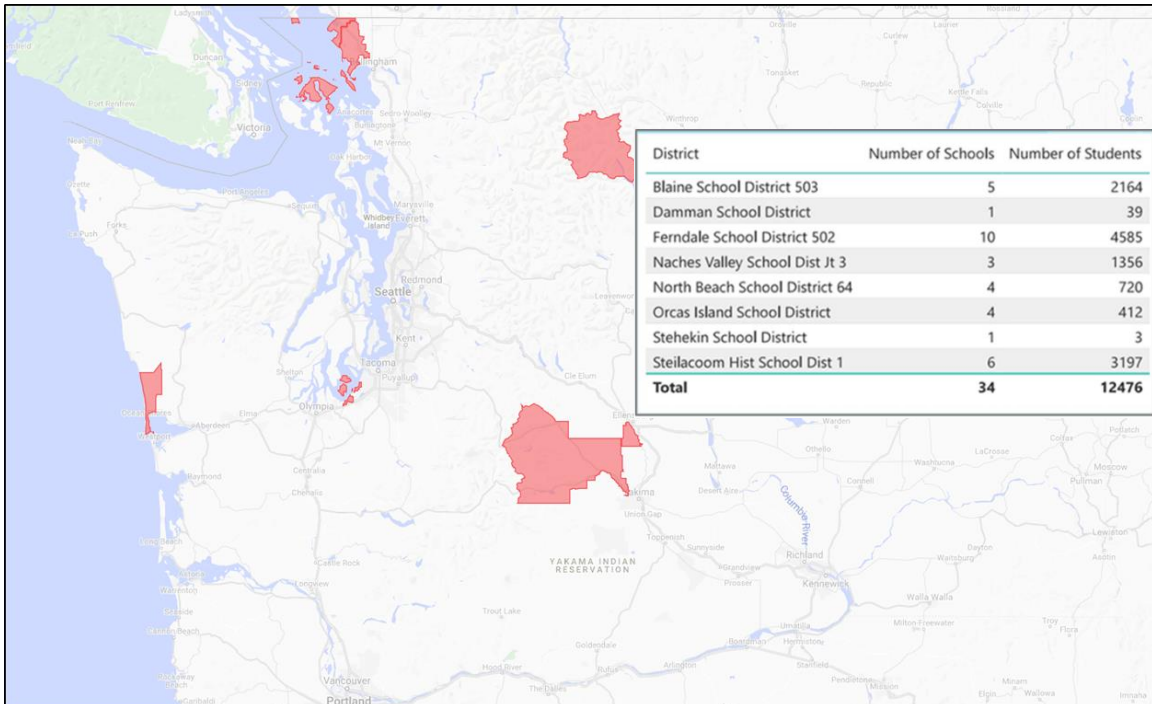
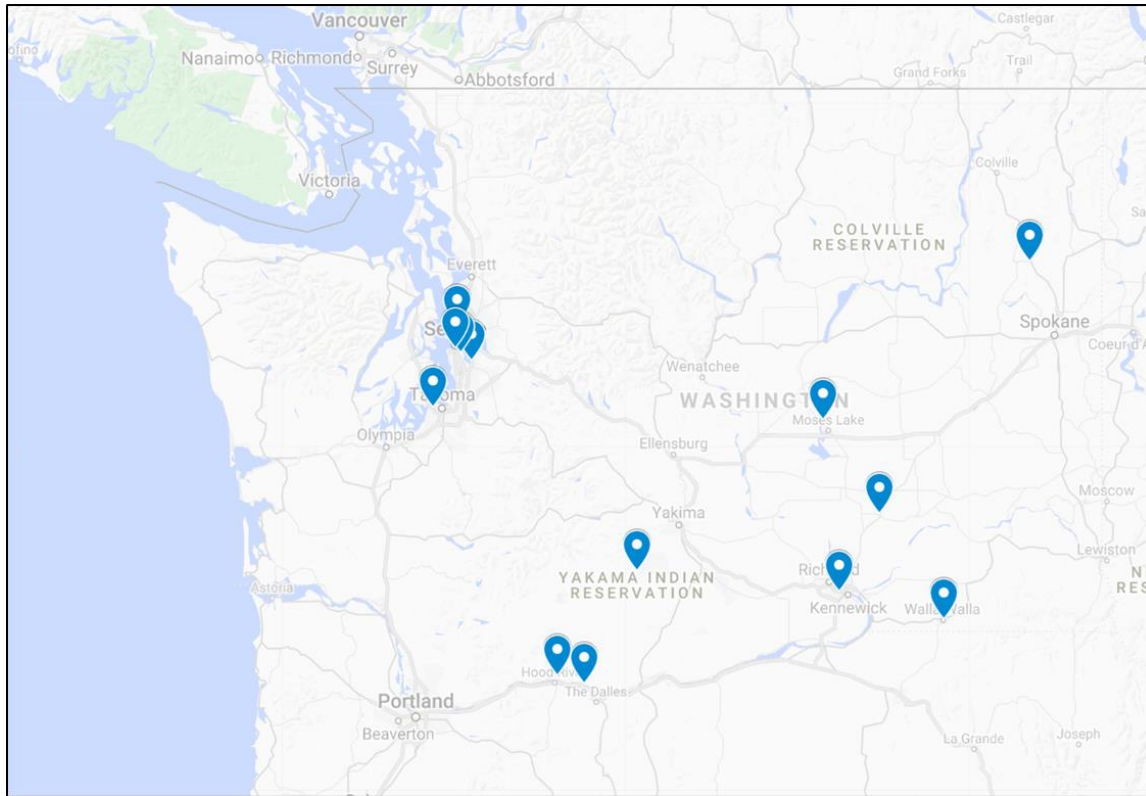


Fig. 3: Schools without Wi-Fi

Source: 2017 OSPI Annual Technology Survey

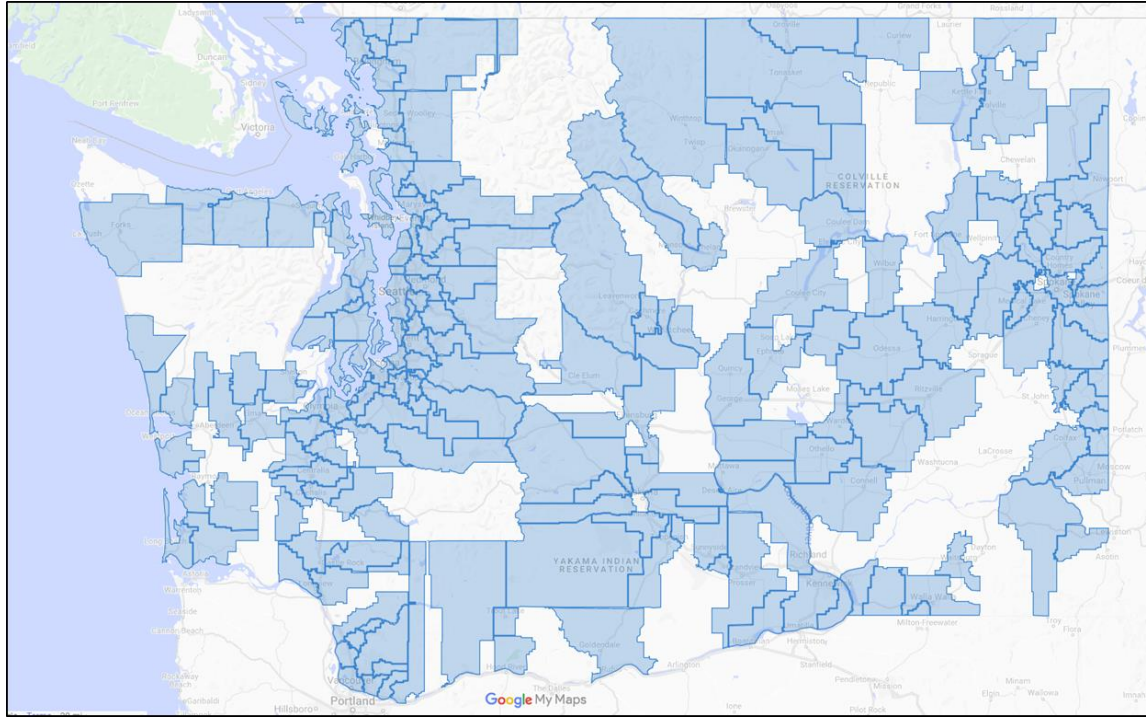
District	School	K-12 Total Enrollment
Kennewick School District	Benton/Franklin Juvenile Justice Center	33
Loon Lake School District	Loon Lake Homelink Program	100
Lyle School District	Dallesport Elementary	101
North Franklin School District	Palouse Junction High School	36
Renton School District	Griffin Home	6
Seattle Public Schools	Interagency Detention School	43
Seattle Public Schools	Middle College High School	129
Tacoma School District	Pearl Street Center	11
Walla Walla Public Schools	Alternative Education Program	88
Wellpinit School District	Wellpinit-Fort Simcoe High School	33
Wellpinit School District	WSD Columbia Basin J.C.	21
White Salmon Valley School District	White Salmon Academy	14
Total		615

Schools without Wi-Fi



Appendix C: Schools that Do Not Currently Meet 1 Mbps per Student Standard

Fig. 3: Districts with <1 Mbps per Student



District	Number of Schools	Student Enrollment	BW per Student*
Adna School District 226	2	733	682 kbps
Anacortes School District 103	7	2718	368 kbps
Arlington School District 16	9	5442	184 kbps
Auburn School District 408	22	16094	311 kbps
Bainbridge Island Sch Dist 303	9	3758	266 kbps
Battle Ground School Dist 119	16	11564	432 kbps
Bellevue School District 405	26	20352	295 kbps
Bellingham School District 501	23	11330	441 kbps
Bethel School District 403	28	19557	256 kbps
Blaine School District 503	5	2164	499 kbps
Boistfort School District 234	1	112	893 kbps
Bremerton School District 100-C	10	5198	192 kbps
Burlington-Edison Sch Dist 100	7	4202	238 kbps
Camas School District 117	10	7082	282 kbps
Carbonado Hist School Dist 19	1	185	541 kbps
Cascade School District 228	5	1304	383 kbps

District	Number of Schools	Student Enrollment	BW per Student*
Cashmere School District 222	3	1576	317 kbps
Castle Rock School Dist 401	3	1246	401 kbps
Central Kitsap School District 401	22	11319	177 kbps
Central Valley Sch Dist 356	22	13180	152 kbps
Centralia School District 401	7	3542	282 kbps
Chehalis School District 302	7	2956	338 kbps
Cheney Public Sch District 360	10	5021	199 kbps
Chimacum School District 49	4	1083	923 kbps
Clarkston School Dist J250-185	6	2572	389 kbps
Cle Elum-Roslyn District 404	4	907	662 kbps
Clover Park School Dist 400	26	13039	383 kbps
Colfax School District 300	2	603	829 kbps
College Place School Dist 250	3	1340	746 kbps
Columbia School District 206	1	161	621 kbps
Columbia School District 400	3	772	130 kbps
Colville School District 115	5	1870	535 kbps
Conway School District 317	1	479	209 kbps
Coulee-Hartline Sch Dist 151	3	169	592 kbps
Crescent School District 313	1	196	765 kbps
Curlew School District 50	1	198	505 kbps
Cusick School District 59	2	266	376 kbps
Davenport School District 207	2	623	161 kbps
Deer Park School District 414	4	1955	512 kbps
Dieringer School District 343	3	1428	700 kbps
East Valley School District 361	7	4112	486 kbps
East Valley School District 90	5	3098	323 kbps
Eastmont School District 206	10	6126	163 kbps
Eatonville School District 404	5	1917	574 kbps
Edmonds School District 15	33	20895	479 kbps
Ellensburg School District 401	5	3325	301 kbps
Elma School District 68	4	1389	720 kbps
Enumclaw School District 216	8	4035	248 kbps
Ephrata School District 165	6	2479	403 kbps
Everett School District 2	27	20357	147 kbps
Evergreen School District	33	25733	777 kbps
Federal Way School Dist 210	37	22683	220 kbps
Ferndale School District 502	10	4585	224 kbps
Fife School District 417	6	3755	533 kbps
Finley School District	3	923	542 kbps
Franklin Pierce Sch Dist 402	13	7798	641 kbps

District	Number of Schools	Student Enrollment	BW per Student*
Freeman School District 358	3	982	509 kbps
Garfield School District 302	3	158	633 kbps
Goldendale School District	3	939	532 kbps
Grand Coulee Dam Sch Dist 301J	2	711	703 kbps
Grandview School Dist 200	6	3735	535 kbps
Granite Falls School Dist 332	5	2240	893 kbps
Green Mountain School Dist 103	1	157	637 kbps
Harrington School District	2	140	714 kbps
Highland School District 203	4	1171	427 kbps
Highline School District 401	29	18941	581 kbps
Hockinson School District 98	3	1848	541 kbps
Hoquiam School District	5	1591	629 kbps
Issaquah School District 411	23	19878	101 kbps
Kelso School District 458	11	5013	199 kbps
Kennewick School District 17	24	17019	294 kbps
Kent School District	38	26793	373 kbps
Kettle Falls School Dist 212	3	707	707 kbps
La Center School District 101	3	1578	317 kbps
Lake Chelan School Dist 129	5	1427	350 kbps
Lake Stevens School District 4	12	9473	211 kbps
Lake Washington Sch Dist 414	44	28476	105 kbps
Lakewood School District 306	5	2454	407 kbps
Liberty School District 362	2	618	162 kbps
Lind-Ritzville Cooperative Schools	6	685	292 kbps
Longview School District 122	13	6554	153 kbps
Loon Lake School District 183	2	221	452 kbps
Lopez Island School Dist 144	3	241	830 kbps
Lynden School District 504	5	2818	355 kbps
Manson School District 19	3	863	579 kbps
Mary M Knight School Dist 311	2	150	667 kbps
Mary Walker School Dist 207	3	610	820 kbps
Marysville School District 25	23	11264	448 kbps
Mead School District 354	14	9705	206 kbps
Medical Lake School Dist 326	4	1868	535 kbps
Mercer Island School Dist 400	5	3939	254 kbps
Meridian School District 505	3	1417	706 kbps
Methow Valley School Dist 350	2	598	836 kbps
Monroe School District 103	8	5945	168 kbps
Montesano School District 66	3	1378	726 kbps
Mossyrock School District 206	3	512	988 kbps

District	Number of Schools	Student Enrollment	BW per Student*
Mount Adams School Dist 209	3	929	538 kbps
Mount Baker School Dist 507	5	1852	540 kbps
Mount Vernon School Dist 320	9	7027	285 kbps
Mukilteo School District 6	19	14541	138 kbps
Naches Valley School Dist Jt 3	3	1356	737 kbps
Naselle Grays River Valley Schools	3	563	888 kbps
Nespelem School District 14	1	131	763 kbps
Newport School Dist 56-415	3	1013	494 kbps
Nine Mile Falls Sch Dist 325	4	1460	342 kbps
Nooksack Valley Sch Dist 506	5	1775	563 kbps
North Beach School District 64	4	720	694 kbps
North Franklin Dist J51-162	6	2085	480 kbps
North Kitsap School Dist 400	12	6067	165 kbps
North Mason School Dist 403	4	2448	408 kbps
North Thurston School Dist 3	21	14437	346 kbps
Northport School District 211	2	191	524 kbps
Northshore School District 417	31	20972	525 kbps
Oak Harbor School District 201	8	6102	328 kbps
Oakesdale School District 324	2	117	855 kbps
Ocean Beach School Dist 101	4	1018	982 kbps
Ocosta School District 172	2	753	133 kbps
Odessa Sch Dist 105-157-166 J	2	250	400 kbps
Okanogan School District 105	3	1459	343 kbps
Olympia School District 111	19	9871	203 kbps
Omak School District 19	4	1560	641 kbps
Onalaska School District 300	3	740	676 kbps
Oroville School District 410	2	599	835 kbps
Orting School District 344	4	2457	407 kbps
Othello School District 147	7	4310	23 kbps
Palouse School District 301	3	195	513 kbps
Paterson School District 50	1	139	719 kbps
Peninsula School District 401	14	8229	243 kbps
Pomeroy School District 110	2	293	341 kbps
Port Angeles School Dist 121	9	3787	264 kbps
Port Townsend School Dist 50	3	1117	895 kbps
Prosser School District # 116	5	2786	179 kbps
Pullman School District 267	5	2890	346 kbps
Puyallup School District 3	32	22924	218 kbps
Quillayute Valley School District	4	1130	885 kbps
Quincy School District 144-101	7	2994	334 kbps

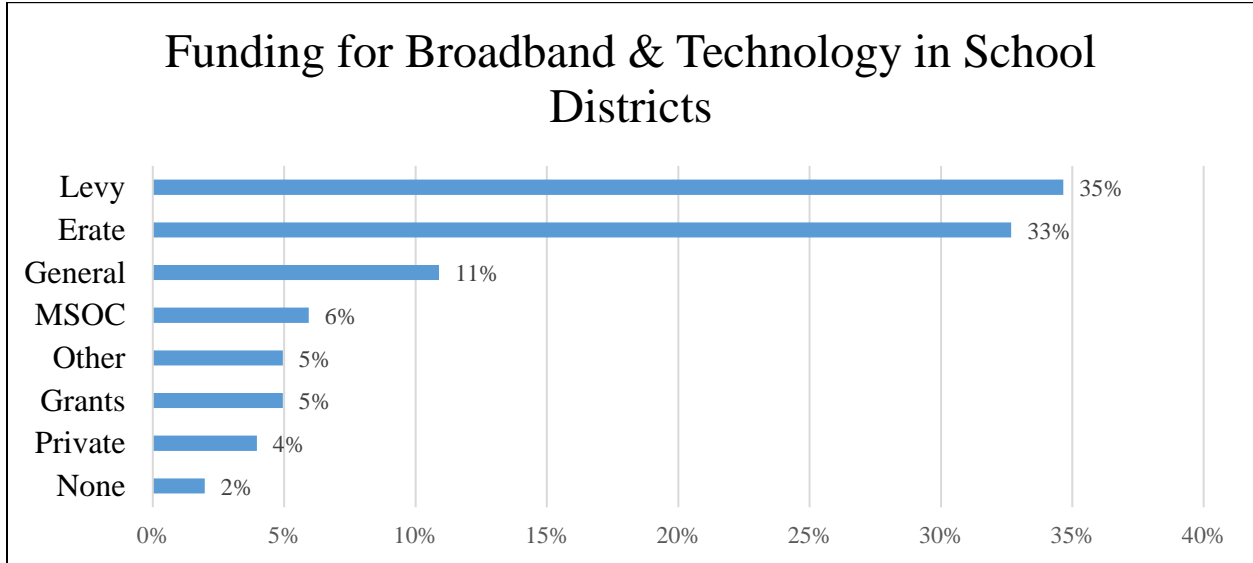
District	Number of Schools	Student Enrollment	BW per Student*
Reardan-Edwall School Dist 9	2	768	130 kbps
Renton School District 403	25	15537	322 kbps
Richland School District 400	16	13194	379 kbps
Ridgefield School District 122	4	3039	197 kbps
Riverside School District 416	5	1514	330 kbps
Riverview School District	9	3218	311 kbps
Rochester School District 401	5	2270	441 kbps
Rosalia School District 320	1	202	495 kbps
Royal School District 160	4	1752	342 kbps
San Juan Island Sch Dist 149	4	959	527 kbps
Seattle School District 1	100	54977	182 kbps
Sedro-Woolley School Dist 101	10	4305	232 kbps
Selah School District 119	4	3486	287 kbps
Sequim School District 323	5	2953	339 kbps
Shelton School District 309	7	4378	228 kbps
Shoreline School District 412	14	9240	541 kbps
Snohomish School District 201	14	9706	216 kbps
Snoqualmie Valley Sch Dist 410	9	6506	307 kbps
South Bend School District 118	2	554	903 kbps
South Kitsap School Dist 402	14	9661	104 kbps
South Whidbey School Dist 206	3	1306	766 kbps
Southside School District 42	1	190	526 kbps
Spokane School District 81	51	31457	318 kbps
Stanwood Camano School District 401	8	4495	222 kbps
Stehekin School District	1	3	0 kbps
Steilacoom Hist School Dist 1	6	3197	316 kbps
Stevenson-Carson School Dist	5	1021	490 kbps
Sultan School District 311	4	1907	524 kbps
Sumner School District 320	13	9298	430 kbps
Sunnyside School District 201	9	6845	292 kbps
Tacoma School District 10	50	28308	707 kbps
Taholah School District 77	2	301	332 kbps
Tahoma School District 409	8	6973	287 kbps
Tekoa School District 265	2	194	515 kbps
Tenino School District 402	4	1238	808 kbps
Tonasket School District 404	3	1217	411 kbps
Toppenish School District 202	7	7037	568 kbps
Touchet School District 300	1	231	433 kbps
Toutle Lake School Dist 130	2	657	761 kbps
Trout Lake School Dist R-400	2	223	448 kbps

District	Number of Schools	Student Enrollment	BW per Student*
Tukwila School District	5	3776	530 kbps
Tumwater School District 33	11	6429	311 kbps
University Place Sch Dist 83	8	5567	180 kbps
Valley School District 70	2	274	365 kbps
Vancouver School District	36	23056	217 kbps
Vashon Island School Dist 402	3	1490	671 kbps
Wahluke School District 73	6	2432	411 kbps
Waitsburg School District	3	306	327 kbps
Walla Walla School Dist 140	10	6054	165 kbps
Wapato School District 207	7	3487	287 kbps
Warden School District 146-161	3	1007	99 kbps
Washougal School Dist 112-6	8	3728	268 kbps
Wenatchee School District 246	15	7653	131 kbps
West Valley School Dist 208	10	5428	184 kbps
West Valley School Dist 363	10	3785	264 kbps
White River School Dist 416	6	4074	245 kbps
White Salmon Vly Dist 405-17	5	1302	384 kbps
Wilbur School District 200	2	291	344 kbps
Willapa Valley School Dist 160	2	382	262 kbps
Wilson Creek School District	2	177	565 kbps
Wishkah Valley School Dist 117	1	151	662 kbps
Woodland School District 404	6	2326	451 kbps
Yelm Community Schools	10	5870	341 kbps
Zillah School District 205	4	1325	755 kbps
Total	1767	1,004,297	

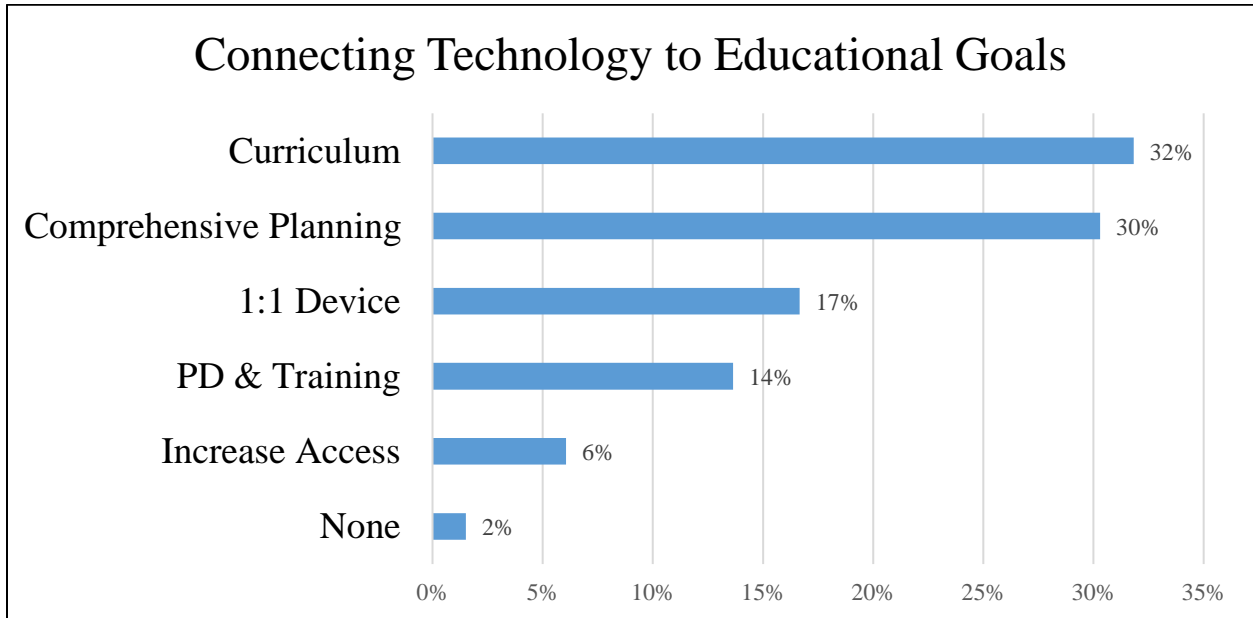
*Bandwidth per Student

Appendix D: Responses from Survey Performed by Senate Staff (Interim 2018)

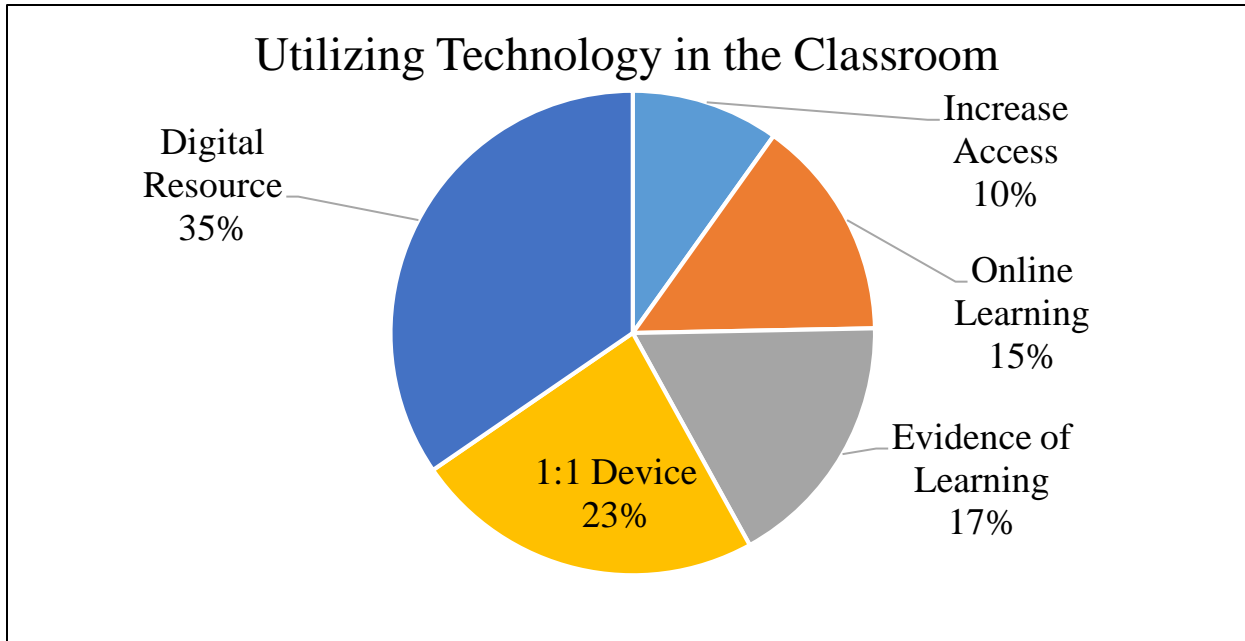
Question 1: What funding sources are utilized?



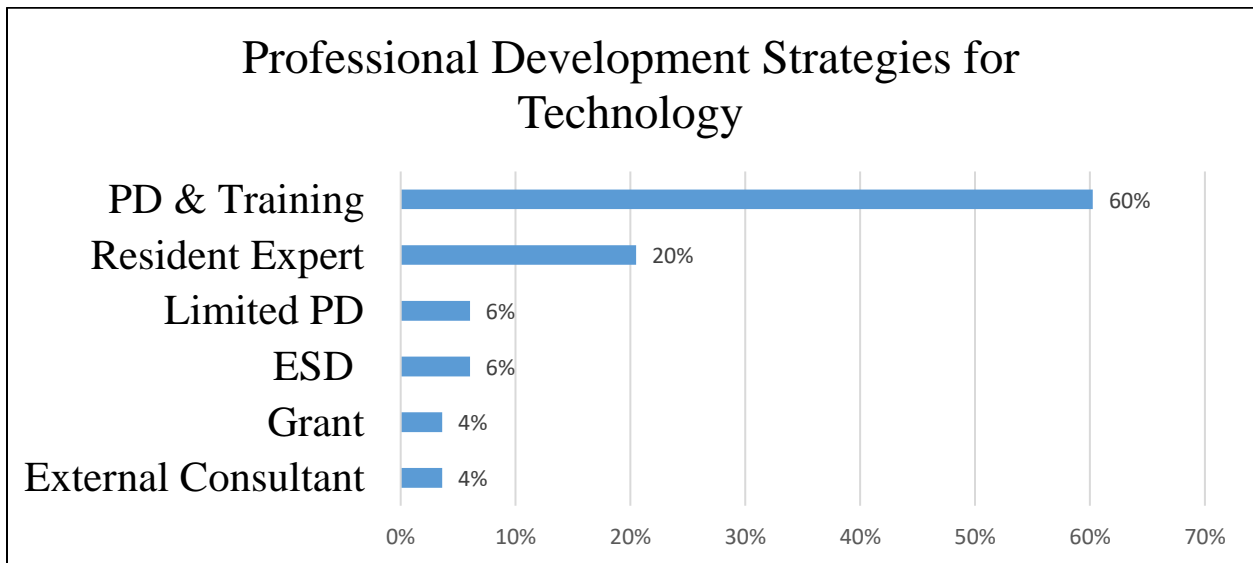
Question 2: How is your district connecting technology with the district's educational goals?



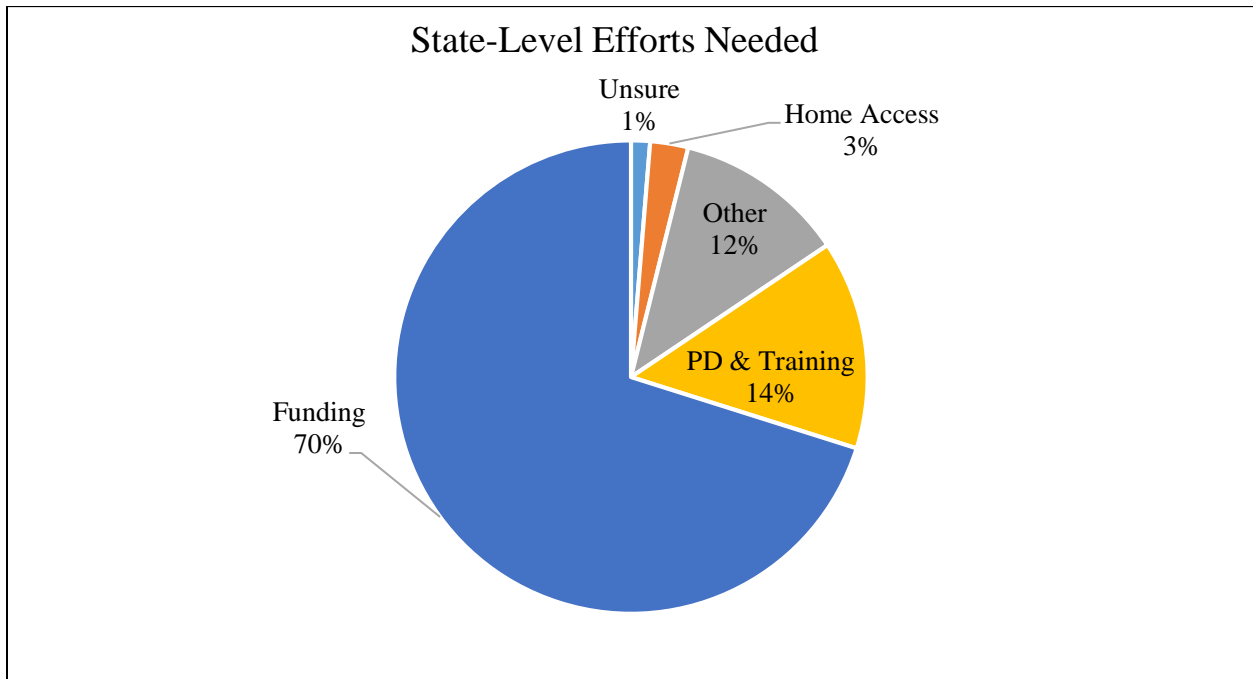
Question 3: How is the district using technology in the classroom?



Question 4: What professional development strategies are used for integrating new technology?



Question 5: What state-level efforts might address inequalities in the types of access?



Appendix E: 2018 Interim Technology Report

The attached PowerPoint was created for a work session during committee assembly on November 14, 2018. It provides a brief overview of the contents of this memorandum.

Senate Early Learning & K-12 Education Committee

Interim Report: Broadband Technology in WA K-12 Education

Ben Omdal, Senate Committee Services
November 14, 2018

Roadmap

- Overview of technology standards
- Current data in Washington State
 - OSPI, FCC, EducationSuperHighway, staff survey
- Recent WA legislative efforts
- Federal/Other state efforts

Background Terminology

- Broadband: High-Speed Internet
 - Typically measured at “25/3” by FCC
- Fiber: Broadband scalable to 10 gbps
 - Basically, has the ability to work with growing speeds
- E-Rate: Federal cost-sharing program that assists school districts with broadband development and equipment

Technological Standards (FCC)

- In 2015, the Federal Communications Commission recommended all schools have internet connection speeds of 100 kbps per student
- The goal for 2018 has been 1 mbps per student

Technological Applications

Classroom:

- Online assessments
- Research (including audio and video)
- Developing computer skills

At home:

- Ability to conduct online research
- Collaboration with other students
- Submitting work
- Communicating with school

Data Sources for This Project

- Federal FCC filings (and EducationSuperHighway)
- OSPI Annual Technology Survey
- Staff Survey Data

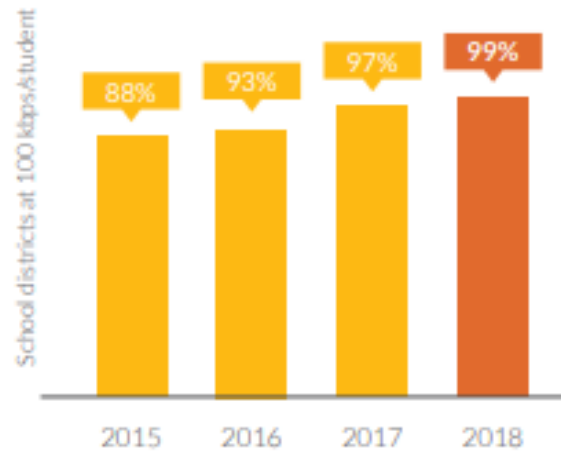
Federal Data / EducationSuperHighway

BANDWIDTH

Since 2015, an additional **242,359** students can access the Internet at speeds of 100 kbps/student.

But there is still work to be done.

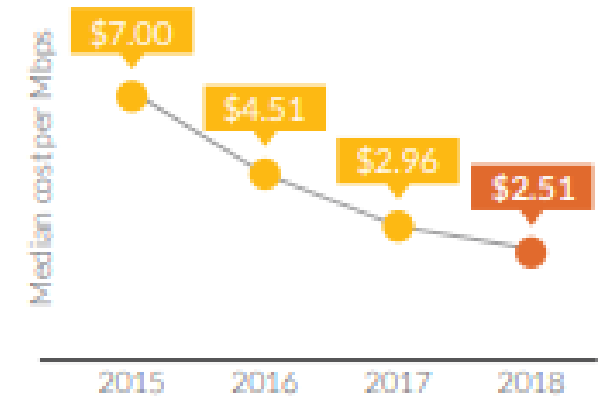
5,320 students still need more bandwidth for digital learning.



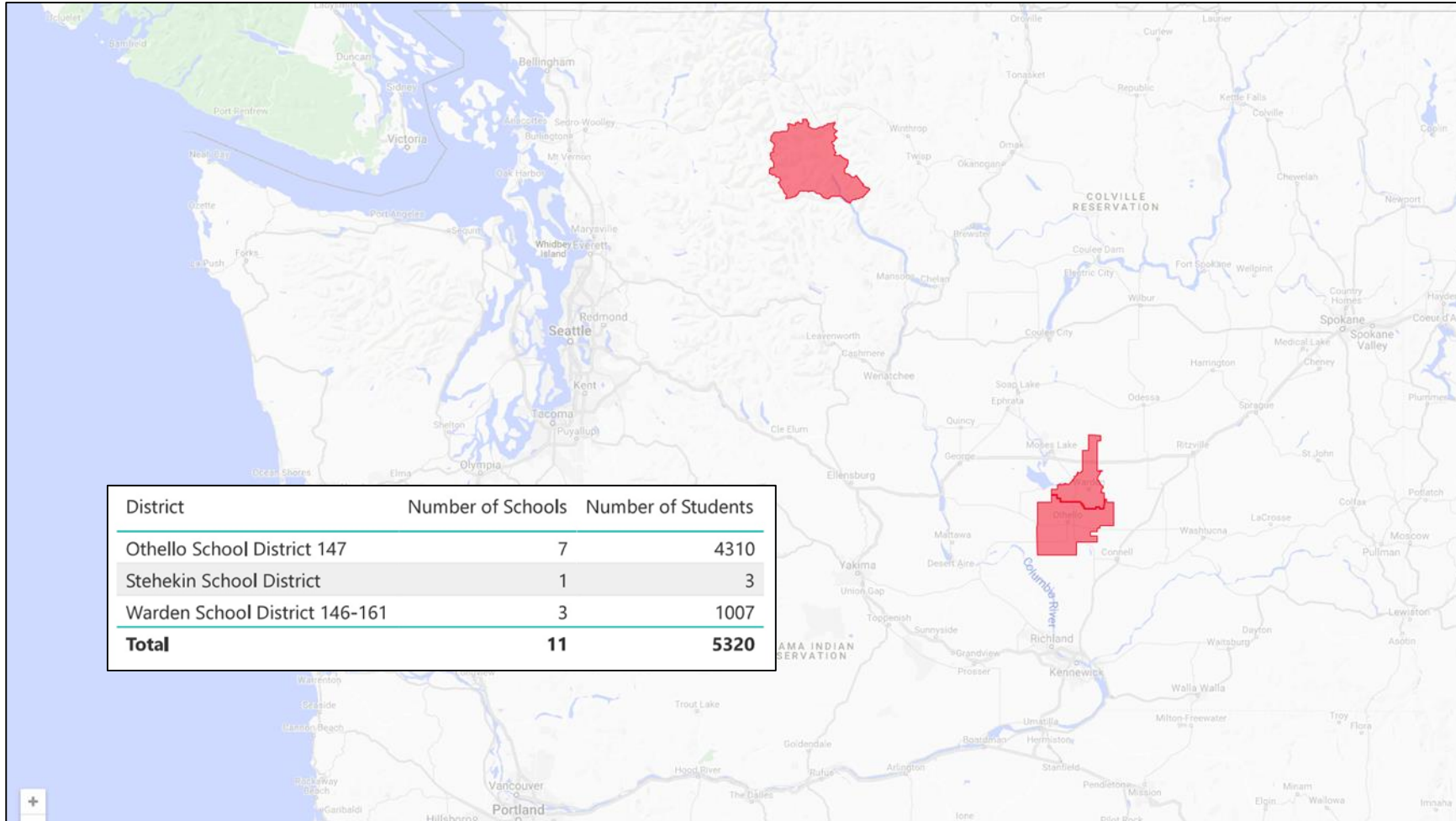
AFFORDABILITY & WI-FI

Since 2015, the cost of broadband in Washington has decreased by 64%.

This compares to 72% decrease nationally.

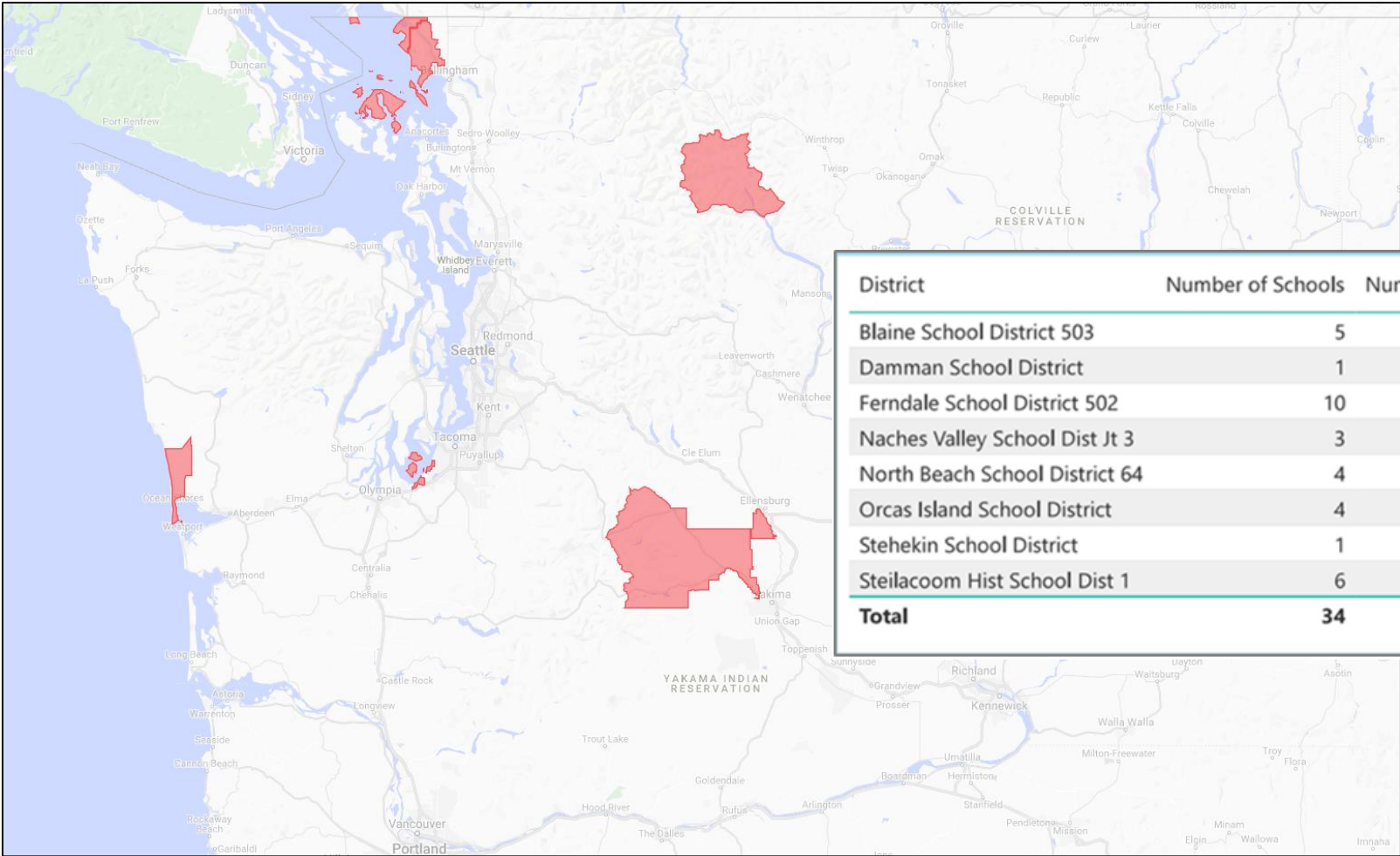


Districts with Bandwidth <100 kbps/student



Source: FCC,
EducationSuperHighway

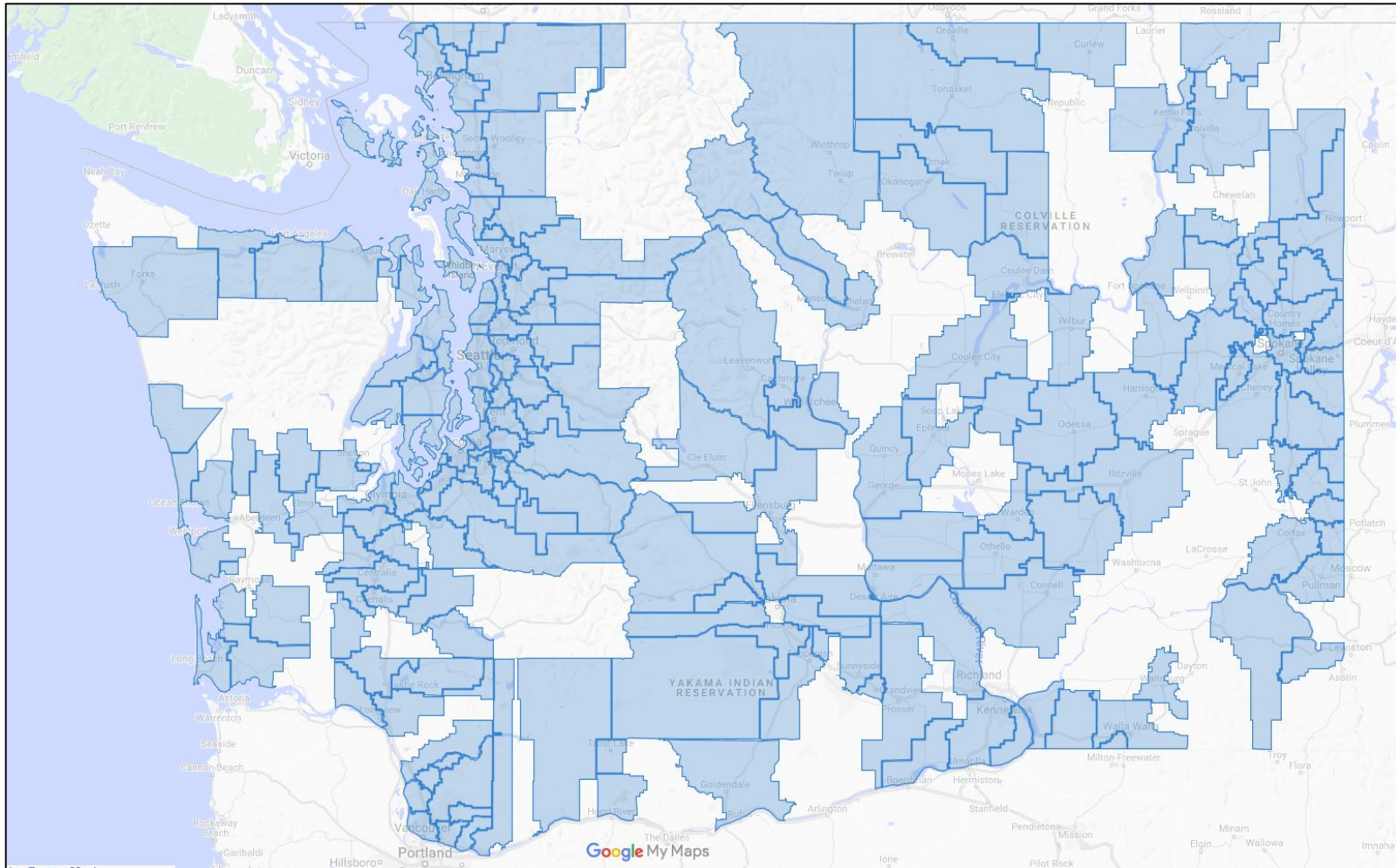
Districts without Fiber scalable to 10 Gbps



Source: FCC,
EducationSuperHighway

Districts with <1 Mbps per student (FCC 2018 Goal)

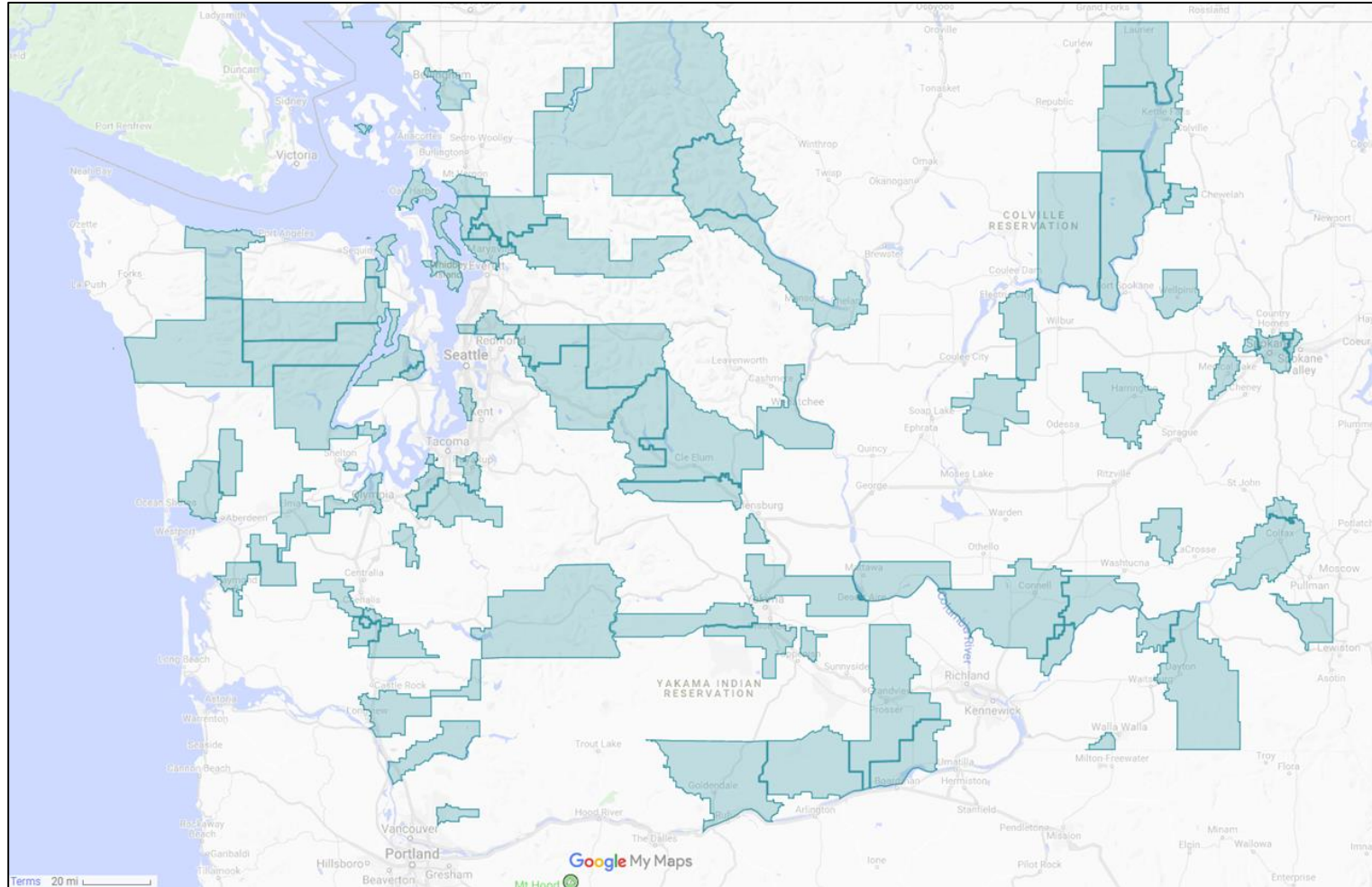
- N=200 (out of 295)
- Full list: [link](#)



Source: FCC,
EducationSuperHighway

Districts with 50% or more of E-Rate Category II funds remaining

- N=89 (out of 295)
- List of districts: [link](#)
- Available funding: [link](#)

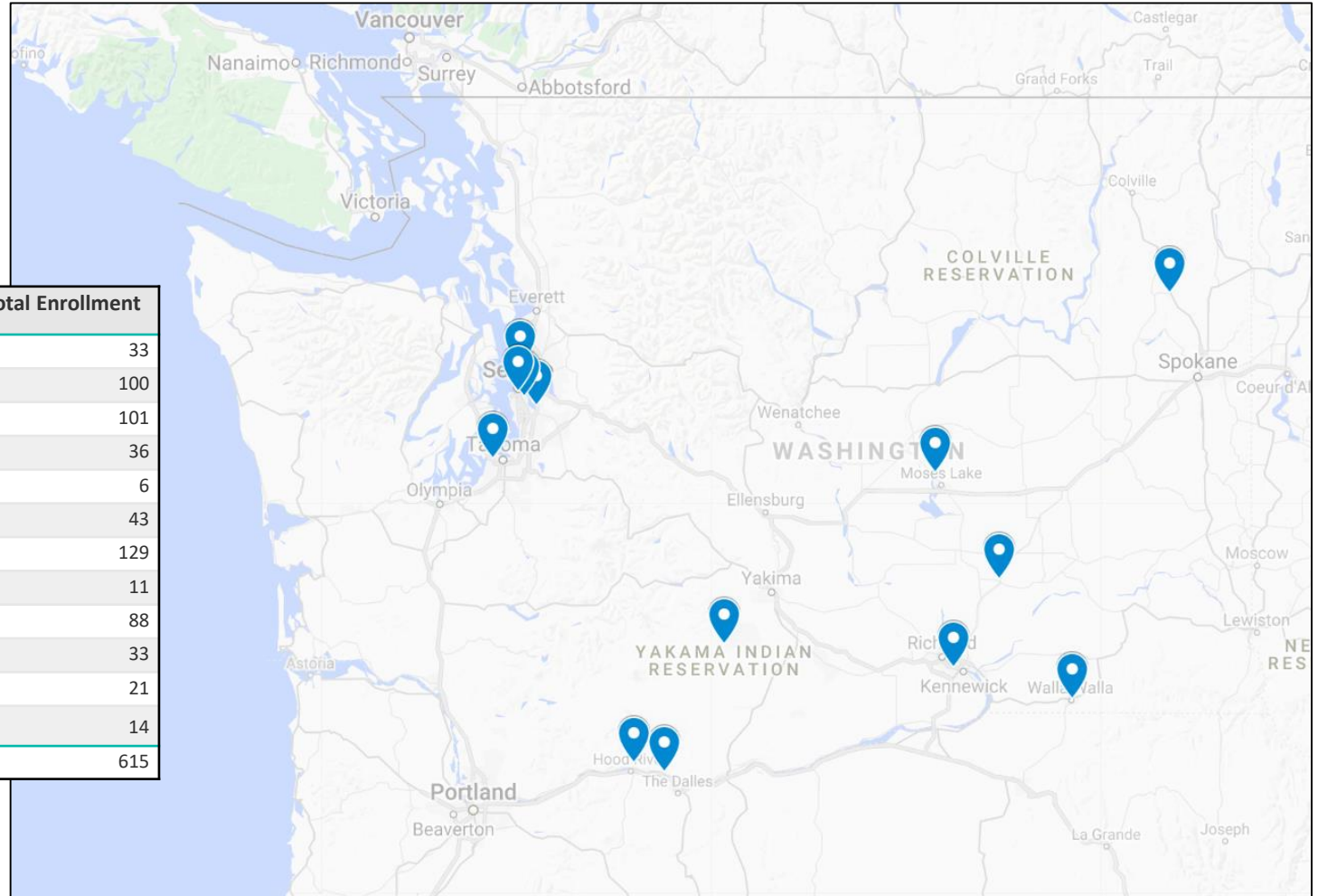


Source: FCC,
EducationSuperHighway

Schools without Wi-Fi (2017 – Most Recent Data)

- N=13
(out of 2085)

District	School	K-12 Total Enrollment
Kennewick School District	Benton/Franklin Juvenile Justice Center	33
Loon Lake School District	Loon Lake Homelink Program	100
Lyle School District	Dallesport Elementary	101
North Franklin School District	Palouse Junction High School	36
Renton School District	Griffin Home	6
Seattle Public Schools	Interagency Detention School	43
Seattle Public Schools	Middle College High School	129
Tacoma School District	Pearl Street Center	11
Walla Walla Public Schools	Alternative Education Program	88
Wellpinit School District	Wellpinit-Fort Simcoe High School	33
Wellpinit School District	WSD Columbia Basin J.C.	21
White Salmon Valley School District	White Salmon Academy	14
Total		615



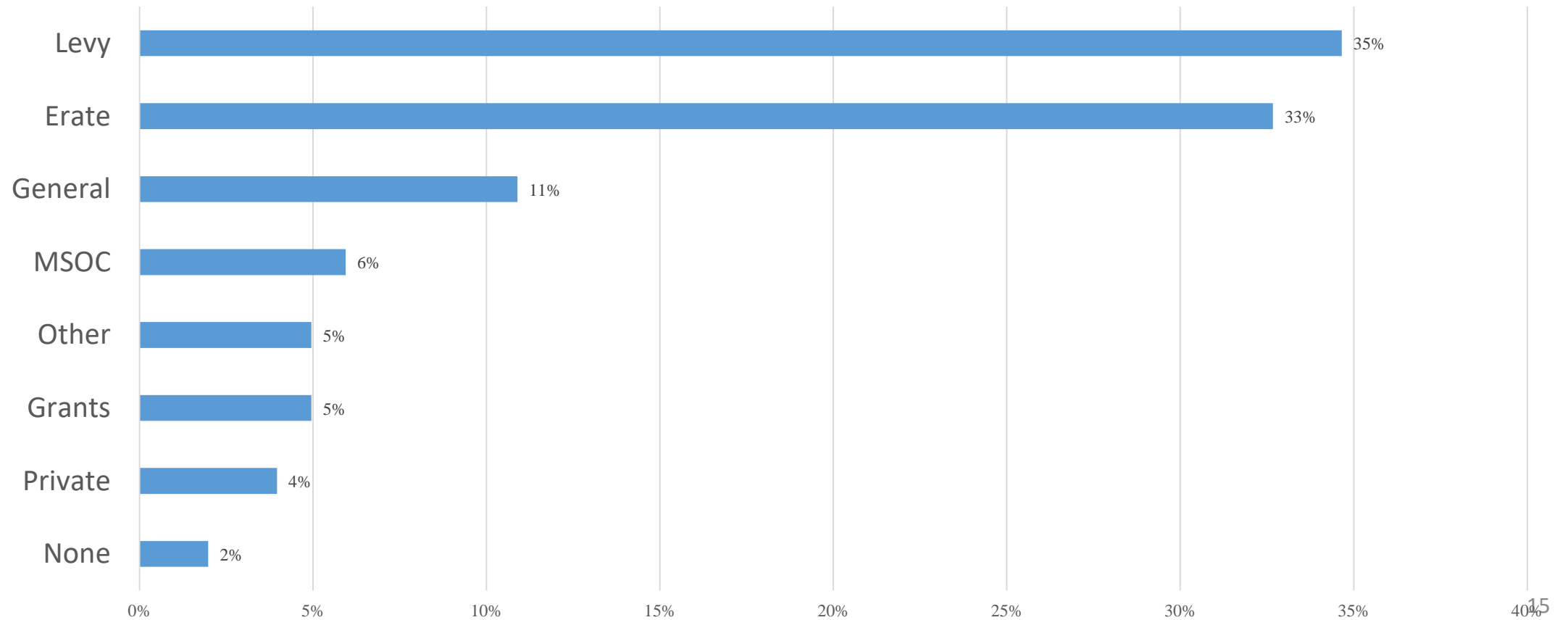
Source: OSPI

Senate Education Committee Staff Survey

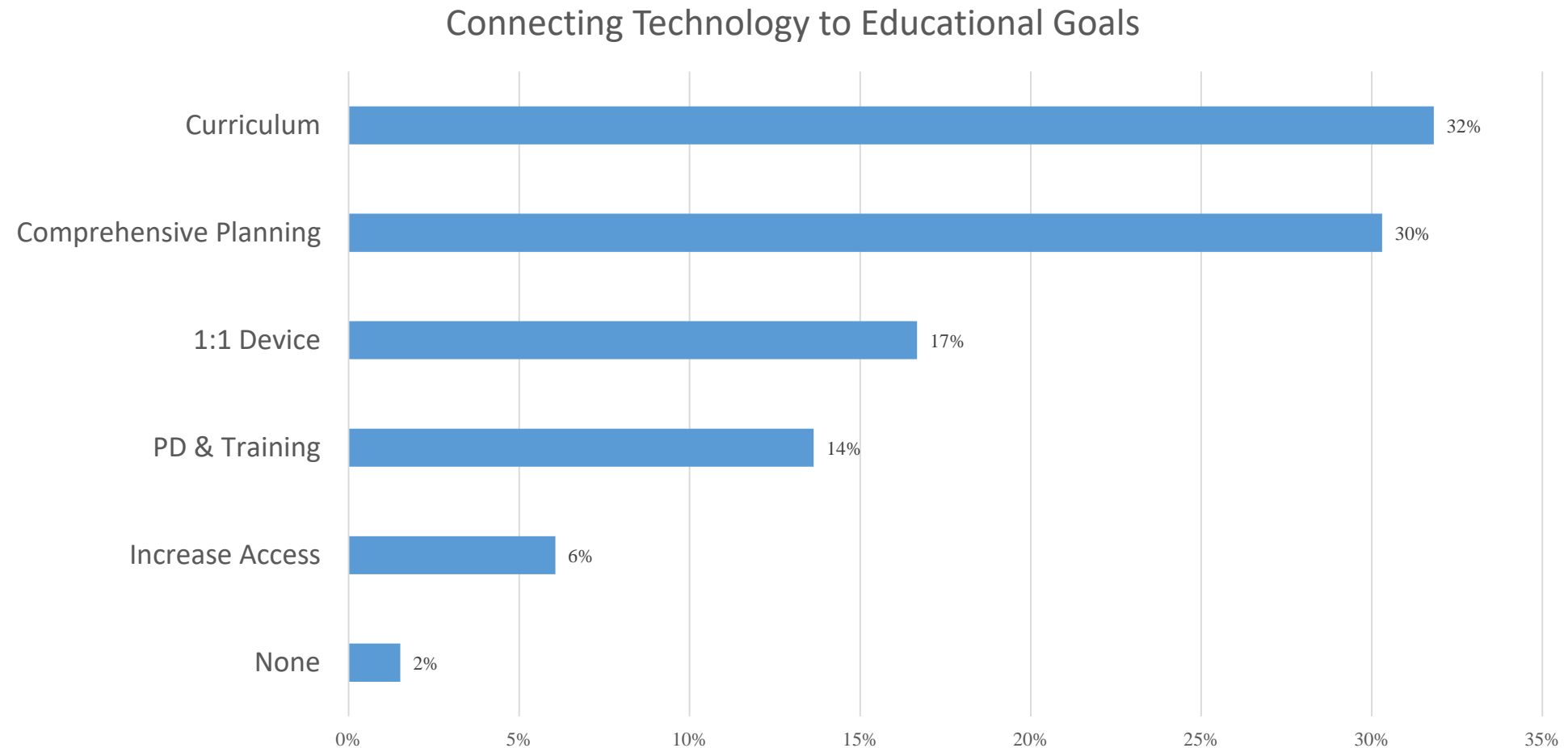
- Staff conducted survey at end of the 2017-2018 school year
- Coordinated through ESDs
- Received 64 responses, from districts of various sizes, locations
- Full results: [link](#)

What funding sources are available?

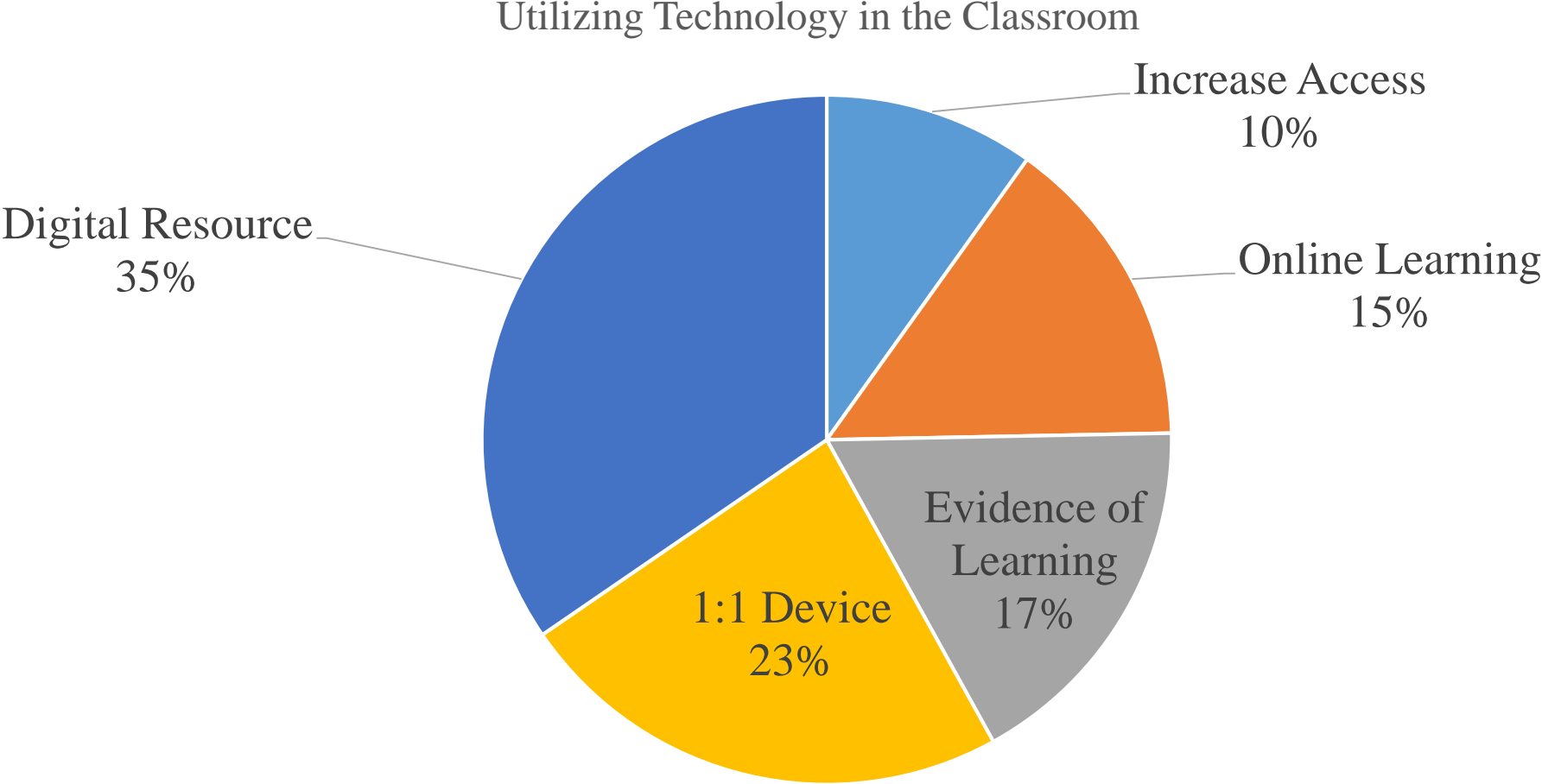
Funding for Broadband & Technology in School Districts



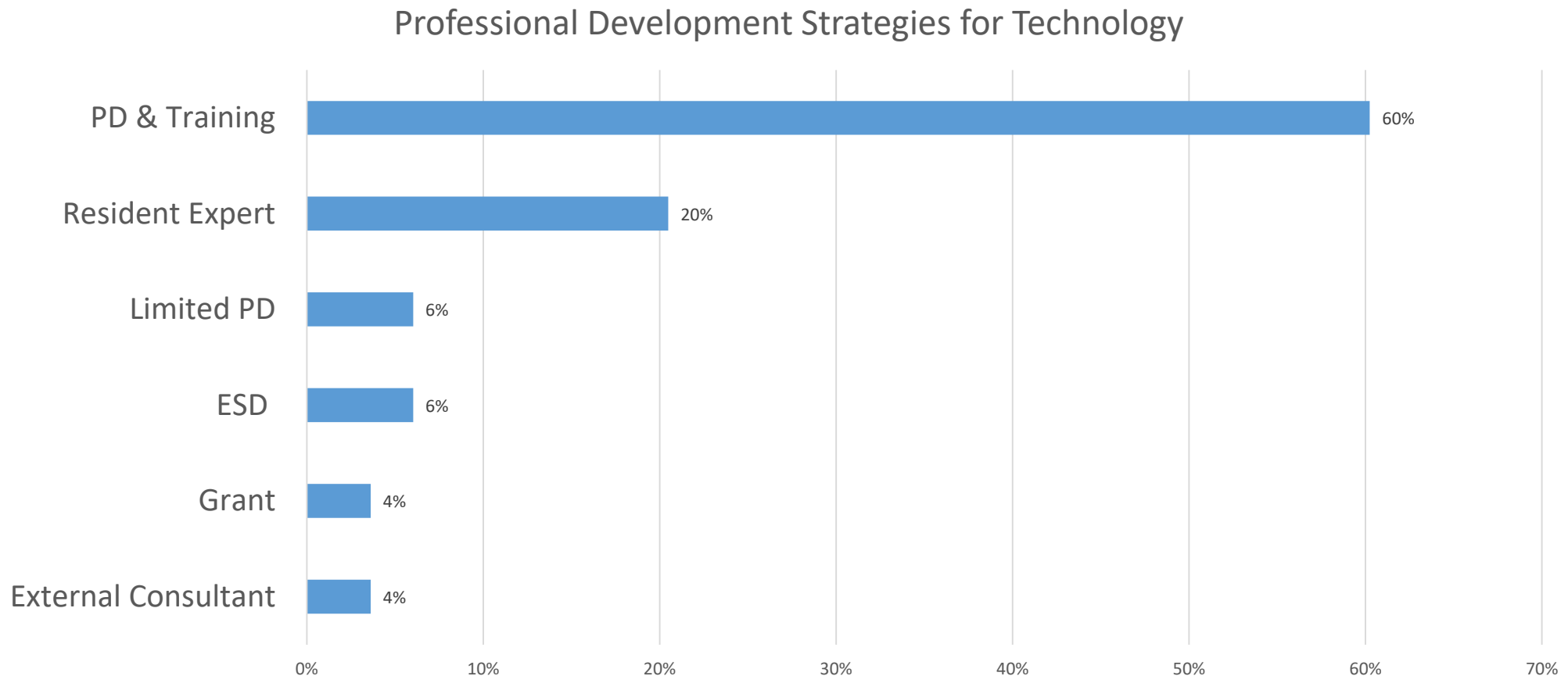
How is your district connecting technology with the district's educational goals?



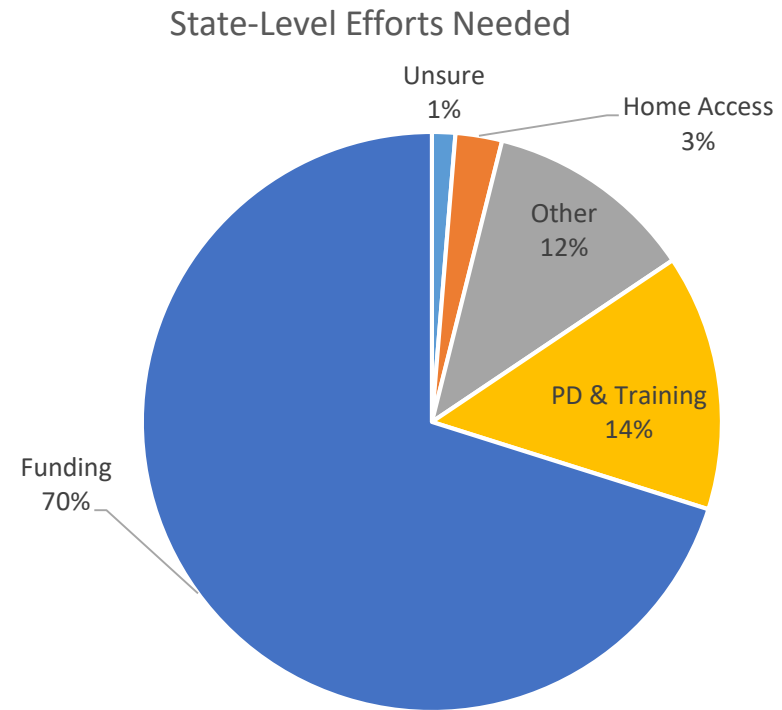
How is the district using technology in the classroom experience?



What professional development strategies are used for integrating new tech?



What state-level efforts might address inequalities in the types of access?



Recent WA Legislative Efforts

- CERB Rural Broadband Program (2018 Supp. Budget): Has awarded grants to local broadband projects
- SHB 2312 (2018 – DNP): Reverse Auction Process
- SB 5935 (2018 – DNP): Governor’s Office on Broadband Access
- SB 6034 (2017), SHB 2664 (2018): Expanded telecommunication abilities of utility districts and ports

WA Digital Learning Access Grant Program (ESSB 6032 – 2018)

- \$900,000 appropriated in 2018 Supplemental Operating Budget
- Managed by OSPI, with grants awarded Nov. 1, 2018
- Range from: \$360 to \$108,000

WA Digital Learning Access Grant Program (ESSB 6032 – 2018)

Adna School District
Almira School District
Arlington School District
Asotin-Anatone School District
Central Valley School District
Cle Elum-Roslyn School District
Conway School District
Federal Way School District
Goldendale School District
Griffin School District
Highline School District
Lacrosse Joint School District
Loon Lake School District
Medical Lake School District
Naches Valley School District
Napavine School District
Nine Mile Falls School District

North Franklin School District
North River School District
Oakesdale School District
Oakville School District
Ocosta School District
Port Angeles School District
Puyallup School District
Roosevelt School District
Seattle School District
Skykomish School District
South Kitsap School District
University Place School District
Wahkiakum School District
Wapato School District
Wellpinit School District
Wenatchee School District
Woodland School District

More info: <http://www.k12.wa.us/EdTech/digitalaccessgrants.aspx>

Other Efforts (Federal, etc.)

- Broadband for All Act (H.R. 6442, 2018 – Introduced)
- Pres. Exec. Order on Broadband (2018)
- States:
 - Working groups
 - Task forces
 - Surveys
 - Various projects

Summary

- Series of local, state, and federal efforts in recent years
- Field of quickly changing standards, technology
- Significant changes in WA connectivity

Additional References

- Pew survey on internet usage trends: <http://www.pewinternet.org/fact-sheet/internet-broadband/>
- OSPI Technology Survey: <http://www.k12.wa.us/EdTech/TechSurvey.aspx>
- EducationSuperHighway Report: <https://s3-us-west-1.amazonaws.com/esh-sots-pdfs/2018%20State%20of%20the%20States.pdf>
- CERB Rural Broadband Program: <https://www.commerce.wa.gov/building-infrastructure/community-economic-revitalization-board/rural-broadband/>
- OSPI Digital Learning Access Grant Program: <http://www.k12.wa.us/EdTech/digitalaccessgrants.aspx>