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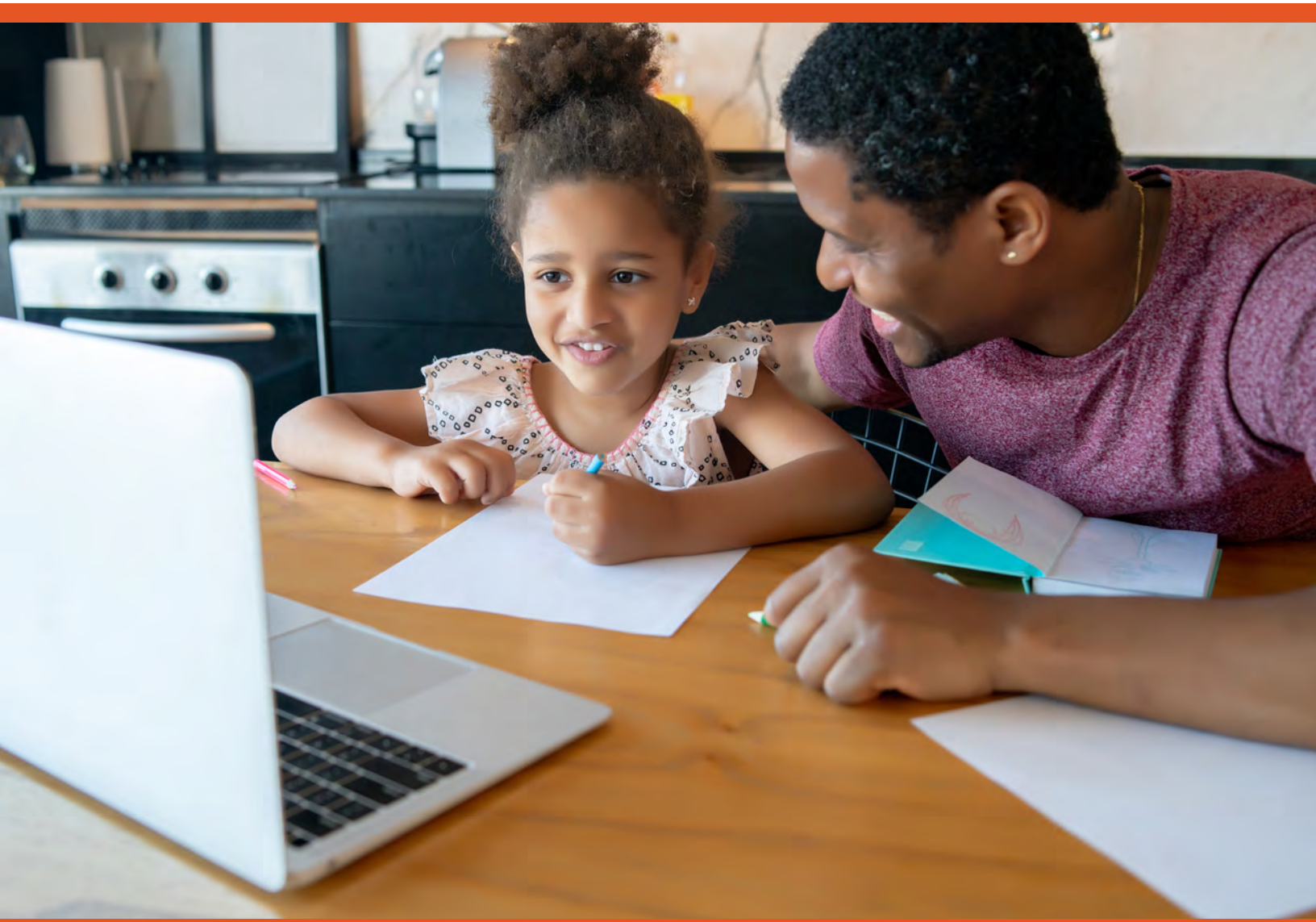
Home Access Playbook

Strategies for State Leaders Working to Bridge the Digital Divide for Students



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Strategies for State Leaders Working to Bridge the Digital Divide for Students

U.S. Department of Education

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Executive Summary

In spring 2020, when the COVID-19 pandemic resulted in a shift to hybrid and remote learning for most students, leaders at all levels took action to ensure students had access to the devices and home internet necessary to stay connected and continue learning. Although progress was made during the pandemic to address the digital divide, issues of home internet access have long impacted students and families, particularly students from low-income, rural, Tribal, and other under-resourced communities. As students return to school buildings, we must continue to engage in the collective problem solving and foster the collaborative partnerships that emerged during the COVID-19 pandemic in order to close the digital divide and strengthen the resilience of our learning ecosystem.

This Playbook outlines seven strategies, or "plays," that state leaders are taking to address issues of home internet and device access for students. The plays, which can be adapted and implemented across different state contexts, include:

- ☐ **Play 1 – Find or Form a State Broadband Coalition**

  Get involved in statewide broadband or digital inclusion efforts to leverage resources, capacity, and expertise across multiple state agencies and create a greater collective—and ensure education leaders are included.

- ☐ **Play 2 – Collect Data on Broadband Availability, Affordability, Adoption, and Quality and Use It to Drive Decision-Making**

  Collect data to drive decision-making, understand the existing barriers to broadband deployment and adoption, identify the most appropriate long-term solutions, target resources, assess progress, and build public support for broadband initiatives.

- ☐ **Play 3 – Identify Needs and Recruit Partners to Fill Specific Gaps**

  Build collaborative, cross-sector partnerships to increase capacity to implement solutions, introduce new expertise and skills, build broad project support, and open new avenues for funding or leadership support.

- ☐ **Play 4 – Assist Districts with a Menu of Options**

  Equip districts with information on the available broadband solutions and the factors that will impact their effectiveness to support informed local decision-making.

- ☐ **Play 5 – Leverage Bulk Purchasing to Optimize Use of Funds**

  Support districts by offering centrally managed procurement vehicles or contracts that leverage bulk purchasing power or longer contract timelines to increase affordability.

- [ ] **Play 6 – Provide Training and Technical Support for Families to Enhance Basic Digital Literacy Skills and Effectively Support Remote Learning**

  Provide families training and support on the use of technology and platforms provided by the school.

- [ ] **Play 7 – Provide Professional Learning and Resources for Educators to Drive Meaningful Classroom Learning**

  Provide professional learning opportunities that support improvements in instructional design and empower educators to effectively use technology to support student learning.

Introduction

Just a few months after celebrating the country's achievement of its goal to connect 99 percent of our school buildings to broadband,[1] the COVID-19 pandemic required a sudden and complete shift to hybrid and remote learning for most schools. Across the country, the COVID-19 pandemic highlighted issues of home internet access that have long impacted students and made clear that many of the strategies relied on before the COVID-19 pandemic needed to be shifted to equitably meet students' needs.[2]

A June 2020 report from Common Sense Media found that up to 16 million K-12 public school students live in households either without an internet connection or without a device adequate for remote learning at home. Approximately 9 million of these students live in households with neither an adequate connection nor an adequate device for remote learning.[3] Research shows that lack of high-speed broadband is more pronounced in low-income, rural, and Tribal communities, and for Black, Hispanic or Latino, and Native American households.[4]

Over the last year, new partnerships have emerged at the state, Tribal, and local levels, between the public and private sector to implement immediate connectivity solutions to ensure continuity of learning for students. States launched new data collection and outreach efforts to gather better data on student access to internet and devices at home, deployed creative connectivity solutions, and implemented new approaches to

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[1] Education Superhighway (2019). 2019 State of States: The Classroom Connectivity Gap is Closed. Retrieved from https://3x4u3i1w2onf4vhj418itzm1-wpengine.netdna-ssl.com/wp-content/uploads/2019-State-of-the-States-Full-Report-EducationSuperHighway.pdf. The 2019 State of the States report notes that 99% of schools are connected at speeds of 100 kbps per student, the FCC minimum recommended bandwidth to enable digital learning in the classroom. Starting in 2018, the FCC raised this standard to1 Mbps per student. In 2020, Connect K-12 reported that 47% of school districts are meeting the 1 Mbps per student goal: *https://connectk12.org/static/media/Connect_K12_2020_Executive_Summary_Full_Report.d84a960a.pdf*

[2] U.S. Department of Education. (2021). Keeping Students Connected and Learning: Strategies for Deploying School District Wireless Networks as a Sustainable Solution to Connect Students at Home. Retrieved from: https://tech.ed.gov/wireless-brief/. *Before the pandemic, schools, districts, and states were taking a variety of approaches to address the homework gap—from purchasing and lending mobile hotspots, to parking buses equipped with Wi-Fi hotspots near under-connected neighborhoods, to allowing students to use the school's internet before or after school. In many cases, however, unserved or underserved students have had to piece together internet access via smartphones with limited cellular data plans or travel to a library or fast-food restaurant to use free Wi-Fi. Even these basic solutions have become more difficult to navigate as schools, libraries, and businesses have closed or limited access to the public during the pandemic.*

[3] Chandra, S., Chang, A., Day, L., Fazlullah, A., Liu, J., McBride, L., Mudalige, T. & Weiss, D. (2020). Closing the K–12 Digital Divide in the Age of Distance Learning. San Francisco, CA: Common Sense Media. Boston, Massachusetts, Boston Consulting Group, retrieved from https://www.commonsensemedia.org/sites/default/files/uploads/pdfs/common_sense_media_report_final_7_1_3pm_web.pdf

[4] U.S. Congress Joint Economic Committee. (2017, September). America's digital divide. Retrieved from: https://www.jec.senate.gov/public/_cache/files/ff7b3d0b-bc00-4498-9f9d-3e56ef95088f/the-digital-divide-.pdf

supporting districts. State and local use of emergency stimulus funding[5] along with state and local funds to purchase and lend mobile hotspots or pay for home internet subscriptions have temporarily eased connectivity issues for approximately 4 million students; however, more than 75 percent of the state and local efforts to address the digital divide for students will expire in the next 1 to 3 years.[6] Once emergency stimulus programs end, states and districts will be required to cover these new, recurring expenses in already limited budgets. A coordinated federal, state, and local effort is needed to sustain and continue building on the progress made to ensure home internet access for students.

As our students continue to return to school buildings and we move from pandemic response to recovery, technology will be essential for meeting the needs of diverse learners, supporting teachers, and providing school and district leaders with flexible models to support and accelerate learning. Reliable home internet access is also critical for ensuring an equitable recovery for our students' families and across our communities—by providing access to online workforce development resources, job skills training, and telehealth services. It is important that we remain focused on addressing the digital divide for students in order to strengthen the resilience of our learning ecosystem in the face of future disruptions and provide equitable access to high-quality education.

[5] States and districts have received three rounds of emergency stimulus funding through the Coronavirus Aid, Relief, and Economic Security (CARES) Act, the Coronavirus Response and Relief Supplemental Appropriations Act, 2021 (CRRSA), and the American Rescue Plan Act of 2021 (ARP). Information about these programs is available on the Department's website: https://oese.ed.gov/offices/education-stabilization-fund/

[6] Ali, T., Chandra, S., Cherukumilli, S., Fazlullah, A., Galicia, E., Hill, H., McAlpine, N., McBride, L., Vaduganathan, N., Weiss, D., Wu, M. (2021). Looking back, looking forward: What it will take to permanently close the K–12 digital divide. San Francisco, CA: Common Sense Media. Retrieved from: https://www.commonsensemedia.org/sites/default/files/uploads/pdfs/final_-_what_it_will_take_to_permanently_close_the_k-12_digital_divide_vfeb3.pdf

About this Resource

In spring 2020, the Office of Educational Technology (OET) hosted a series of listening sessions with state leaders—from state educational agencies (SEAs), state broadband offices, state libraries, and state economic development agencies—to identify what digital equity issues were magnified as a result of school closings, what immediate actions states were taking to address these issues, and what long-term solutions were being considered to sustainably address these issues.

This Playbook outlines seven strategies, or "plays," that state leaders are taking to address issues of home internet and device access for students. The plays address several of the needs identified by state leaders in the listening sessions, including a need for more accurate broadband availability data and data on students' home broadband access, a need for continued collaboration across government agencies and with internet service providers (ISPs) and community partners, and a need for additional training for teachers and families to effectively use the technology to improve student learning.

The Playbook and the individual plays are not intended to be prescriptive and may not be universally applicable across state contexts. However, the Playbook aims to share actionable strategies and state examples so that other state leaders might discover a new approach that can be adapted to their context.

Each play provides a brief overview outlining the importance of the play, frequently asked questions that provide additional background context, exemplars that demonstrate each play in practice, a checklist of considerations for implementing the play, and key questions to ask for each consideration.

Play 1 – Find or Form a State Broadband Coalition

Coordinated statewide broadband or digital inclusion efforts have the power to leverage resources, capacity, and expertise across multiple state agencies to create a greater collective impact than might be possible by any individual agency. Additionally, statewide efforts may lend legitimacy and leadership support to digital equity and inclusion initiatives, ensuring that issues of broadband access, affordability, and adoption are prioritized across multiple state agencies and sectors including education, workforce development, healthcare, public safety, and economic development. Recognizing the value of a coordinated statewide effort, many states and territories have established state broadband or digital inclusion coalitions. Education leaders, institutions, and agencies are well-positioned to lead and contribute to broader state or local broadband or digital inclusion coalitions, task forces, or initiatives working to implement solutions to address the digital divide – and should be represented in these groups. Implementing long-term solutions that address the digital divide will require a coordinated effort across the local, state, and federal levels.

Frequently Asked Questions

1. Which states have statewide broadband coalitions?

The State Broadband Leaders Network (SBLN) is a community of state broadband initiative leaders convened by the National Telecommunications and Information Administration (NTIA) at the U.S. Department of Commerce. Fifty states, the District of Columbia, and five territories participate in the SBLN and have state broadband efforts of varying levels of formality and statewide coordination (e.g., state broadband office, task force, commission, or authority to coordinate broadband efforts). Some of these state broadband efforts are run from the Governor's office, while others operate out of state offices for housing, community development, information technology, or economic development. Visit the SBLN website for more information about state broadband efforts and to identify state broadband contacts: https://broadbandusa.ntia.doc.gov/resources/states.

2. What agencies or organizations might be represented in a state broadband coalition?

The membership of each state broadband coalition, taskforce, or working group will be different; however, the following agencies, organizations, or roles have been represented across current state broadband efforts:

Sector	Possible Member Agencies, Organizations, Individuals
Education & Libraries	• State Educational Agency • State-level Private School Organization • State Board of Higher Education • State Community College Board • State Education Network or Regional Education Network • State Library or Public Libraries • Postsecondary Institutions
Economic Development	• State Department of Commerce or Economic Development • State Department of Trade • State Workforce Development Board • State Farm Bureau
Government	• Governor's office • Organizations or associations that represent townships, counties, cities • State or local elected officials • Elected leaders of Tribal Nations • State Department of Transportation • Office of Public Safety or Emergency Management • State Police
Healthcare & Family Services	• State Department of Health and Family Services • State Department of Aging • Housing authorities • Hospital networks
Information Technology	• State Department of Information Technology
Private/Non-Profit	• Telecommunications/internet service providers • Electric Co-ops • Foundations • Non-profits/local business owners
Other	• Local citizens

3. How can the education sector contribute to the state discussions?

As representatives of educators, learners, and families from PreK-12 through Postsecondary Education and Adult Education, education leaders are uniquely positioned to represent a diverse range of perspectives and needs from across the state.

As trusted community members, schools and postsecondary institutions are well-positioned to gather data on access and adoption, share information about state broadband programs, and support digital literacy and digital skills training in local communities. Schools and postsecondary institutions may also be able to unlock federal funding dedicated for schools, leverage school building infrastructure for placement of cell towers or antennas or may have existing school broadband infrastructure that can support broader community networks. Since the technology needs of a student may be specialized (e.g., higher upload speeds, full-screen computing devices, keyboards), education leaders should take part in the conversations and advocate for solutions that address these needs.

Play in Practice

The Nebraska Information Technology Commission (NITC)

The Nebraska Information Technology Commission (NITC), established by the Nebraska legislature, provides advice, strategic direction, and accountability on information technology investments in the state. To achieve its mandate, the NITC relies on coordination and collaboration to influence a wide range of information technology issues. The NITC is assisted by six advisory groups: Community, Education, eHealth, Geographic Information Systems (GIS), State Government Councils, and the Technical Panel. The Education Council is a 16-member advisory committee that includes representatives from K-12 (e.g., educators, administrators) and Postsecondary education (e.g., state colleges, community colleges, University of Nebraska System). The Education Council advises the NITC on issues related to education information technology needs, goals, and policy. More information on the NITC Education Council is available at: https://nitc.nebraska.gov/education_council/index.html.

New Mexico Homework Gap Team (NM HGT)

New Mexico established the New Mexico Homework Gap Team (NM HGT), a collective effort to coordinate statewide activities in support of narrowing the Homework Gap. The team is led by the New Mexico Public Education Department, the Department of Information Technology, and others including the New Mexico Indian Affairs Department, Public Schools Facility Authority, Department of Cultural Affairs, State Library, Santa Fe Indian School, Navajo Nation, and Community Learning Network. The NM HGT collaborates to identify broadband gaps, clarify issues, and provide recommendations (e.g., legislation, funding, construction, regulation) to support the New Mexico Broadband Strategic Master Plan. More information on the New Mexico Homework Gap Team is available at: https://www.communitylearningnetwork.org/nm-homework-gap-team.html.

Checklist & Key Questions

☐ **Join an existing statewide broadband coalition.**

- What formal or informal coalitions or initiatives already exist?
- Is the education sector represented in the existing coalition? If yes, reach out to the education representative(s) and learn about the key priorities of the group and how to contribute. If not, why not?
- What resources (e.g., school building infrastructure, school networks, funding); data; expertise; awareness (e.g., needs of teachers, students, families); or outreach support can you provide as an education representative?

☐ **Convene a new coalition if one does not already exist.**

- What are the goals for the coalition? What will the coalition accomplish?
- Who should be involved? Is the committee representative of the community? Along with putting out a call for members, consider targeted outreach (e.g., to community-based organizations that support families experiencing homelessness).
- What resources, expertise, and perspectives will each coalition member contribute? What's missing? What role will each coalition member fill?
- Is a memorandum of understanding (MOU) between coalition member agencies or organizations necessary?
- How will the coalition be codified (e.g., legislation)?

Play 2 – Collect Data on Broadband Availability, Affordability, Adoption, and Quality and Use It to Drive Decision-Making

Collecting data about the availability, affordability, adoption, and quality of broadband internet is critical for driving decision-making, understanding the existing barriers to broadband deployment and adoption, identifying the most appropriate long-term solutions, targeting resources, assessing progress, and building public support for broadband initiatives. There are existing federal data sets and mapping efforts that state education leaders may be able to utilize, and the FCC is currently implementing changes to its data collection processes and systems to gather more granular information on broadband deployment. However, there may be other data that state or local education leaders may need to collect to pinpoint student household needs. Partnerships can be key for helping state education leaders analyze existing data and gather new data to inform planning.

Frequently Asked Questions

1. What type of data should we collect?

States are uniquely positioned to establish common data elements that can be collected across all local educational agencies (LEAs). Establishing common data elements will provide a comprehensive picture of the state of connectivity and allow for better targeting of resources. It will also help ensure that this data can be aggregated, in accordance with applicable privacy laws, at the state and national levels to ensure a coordinated response.

The Council of Chief State School Officers (CCSSO) developed the following list of recommended data elements in collaboration with SEAs, LEAs, and industry experts:[7] CCSSO is engaging with Student Information System (SIS) vendors to incorporate the data elements into their SIS products.

[7] Council of Chief State Officers, 2020. *Restart & Recover: Home Digital Access Data Collection: Blueprint for State Education Leaders*. [online] Retrieved from: https://ccsso.org/sites/default/files/2020-07/7.22.20_CCSSO%20Home%20Digital%20Access%20Data%20Collection%20Blueprint%20for%20State%20Leaders.pdf.

Data Element	Question
Digital Device	*What device does the student most often use to complete schoolwork at home?* ***Why is this data element important?*** Students with access to a desktop, laptop, or tablet are better equipped to fully participate in remote learning. Students using only a mobile device to participate in remote learning may face challenges including use of educational platforms or tools that are not designed for mobile devices and difficulty reading information or typing assignments due to the size of the screen and limited keyboard functionality.[8] According to a study conducted by the Quello Center at Michigan State University, "students who do not have access to the internet from home, or who are dependent on a cell phone alone for access, perform lower on a range of metrics, including digital skills, homework completion, and grade point average."[9]
Device Access	*Is the primary learning device a personal device or school-provided? Is the primary learning device shared with anyone else in the household?* ***Why is this data element important?*** Students that do not have a dedicated learning device but must share a device with other school-aged siblings or parents that are also learning or working from home may face disruptions to their remote learning. Understanding how many students do not have a dedicated learning device may help a school or district target limited resources and prioritize which students should receive school-provided devices.
Internet Access	*Can the student access the internet on their primary learning device at home?* ***Why is this data element important?*** Identifying which students do not have internet access at home will help schools or districts determine whether students face an access or an affordability challenge, identify the best home internet access solution, and prioritize which students should receive school- or district-support for home internet access. Pairing this question with a question about the type of internet service will also help schools or districts identify students that may only have access via cellular service.

[8] Chandra, S., Chang, A., Day, L., Fazlullah, A., Liu, J., McBride, L., Mudalige, T. & Weiss, D. (2020). Closing the K–12 Digital Divide in the Age of Distance Learning. San Francisco, CA: Common Sense Media. Boston, Massachusetts, Boston Consulting Group, retrieved from https://www.commonsensemedia.org/sites/default/files/uploads/pdfs/common_sense_media_report_final_7_1_3pm_web.pdf

[9] Hampton, K. N., Fernandez, L., Robertson, C. T., & Bauer, J. M., Broadband and Student Performance Gaps, James H. and Mary B. Quello Center, Michigan State University (March 2020), available at https://quello.msu.edu/broadbandgap/.

Data Element	Question
Internet Access Type	*Does the student access the internet using a data plan for a cell phone, smartphone, tablet, mobile hotspot, or other device?* *In addition to a mobile internet service or data plan, does the student use any other type of internet service when at home?* *Other than through a mobile data plan, does the student access the internet at home using:* • *High-speed internet service installed at home, such as cable, DSL, or fiber-optic service?* • *Satellite internet service?* • *Dial-up service?* • *Some other service?* ***Why is this data element important?*** The type of connection (e.g., fiber, cable, DSL, satellite, etc.) will impact the bandwidth and speeds a student has access to for learning. Bandwidth and consistency of access will impact the quality of a student's digital learning experience and how students engage with their teacher, classmates, and content. Students that only have access through a cellular data plan, may be subject to data caps that increase cost and slow down service once the cap is reached.
Internet Performance	*Can the student stream a video on their primary learning device without interruption?* ***Why is this data element important?*** Between synchronous engagement via a video platform or streaming pre-recorded lessons or lectures, video has been a primary form of communication and teaching during the pandemic. Understanding students' ability to stream a video will help schools understand what additional accommodations might be needed, even if a student has internet access and a device (e.g., downloading content for use offline).

2. What existing data may be available to support this effort?

Census Bureau American Community Survey (ACS) – Computer and Internet Use Data

- The Census ACS data includes questions about the computers and devices that people use, whether people access the internet, and how people access the internet. Every year, over 3.5 million households across the country participate in the ACS. The ACS produces estimates on a wide range of geographies, including low geographic levels such as census tracts and block groups. States can use the 5-year ACS estimates (e.g., most recent covers 2015-2019) to identify which communities across their state may have low levels of computer or internet adoption in order to target resources and investments. The data can also provide insight into the most common types of devices (e.g., desktops or laptops vs. smartphones) and most common types of connectivity (e.g., wired vs. satellite vs.

cellular), which can inform leaders about the quality of the access across communities. School districts can look at these same data points at the school-district level to provide a high-level snapshot of connectivity in their community.

FCC Form 477 - Fixed Broadband Deployment Data

- The FCC Form 477 data documents the providers (e.g., Comcast, Verizon), the technology (e.g., DSL, cable), the services (residential or business), and the maximum advertised upload and download speeds available by census block. Form 477 data is self-reported by ISPs twice a year. This data has been criticized for over-estimating broadband coverage because providers may not offer service to every home in every census block in which they report service. However, this data can be a useful tool for schools trying to identify a list of service providers that may serve their communities and could serve as potential partners. The FCC is in the process of implementing a new Broadband Data Collection that will result in more detailed and precise information on the availability of fixed and mobile broadband services. The Broadband Data Collection program will give the FCC, as well as stakeholders, including schools, the tools they need to determine the availability and quality of broadband deployment on a location-specific basis.

NTIA Internet Use Survey Data

- The NTIA Internet Use Survey covers a range of topics related to digital inclusion and other internet policy issues, including the adoption of different types of devices and internet access technologies, locations of internet use (e.g., home, school, library), types of online activities, and the primary reason households are not online (e.g., cost, relevance). NTIA partners with the U.S. Census Bureau to administer the Internet Use Survey as a periodic supplement (e.g., most recently conducted in November 2019) to the Current Population Survey (CPS). The CPS is a monthly survey that includes approximately 50,000 households across all 50 states and the District of Columbia. States can use the NTIA Data Explorer to track internet use metrics overtime and see state-by-state comparisons or break down metrics by demographics. Pairing this data with the ACS Computer and Internet Use data can provide additional insight into issues of access, affordability, and adoption at the state-level.

Internet Speed Test Data

- Internet speed test data provides a snapshot of the performance, quality, and availability of internet service at a particular moment in time. Because of variations in home Wi-Fi systems and other factors that can affect the accuracy of measurements, such tests are most valuable as a measure of mobile broadband speeds, but they can also provide useful information as to user experience with their fixed broadband service. By measuring latency (or ping), and download and upload speeds, speed tests can confirm the speed of a connection and whether the service is measuring up to an ISPs advertised speeds. States are using openly licensed speed test data from organizations like the Measurement Lab (M-Lab) and Ookla alongside FCC Form 477 data to develop more accurate broadband

coverage and performance maps in order to target local, federal, and state broadband investments to underserved communities.

3. What maps or tools already exist?

ACS-ED Maps

- The ACS-ED Maps tool identifies conditions of school-age children in school districts based on data from the U.S. Census Bureau's American Community Survey Education Tabulation (ACS-ED). The map displays, by school district, the percent of households with a computer and the percent of households with a broadband internet subscription.

NTIA Indicators of Broadband Need Map

- Layers in this map, which uses different data sources to show information on broadband availability and areas of need, were created using data sourced from the American Community Survey collected by the U.S. Census, Measurement Lab (M-Lab), Ookla, Microsoft, and the Federal Communications Commission (FCC). In addition, there is a layer in the map that displays the locations of higher education institutions eligible as Minority Serving Institutions (MSIs) under NTIA's Connecting Minority Communities grant program. There is also a layer that shows areas designated as American Indian, Alaska Native, and Native Hawaiian Areas by the U.S. Census in 2020. Reference the FAQ document or User Guide for more information.

FCC Map of Fixed Broadband Deployment

- The FCC's interactive map of fixed broadband deployment depicts the census-block based fixed deployment data that providers report on the FCC Form 477. Users can search the map for information by provider and reported speed in an area. The Broadband Data Collection that the FCC is currently developing will provide more detailed and granular fixed and mobile deployment data than is currently collected through Form 477.

Digital Divide Index

- The Digital Divide Index (DDI) calculates a DDI score of 0 to 100 for each county or census tract. A score of 100 indicates the highest digital divide. The DDI is comprised of two scores: (1) the infrastructure/adoption (INFA) score and (2) the socioeconomic (SE) score. The INFA score is developed by examining five variables tied to infrastructure and adoption (e.g., percentage of homes without a computer or internet access; median maximum advertised download and upload speeds). The SE score is developed by examining five variables known to impact internet adoption. The DDI uses ACS 5-year estimate data and FCC Form 477 data. A community with a high INFA score may need to focus efforts on improving broadband infrastructure, while a community with a high SE score may need to focus on digital literacy training and internet adoption efforts. States can quickly

see which communities have the highest DDI score and where additional investments and resources may be needed.

Play in Practice

New Mexico collects granular data to close the Homework Gap

In response to the COVID-19 pandemic, New Mexico formed the Homework Gap Team (NM HGT), bringing together leaders from across the state to take a holistic approach to addressing the Homework Gap.[10] Starting March 2020, the state administered a series of surveys to better understand and address students' home access issues.

The first survey asked school technology directors to identify how many student devices, such as hotspots and computers, might be needed. For example, the survey asked, "*If funding became available for end-user devices (e.g., Chromebooks, tablets), and you had some students that could benefit from that, how many would you ask for?"* The results revealed that approximately 44,000 students needed broadband connectivity and another 55,000 students required learning devices.

A second survey was issued to students, families, and teachers to understand the quality of connectivity during distance learning. It asked questions such as, *"Who is your Internet service provider?"* and "*My experience has been…"* Respondents also completed a M-Lab Speed Test that measured upload and download speeds as well as their latency and retransmission.

The survey data was used to target the rollout of several strategies to provide home connectivity to students including the purchase of 700 residential hotspots, 101 facility-based mobile hotspots, and more than 6,000 student devices. The State also created the New Mexico Broadband Map[11] to identify unserved and underserved locations across the state by pairing the NM HGT survey data with ISP coverage data by technology type. The interactive map allows users to input an address and see information about the available internet service options. It also maps public Wi-Fi parking lot hotspots throughout public, Tribal, and ISP locations. The New Mexico Broadband Map and the underlying survey data informed the development of the State of New Mexico Broadband Strategic Plan.[12]

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[10] The team included leaders from the New Mexico Public Education Department, New Mexico Indian Affairs Department, Department of Information Technology, Department of Cultural Affairs, State Library, Santa Fe Indian School, Navajo Nation, Community Advocacy.

[11] New Mexico Broadband Map: https://nmbbmapping.org/mapping/

[12] State of New Mexico Broadband Strategic Plan and Rural Broadband Assessment: https://www.doit.state.nm.us/broadband/reports/nmbbp_strategic20200616Rev2Final.pdf

Checklist & Key Questions

☐ **Establish the objectives for the data collection effort.**

- What questions are you trying to answer about student home internet access and device access? Whether students have internet access? What type and speed of access? The costs of home access? The data caps associated with home access? Whether students have a dedicated learning device? Type of device? Can students access that device year-round or only during the school year?
- How will your data collection align with and support your long-term goals for internet and device access and the use of technology to support learning?
- How do you plan to use the data you collect?
- How long will the data be retained before being destroyed?
- How will the data be shared, if at all? Will it be used internally or displayed publicly via a map? Does this data sharing comply with applicable privacy laws?

☐ **Identify existing data sets and data gaps.**

- What information is currently collected and what new information is needed to understand the scope of the challenge?
- Are there other entities (e.g., state agencies, non-profit organizations, ISPs) collecting the needed data? Is it possible to establish data-sharing agreements to get access to this data? Do these data-sharing agreements comply with applicable privacy laws?
- Is your state a partner in the NTIA National Broadband Availability Map? Can any data be accessed through this partnership?

☐ **Identify what existing data collection tools already exist.**

- Are there existing state or district data collection efforts that already exist (e.g., surveys)?
- Is it possible to add additional questions or data elements to these existing tools to collect the needed information?

Checklist & Key Questions

☐ **Identify what skills and expertise are needed and available to support the data collection effort (e.g., survey methodologists, data analysts, GIS experts).**

- Is the expertise available in-house or is a partnership with another state agency, institution of higher education, or other entity necessary to support the data collection?

☐ **Design the data collection.**

- Is it possible to establish a set of consistent, standard questions or data elements?
- Who needs to be engaged (e.g., school or district leaders, families, representation from diverse communities, Tribal and state agencies) to gain buy-in?
- Have the questions been written in plain language and piloted with the anticipated respondents (e.g., school leaders, families) to ensure they are clear? Consider reusing question language from the NTIA Internet Use Survey or the ACS that have been tested by Census Bureau experts to help ensure clear and understandable questions.
- Has the survey been translated into the most common household languages?
- Is the survey accessible under Web Content Accessibility Guidelines (WCAG) 2.0 Guidelines?
- Have a range of data collection methods been considered to ensure students and families from a range of circumstances can be reached (e.g., paper surveys, email, text, phone calls)?
- Are there trusted partners that can support the data collection (e.g., school principals, community-based organizations)?

☐ **Determine how data will be stored and accessed.**

- Is there a central online survey tool and data repository that the state can utilize to collate LEA data in a central location?
- Where will the data be stored? What security features will be implemented?
- Who will have access to the data? Will it be shared publicly? Does this data sharing comply with applicable privacy laws?

Checklist & Key Questions

- ☐ **Continuously update the data to monitor progress.**
  - What are the key timelines that may impact how frequently the data must be updated (e.g., new student addresses; annual FCC Form 477 data)?
  - How often will the new data be collected? By whom?
- ☐ **Visualize the data and share the visualizations publicly to help build public support.**
  - Is there a state-level broadband map that currently exists?
  - Is there data from the education community that can be included on these maps (e.g., school locations; connectivity data for student households)?

Play 3 – Identify Needs and Recruit Partners to Fill Specific Gaps

Expanding home internet access for students requires solutions that address the digital divide for the broader community. Bringing new partners from other sectors (e.g., healthcare, economic development, public safety, local business) to the table can help state and local education leaders connect students and families in a holistic way that benefits the entire community and reaches beyond the school campus. Collaborative, cross-sector partnerships have the potential to increase capacity to implement solutions, introduce new expertise and skills, build broad project support, and even open new avenues for funding or leadership support.

Frequently Asked Questions

1. What are some possible connectivity solutions we might consider implementing?

Solution	Implementation Timeline	Description
Mobile Hotspot	Immediate deployment (1-4 weeks)	A small, portable device that connects to the internet via a cellular service and emits a Wi-Fi signal. Personal devices can then be connected to these Wi-Fi signals to access the Internet. Mobile hotspot devices and data plans may be purchased by schools or districts and sent home with students.
School or Community Wi-Fi Hotspots (e.g., drive-up, parking lot hotspots)	Immediate deployment (1-4 weeks)	Wireless access points set up at schools or other community locations that provide free service.
School or Community Bus Wi-Fi	Immediate deployment (1-4 weeks)	A Wi-Fi equipped school or community bus that is parked in a public location (e.g., an under-connected neighborhood) and provides free internet access to students within a certain radius of the bus.
Off-campus Wireless Network	Near future deployment (5 weeks – 6 months)	A school-owned Wi-Fi network that provides free, basic wireless internet access to the homes of students or other community sites often in neighborhoods with the greatest need.

Solution	Implementation Timeline	Description
School, District, or State-Sponsored Internet Service	Near future deployment (5 weeks – 6 months)	Schools, districts, or states temporarily cover the monthly cost of a low-cost internet service plan for students who lack internet service.
Broadband Infrastructure Deployment	Long-term deployment (years)	Leveraging federal, state, and local funds to develop broadband networks or infrastructure (e.g., fiber) through which broadband services can be delivered.

2. Who are potential partners, and what type of support might they provide?[13]

Institutional Partners

Partner	Type of support
Colleges and Universities	• Serve as key anchor tenants on broadband networks • Provide low-cost or free equipment and space • Offer expertise to teach digital literacy classes • Provide outreach and broadband adoption training for rural broadband projects (e.g., university extension offices which have traditionally provided education and technology to rural communities) • Operate school and inter-school networks among localities • Provide funding
Libraries (state/local)	• Provide broadband services, community outreach, and digital literacy expertise • Provide access to equipment and classrooms • Host health, education, and workforce development programs
Healthcare (hospitals/clinics)	• Serve as key anchor tenants on broadband networks • Sponsor telemedicine projects that include rural areas • Provide funding

[13] This chart is adapted from National Telecommunications and Information Administration BroadbandUSA. (2017). The Power of Broadband Partnership. Retrieved from https://broadbandusa.ntia.doc.gov/sites/default/files/publication-pdfs/bbusa_power_broadband_partnerships.pdf.

Private Partners

Partner	Type of support
Internet Service Providers (ISPs)	• Provide infrastructure expertise and facilities • Provide capacity, equipment, networks, collocation facilities, and interconnection • Emphasize economic development and technology innovation • Provide market and technology expertise and innovation
Foundations, Banks	• Fund and support broadband and/or device adoption and deployment • Promote equitable access

Government

Partner	Type of support
Local, State, and Federal Government	• Participate in project planning and implementation • Scale successful projects • Participate in applications for funding • Provide funding and loans
Economic Development Agency	• Share information about how to increase economic growth • Award grant funds to projects

Community Partners

Partner	Type of support
Community Centers (e.g., senior centers), Churches, Community-based Organizations (e.g., YMCA)	• Communicate broadband benefits to non-adopters/potential subscribers • Provide facilities and staff to support broadband adoption and digital literacy training
Chamber of Commerce	• Host events with local businesses • Share information with local businesses • Fund and support broadband and/or device adoption and deployment

3. When is a formal partnership agreement appropriate? When is an informal partnership agreement appropriate?[14]

Formal partnership agreements may be helpful when:

- Funds change hands in exchange for deliverables
- Parties commit to provide assets, facilities, and/or equipment
- Staffing will be provided
- Services or capacity will be provided
- Existing partnerships or contracts with third parties will be leveraged

Informal partnerships are often implemented without a traditional contracting process and may occur when:

- The broadband project can further the goals of partner organizations, such as workforce development and education
- Both parties can mutually aid each other (e.g., announcements in each other's newsletter)
- The informal partner's mission is compatible with the broadband project (e.g., community foundation)

4. What are the key components of a formal partnership agreement?

Formal partnership agreements may include the following items:

- The names of the parties involved
- Effective date, termination date
- Legal authority that governs the agreement
- Partnership expectations, roles, and responsibilities
- Expected deliverables, project timelines, and milestones
- Renumeration (e.g., cost-sharing, rates, charges)
- How intellectual property (IP) will be shared and managed
- Procedures for managing changes to the agreement or dispute resolution
- How any data sharing between the parties complies with applicable privacy laws, purpose of data sharing, and data security procedures

5. What are common practices for successful partnerships?

- Clearly outline roles and responsibilities
- Communicate regularly
- Designate a lead representative to participate regularly in group calls or meetings for each partner

[14] Questions 2-4 are adapted from National Telecommunications and Information Administration BroadbandUSA. (2017). The Power of Broadband Partnership. Retrieved from https://broadbandusa.ntia.doc.gov/sites/default/files/publication-pdfs/bbusa_power_broadband_partnerships.pdf.

- Monitor scheduled milestones and deliverables on a regular basis
- Listen and build trust; relationships grow as partners develop trust

6. How can a logic model support the implementation plan?

A logic model is a visual representation of the assumptions and theory of action that underlie the structure of a project or program. Developing a logic model at the beginning of program planning provides a framework for charting the links between your resources, activities, and outputs, and the project's intended outcomes. A logic model can help communicate to stakeholders the goals of the project, how the goals will be reached, and how progress towards the goals will be tracked. The Department's Pacific Regional Educational Laboratory (REL) has developed an Education Logic Model Application that guides users through the process of developing a logic model.

Play in Practice

Pennsylvania universities partner with nonprofits and school districts to provide free internet access to in-need communities

For Pennsylvania schools, the COVID-19 pandemic and the shift to remote learning highlighted the digital inequities in the education system. To alleviate the digital divide in Western Pennsylvania, eight universities, research groups, nonprofit organizations, and school districts collaborated to provide free, high-speed internet access to families of school-age children with low-incomes. Each partner organization brought unique resources and expertise to the project including:

- ***Meta Mesh Wireless Communities (MMWC):*** MMWC is a nonprofit, networking solutions consolidator responsible for network design, equipment installation, and maintenance for the project.
- ***Carnegie Mellon University (CMU):*** A team from CMU's School of Computer Science and the Simon Initiative has coordinated connections to CMU and the University of Pittsburgh (Pitt), provided critical start-up funding for the project, and liaised with key stakeholders and community groups. They offer ongoing project design, implementation, and fundraising support.
- ***University of Pittsburgh (Pitt):*** Pitt is contributing facility access and funding to enable the use of the Pitt Cathedral of Learning as the "Super Node/hub." With its extensive community engagement efforts, including centers in Homewood and the Hill District, Pitt is also supporting stakeholder and community involvement in additional neighborhoods following the pilot.
- ***The Keystone Initiative for Network Based Education and Research (KINBER):*** KINBER is Pennsylvania's statewide research, education, and community network organization and network provider to both CMU and Pitt and provides a "gateway" to the internet through KINBER's PennREN Fiber which is broadcasted from the Cathedral of Learning via MMWC.

- **Participating School Districts and Community Groups**: The New Kensington-Arnold and Cornell (Coraopolis) school districts, as well as the Homewood Children's Village, are collaborators. Penn State New Kensington contributes to the project's progress in the New Kensington area. These local community partners bring vital expertise, leading the effort to build community buy-in, leveraging social capital to facilitate the creation of wireless internet service provider (WISP) infrastructure, and identifying households in need of internet connectivity. They also advise CMU, Pitt, and Meta Mesh partners on community need and intentional partnership practices.

The result of this collaborative partnership is a pilot program that connects approximately 450 households with school-age children to internet access using high-powered radios on top of the Cathedral of Learning that transmit Wi-Fi to these city households. Once the first phase of this project ends, the partners hope to expand to other parts of Western Pennsylvania.

Oregon holds Connect Oregon Students for Learning Summit to draft plan for digital access

The Connect Oregon Students for Learning Coalition was formed after the temporary closure of Oregon schools following the spread of COVID-19. The Coalition, which included the Oregon Department of Education, Oregon Business Council, Oregon Community Foundation and Coalition of Oregon School Administrators, was brought together to expand the state's capacity to support virtual instruction.

In May 2020, the Coalition held the *Connect Oregon Students for Learning* Summit that brought together partners from the education sector, business community, philanthropy, and community-based organizations to develop a plan for providing every Oregon student with stable and reliable home internet access. Prior to the summit, the Oregon Department of Education conducted two surveys that identified four areas of need – broadband infrastructure, internet service access, device access, and digital literacy. This informed the design of the summit and helped focus discussions on how summit participants could help address each of these needs. The summit was organized over the course of 3 weeks by a leadership team, which focused on bringing a wide range of stakeholders to the table.

Summit attendees identified the following next steps:

- Re-engineering and reframing the student learning experience at present and for the future
- Fostering strong partnerships and voices across Oregon
- Tackling systemic and sustainable opportunities to meet the urgent needs of Oregon residents

Summit participants also aligned around a series of shared beliefs including the importance of access to reliable, high-speed internet; the right to access appropriate technology, tools, and resources by students to foster engaging learning experiences; the right to access appropriate technology, tools, and resources by instructors to foster

engaging learning experiences; and the underscoring of equity realized by resource allocation and opportunities.

The Connecting Oregon Schools Summit recommendations were presented to the Governor resulting in $28 million to support schools in acquiring:

- **Access and Connectivity**: Adequate infrastructure and/or services that enable internet access and connectivity for student learning;
- **Student and Teacher Devices**: Appropriate and user-friendly devices for students and teachers to navigate through distance learning curriculums and programs of study;
- **Digital Content and Curriculum**: High quality, adaptable, culturally responsive, and effective digital learning curriculum and content that fosters student learning and engagement;
- **Learning Management Systems**: Online technology that allow educators to successfully deliver their teaching content and lessons; and,
- **Professional Learning for Educators**: Various supports and trainings that ensure effective use of all digital learning tools.

Checklist & Key Questions

- [ ] **Develop a logic model or theory of change that outlines the resources, activities, outputs, and intended outcomes of your selected approach(es) (e.g., mobile hotspot or off-campus wireless network deployment, Wi-Fi on buses) for connecting students at home in order to identify gaps in resources or capacity.**
  - What are the resources or inputs needed to implement the selected approach(es) and achieve the desired outcomes? Resources may include both material items (such as technology infrastructure, facilities, and funding) and nonmaterial items (such as time, community support, and specialized knowledge or skills).
  - What activities or steps are needed to implement the approach(es) and achieve the intended outcomes?
  - How do you include Tribal consultation and community engagement in your process?
  - What resources and activities can you support? What gaps exist?
- [ ] **Identify and recruit potential partner organizations to fill identified resource gaps.**
  - Are there potential partner organizations that have the material or nonmaterial resources that can address the existing gaps?
  - What types of interested parties can be reached through each potential partner organization?
  - What interests and equities do the potential partner organizations have in providing home internet access to students, families, and the broader community?
- [ ] **Clearly define and document each partner or collaborator's role on the project.**
  - Is a formal partnership agreement (e.g., contract, grant agreement) or informal partnership agreement necessary?
- [ ] **Establish methods for regular communication and coordination.**
  - How will partners engage synchronously (e.g., regular meeting) or asynchronously to ensure that all project partners are aware of the latest developments and on the same page?
  - Whose job is it to manage communications between project partners? Ensure this person has the capacity to both recruit and maintain these new connections.

Play 4 – Assist Districts with a Menu of Options

Local school districts are often most knowledgeable about student, family, and community needs and resources and best positioned to make decisions, including selecting the best solution(s) to address home internet access for students. However, many districts – particularly small or rural districts – would benefit from additional capacity, expertise, and support to evaluate the range of possible broadband access solutions and select the approach(es) that will ensure connectivity for students. In states where local governing bodies have greater governance and management responsibility for public schools, states can support districts in navigating and selecting broadband solutions to address the digital divide for students. States have a bird's eye view of the ISPs operating in the state, existing or forthcoming state broadband infrastructure investments that can be leveraged, or knowledge of federal and state broadband funding opportunities. States can equip districts with information on the available broadband solutions and the factors that will impact their effectiveness (e.g., geography, population density, technologies) to support informed local decision-making.

Frequently Asked Questions

1. What are some things we might include on a menu of options?

A menu might include a range of tools or services that align with the identified needs of LEAs. States should consider what resources, expertise, tools, or services they have the capacity to provide. This could include infrastructure (e.g., information on different connectivity solutions), hardware (e.g., centralized procurement vehicle for laptops or tablets), software (e.g., access to certain educational software via a statewide license), technical assistance, or training. For example, in a state that recently passed legislation requiring each school district to maintain a learning management system (LMS), the state might provide districts information on the technical specifications, functionality, and pros/cons of different LMS platforms. Alternatively, a state might offer a centralized procurement vehicle for one or more LMS platforms that districts can choose to utilize. States implementing this strategy should consider what resources, expertise, tools, or services they have the capacity to provide. This could include infrastructure (e.g., information on different connectivity solutions), hardware (e.g., centralized procurement vehicle for laptops or tablets), software (e.g., access to certain educational software via a statewide license), technical assistance, or training.

Play in Practice

Launch Nebraska Digital Learning Guidance

Following the spring 2020 school closures due to the COVID-19 pandemic, the Nebraska Department of Education, Nebraska ESU Coordinating Council, and Network Nebraska spent summer 2020 developing a practical, step-by-step digital learning guide to help districts prepare for remote learning in the fall and the uncertain future that lay ahead. The guide provides information for LEAs organized into menus of available options in five key areas: infrastructure, devices, software systems, digital content, and professional development and training.

The infrastructure section focuses on the goal of achieving equity of broadband internet access to every student home. The guide outlines actions that school districts could "do now" (1-4 weeks) and "do in the near future" (5-26 weeks) and provides project plans for a selection of infrastructure projects a district might choose to address the issue of home internet access for their students. These include mobile cellular hotspots, homework hotspots at community anchor institutions, working with local internet providers, TV white space, wireless education broadband services, and low earth orbiting satellite service. Each project plan outlines the installation timeline, cost estimate, sustainability, and pros and cons.

A. Project—Mobile Cellular Hotspots

Installation Timeline:	1-2 weeks; dependent on supply chain order fulfillment
Rough Cost Estimate:	$99-$300 per device up front; $12-$40 per month per device; bulk purchases available
Sustainability:	Subscription plans are 6-month minimum, up to 2 years. Moderate up front cost, but significant ongoing costs over the life of the subscription. Some education entities have reported a high device loss and breakage rate.
Pros:	Simple, manageable technology that can be "married" to district-owned computing devices and CIPA compliant.
Cons:	Must have adequate mobile cellular coverage to operate, with one or more providers; ongoing costs can be significant, Data limits are not conducive for educational use.
Scaling Statewide:	30,000 students x $200/device = $6,000,000 30,000 devices x $20/month = $600,000/month ($7.2M/year)

Excerpt from the Launch Nebraska Digital Learning Guide

Texas Home Learning 3.0

Launched in August 2020, Texas Home Learning 3.0 (THL 3.0) offers Texas districts access to resources and supports in three areas – curriculum, technology, and professional development. THL 3.0 offers access to standards-aligned, digital learning materials aligned with Texas state standards. The materials are customizable and have embedded accessibility supports for English learners and students with disabilities and resources to help familiarize parents with the content. THL 3.0 also offers districts access to three types of accessible technology solutions including (1) a storage and single sign-on system to support content organization and access; (2) a classroom management system that supports student collaboration, and (3) a free 2-year learning management system license. Districts can choose to utilize the three tools independently or in combination based on their needs. Finally, THL 3.0 offers content and technology-focused professional learning resources to support educators teaching in both in-person or remote settings. Districts can choose to utilize all, none, or some of the resources and supports provided by THL 3.0. All resources and supports are freely accessible to all public schools in Texas and can help free-up limited district funding for other local priorities.

Checklist & Key Questions

☐ **Identify key connectivity challenges and state-specific resources and solutions that are available in order to create a menu of options to support school districts.**

- Are there state-level data or maps that can support districts in evaluating possible connectivity solutions? (Play 2)
- What connectivity challenges exist in your state – how might geography, population density, cellular coverage, or state policies/laws (e.g., rights of way, permitting requirements, moratoria on municipal broadband development) impact the types of solutions that will work in different communities across your state?
- What state-level resources exist that can support district solutions? Consider existing infrastructure resources, funding, capacity support, and technical assistance resources. For example, does the state operate a research and education network (REN) that can support district connectivity? Can this existing network support community anchor institution connectivity? Can it be used to extend home connectivity to students? Is there state-owned fiber that can serve as backhaul for districts?
- Are there existing state contracts with ISPs or hardware or software vendors that can support bulk purchasing by districts?
- Develop funding formulas that address the most significant needs districts have, including taking into account the percentage of students living in poverty, percentage of English learners, and percentage of small, and/or rural schools.

☐ **Communicate these solutions so districts have information on which solution(s) will be most successful in addressing their unique challenges.**

- Consider dividing solutions based on the timeline to implementation – some solutions can more quickly be implemented but may be less sustainable overtime; other solutions may require longer lead time.
- Are there particular solutions that are state supported, for example, through a state contract?
- What information is needed to help districts understand the available solutions and identify the solutions that will best meet their needs? Consider including pros and cons to support district decision-making.
- Are there school districts in your state that have implemented any of the solutions on the "menu"? How can the state document these examples or

Checklist & Key Questions

connect leaders from school districts to learn more about their experience implementing a solution?

☐ **Provide technical assistance support to districts, especially those that may benefit from additional technical capacity, to identify their key challenges and solutions.**

- Can you assist small and/or rural districts in writing requests for proposals?
- Is there state capacity to support on-the-ground network assessments to help districts assess what resources they have locally and what potential challenges or barriers might exist?
- What support is available to technology directors as they build out their network? Can you provide a frequently asked question resource on E-rate funding? Can they access help through their intermediate agency?

Play 5 – Leverage Bulk Purchasing to Optimize Use of Funds

During the COVID-19 pandemic and sudden shift to remote learning for most schools, many districts suddenly needed to purchase devices, mobile hotspots, learning management systems, and other hardware, software, or services to ensure continuity of learning for students. States and regional education service agencies stepped up to support districts by offering centrally managed procurement vehicles or contracts that leveraged bulk purchasing power or longer contract timelines to increase affordability. Some states also led negotiations with ISPs to target construction of new broadband infrastructure to un-served communities, temporarily remove data caps, or provide low-cost internet service plans.

Frequently Asked Questions

1. What is a Service Level Agreement (SLA)?

An SLA is an agreement between the vendor and client that lays out expectations for the service type and service quality and how issues will be remediated if requirements are not met. Establishing an SLA can create clarity among the vendor and client and may limit the potential for misinterpretation and roadblocks that may pop up. SLAs are not necessarily required but may be useful for any technology contract. Vendor SLAs are generally written from a vendor's point-of-view and may or may not be amendable. LEAs are encouraged to seek knowledgeable legal assistance when reviewing technology SLAs.

Play in Practice

Mississippi Department of Education (MDE) offers bulk-purchasing through Mississippi Connects

In 2020, the Mississippi Department of Education (MDE) launched the Mississippi Connects program to ensure that every Mississippi public school student had the technology needed to continue learning at school or home during the COVID-19 pandemic. However, the state also saw an opportunity to use the emergency funding as a catalyst to jumpstart Mississippi districts' transition to digital learning. The Mississippi Legislature allocated $200 million to the Connects program through two laws, the Equity in Distance Learning Act (SB 3044) and the Mississippi Pandemic Response Broadband Availability Act (HB 1788). Mississippi Connects takes a multi-prong approach—addressing district needs for device access, internet connectivity, high-quality digital instructional materials, professional development for teachers, and student access to telehealth services.

MDE set up a bulk purchasing system through which districts could purchase laptops or tablets for students and teachers. In addition to providing bulk purchasing support, the state offered software and services support – all devices were delivered to districts pre-loaded with software, security, and support features and configured for immediate use. Mississippi Connects is also offering on-site repair and replacement services through June 2023. Mississippi Connects covered up to 80 percent of the device costs for school districts using the bulk purchasing system if districts covered at least 20 percent of costs. As of September 2020, districts had placed orders for 320,000 devices.

Texas' Operation Connectivity offers bulk purchasing and matching funds

Texas' Operation Connectivity was launched in spring 2020 by the Governor's office, Texas Legislature, and Texas Education Agency (TEA) to ensure all Texas public school students have a device and internet connection. On July 17, 2020, the Governor announced that the state had allocated $200 million in Coronavirus Aid, Relief, and Economic Security (CARES) Act funding to TEA to support the purchase of devices and internet connectivity. Using the funding, TEA established a reimbursement program for school districts that included a state matching component based on the number of economically disadvantaged students in the district. To secure reduced prices and timely delivery of devices, TEA utilized the Region 4 Education Service Center (ESC) to offer a bulk purchasing program for districts. In order to participate, school boards had to approve an interlocal agreement with the Region 4 ESC. Interlocal contracts are governed by Texas' Interlocal Cooperation Act which aims to improve efficiencies by allowing local governments to contract with other local governments or state agencies to support governmental services or functions, including purchasing. As of August 2020, 700,000 devices and 300,000 hotspots have been requested for bulk purchase by over 800 Texas LEAs.

Checklist & Key Questions

- [ ] **Use data to estimate the need. (Play 2)**
  - How many student and teacher devices are needed?
  - How many students and teachers need internet connectivity? Consider which connectivity solutions will be most appropriate and sustainable based on the available infrastructure.
- [ ] **Work with the state information technology department, public service commission, public utilities commission, state broadband office, or other agency to understand the range of ISPs operating in your state, the available internet services and cost, and the existing relationships.**
  - Which locations have existing broadband access that can quickly connect unconnected households through monthly internet service plans?
  - Are there areas in your state where fiber is not a viable solution due to terrain, Tribal lands, or public lands?
  - Are there areas where mobile hotspots are not a viable solution due to limited cellular service?
  - Are there areas where satellite is not a viable solution due to terrain?
- [ ] **Understand local, state, and federal contracting rules or requirements.**
  - Are there existing purchasing agreements in place at either the state-level or regional intermediate unit-level (e.g., bulk purchasing co-ops, National Association of State Procurement Officials (NASPO) participating agreements) that can be utilized?
  - What state or local procurement policies are in place? Is there flexibility regarding state or local policies due to the pandemic?
- [ ] **Consider creating the option for districts to participate in a larger state bulk purchase.**
- [ ] **Develop a robust menu of options so schools may purchase the hardware and internet service that best fit their needs. (Play 4)**
- [ ] **Work with technology practitioners (e.g., LEA CIOs, CTOs) to research technical requirements and assemble a list of hardware, software, or services that will be offered through bulk purchasing agreements.**
  - What hardware (e.g., laptops, tablets) and software (e.g., learning management systems) are districts currently using?

Checklist & Key Questions

- Do the providers you're considering have the capacity to handle large capacity orders (e.g., supply chain, distribution workflows, device management, technical support)?
- Reach out to providers to determine how they can support your needs.

☐ **Identify your target outcomes and requirements and engage vendors.**

- In addition to purchasing devices, what are your warranty, repair service, technical support, asset management, software, replacement, project management, and professional development needs?
- Can you negotiate lower pricing by lengthening the contract or purchasing a larger number of devices by aggregating across all district needs?
- Have you considered other contract areas for negotiation including the service level agreement, installation fees, data privacy and security, requirements for interoperability, removal of data caps for mobile hotspot data plans, or termination conditions?

Play 6 – Provide Training and Technical Support for Families to Enhance Basic Digital Literacy Skills and Effectively Support Remote Learning

Increased access to home internet and devices can support improved parent-teacher engagement and information-sharing. To limit families' barriers to access and engagement, it is important that state and local education leaders understand how to support families that may have limited technology access, digital skills, or language barriers. These barriers may disproportionately impact English learners, children of immigrants without documentation, or students experiencing homelessness. Education leaders can engage families in effectively using technology by providing support on the use of technology and platforms provided by the school (e.g., tutorials). Education leaders may also consider partnering with trusted community-based organizations to provide technology support and digital literacy training for families in their home language.

Frequently Asked Questions

1. What skills are necessary for basic device or technology literacy?

Basic technology literacy includes:

- How to use the device(s) at home.
- How to connect to the internet (e.g., from a Wi-Fi hotspot or Mi-Fi).
- Basic device capabilities necessary for learning such as how to use a mouse, where to locate the camera and microphone, and commonly used software.
- Promising practices for basic troubleshooting (e.g., unmute, turning on the device, restarting)
- The ability to use technology to find, evaluate, create, and communicate information.

2. What training is required for basic application or platform literacy?

Training should include information tailored to the different applications or platforms students will use for remote learning and how a family can support virtual learning. This includes:

- Walking families through logging in and out of platforms.
- Demonstrating where lessons, lesson plans, and homework can be found and how assignments are to be turned in.
- Demonstrating where families can find grades and how students and families can communicate with the teacher.
- Basic troubleshooting procedures that may be required when using the platform.

3. What are some things to keep in mind when developing resources for families?

When developing training resources for families, make sure to use plain language and avoid technical jargon. It may be helpful to enlist a few diverse parents or caregivers to review materials to ensure they are clear and understandable before distributing more widely. It is also important that resources, training, and tech support are available in accessible formats and in the most common languages spoken by students at home.

4. What are some strategies for disseminating resources and training materials to parents?

Families will have a range of digital skills and experiences using technology, so it is important to consider what supports will help families feel successful supporting their student with remote learning. Consider creating resources in multiple formats (e.g., step-by-step written directions, short videos) to provide families multiple ways to access and learn the information. Also, design accessible (e.g., language, disability), bite-sized resources and trainings that accommodate families with limited time. Formats to consider include:

- Information packets. Training materials that are sent with the school-issued computer that includes a tutorial on how to use the computer and the applications being used in the classroom.
- Pre-record 5-minute training sessions that can be sent to parents' mobile devices that address specific technical skills or issues.
- Online training or webinars. Although this format may make it easier to demonstrate certain processes, it may present a barrier for families with limited time or without reliable access to broadband.
- In-person trainings. Present several sessions after work or on the weekend that include language translators, sign language interpreters, etc.

5. How might a parent chat group serve as a resource for parents?

Families come from all over the digital literacy spectrum. Some families may already be familiar with various technologies and devices. Others may be using digital devices and the internet for the first time. Setting up a parent chat group (e.g., via text message or other accessible method) for each classroom enables families who are familiar with the technology and devices being used in that class to help other families who are less familiar.

Play in Practice

Ohana Help Desk provides technology support to Hawaii Public School students and families

In 2020, The Hawaii Department of Education (HIDOE) awarded Hawaiian Telcom a $1.7 million contract to establish a help desk as part of its COVID-19 response. Many school districts provide technology support to families, but the HIDOE Ohana Help Desk wanted to ensure a high level of assistance with phone and chat support in multiple languages (e.g., English, Hawaiian, Ilokano, Tagalog, Chuukese, Marshallese). Help desk agents provide application support, connectivity support, device support, video conferencing support, and other technology support (e.g., cybersecurity). Students and families can also get help resolving technical issues when connected to the HIDOE remotely using their learning devices. The help desk also provides self-service support through the help desk portal, including tip sheets, videos, and links to other online resources. The resources cover basic skills such as turning on a computer or a tablet, connecting to the HIDOE network, and accessing different applications used in HIDOE classrooms. The help desk is available during weekdays and outside of school hours (Monday-Friday, 7am-8pm), and on Sundays. Assisting families in their preferred language ensures that all students can successfully connect for remote learning.

Digital Navigators help families navigate barriers to connectivity

At the start of the COVID-19 pandemic, the National Digital Inclusion Alliance (NDIA) recognized that social distancing requirements and the closure of community anchor institutions like public libraries would limit access to digital skills training and technology support. To address this challenge, NDIA developed the Digital Navigator Model to train volunteers, professionals, or cross-train social service agency staff (e.g., libraries, health services) to provide one-on-one support over the phone. Training may address skills like navigating the sign-up process for home internet service, using devices, or other digital skills. Digital Navigators may also be trained to help community members navigate sign-ups for different government benefit programs or navigate online employment applications.

States, school districts, or other community-based organizations can replicate the Digital Navigator model in their own communities using documentation and resources (e.g., sample Digital Navigator job descriptions) provided by NDIA. For example, the State of Illinois' Office of Broadband partnered with the NDIA and a non-profit technology recycling and refurbishment organization to provide low-income families with devices and their own network of Digital Navigators.

Checklist & Key Questions

- [ ] **Develop family "use cases" that encompass a range of possible family experiences to build empathy and consider the remote learning environment from different perspectives. For example, these perspectives should include English learners, students experiencing homelessness or who are highly mobile, families with different work situations, families with multiple children at different grade levels, and families with a child with disabilities.**
  - What are some of the common experiences of families in our communities?
  - What would the remote learning experience look like for each of these families?
  - How might the remote learning experience be streamlined to reduce the burden on families?
  - What does successful remote learning look like? What supports might be necessary to ensure all families and students are successful with remote learning?
- [ ] **Perform a family needs assessment to understand access to internet and dedicated learning devices, and to identify comfort levels and attitudes towards using technology. (Play 2)**
- [ ] **Review the remote learning ecosystem and identify opportunities to streamline the number of platforms, tools, or applications being used for remote learning.**
  - Consider that there may be "official" platforms or tools as well as tools that educators are introducing in individual classes.
  - Are there opportunities for a consistent state or district-wide learning management system that offers consistency across schools and districts?
  - How do tools and applications integrate with the learning management system? Do they offer "single sign-on" capabilities that limit the number of passwords required to sign into and use different applications?
  - What assistive technologies, tools, or software features are available to support students or caregivers with disabilities? What training or supports do families need to effectively utilize assistive technologies and tools to support learning?

Checklist & Key Questions

- ☐ **Establish family support systems (e.g., technical support desk, parent chat groups).**
  - What are the most common household languages in my community? Can we offer support in the most common household languages? If not full-time, could support in other languages be offered at certain days/times of the week?
  - Can these support systems run at the regional (e.g., educational service agency) or state level to increase the capacity of, and reduce the costs for, individual schools or districts?
  - Can tech support be included as a requirement as part of a hardware or software contract?
  - Are there community partners (e.g., high school students, college students, community-based organizations) that can help staff the tech support desk, especially to provide language support?
  - Are there collaborators (e.g., library partners, universities, local businesses, statewide family engagement centers) that possess the expertise to provide technical support or provide trainings/materials to families?
  - What training do these tech support volunteers need?
  - Can supports be established to help families outside of standard school hours?
- ☐ **Curate training resources on platforms, tools, or applications (e.g., tutorials).**
  - Identify internal and external resources (e.g., parents, community college IT teams, librarians).
  - Create materials that reflect the languages spoken at home.
  - Communicate needs to the vendor – do they have, or could they develop family-friendly support materials? Consider making this a contract requirement.
  - Do other districts, states, or entities have training and resources that can be accessed?
- ☐ **Determine how training resources can be accessed or disseminated and consider how to manage sharing new resources or updates to existing training resources.**
- ☐ **Monitor families' needs regularly to ensure supports and resources are meeting needs and identify areas where additional support may be needed.**

Play 7 – Provide Professional Learning and Resources for Educators to Drive Meaningful Classroom Learning

The presence of dedicated student learning devices alone does not make an instructional system effective or accessible to individual students. Using technology for instruction without integrating it with strong instructional practice may even widen inequities in student opportunities and outcomes. For example, studies have shown that even when devices are available for learning, students from low-income backgrounds and students of color tend to receive instruction that leverages technology for routine drills focused primarily on repetition with lower levels of adult support, whereas students in higher income schools experienced technology as a creative and playful medium.[15] Recent studies have found that teacher professional learning in technology is the most significant predictor of the type and quality of classroom technology use by students, suggesting that providing effective professional development for teachers can help close the digital use divide. It is essential that along with internet access and device rollout, states and districts provide professional learning opportunities that support improvements in instructional design and empower educators to effectively use technology to support student learning.

Frequently Asked Questions

1. What are open educational resources (OER) and how can they support statewide professional learning efforts?

Open educational resources (OER) are teaching, learning, and research resources that reside in the public domain or have been released under a license that permits their use, modification, and sharing with others. Open resources may be full online courses, digital textbooks, or more granular resources such as images, videos, and assessment items.

Because OER are free to access and use, and have permissions that allow adaptation, a state could invest once in the creation of a core set of materials or resources that can then be customized to the needs of local school districts. OER also facilitates statewide (and cross-state) collaboration because access to and sharing of materials is not restricted by licensing agreements that may only allow access to a limited number of people. Several states including North Carolina, Michigan, Oregon, and Washington

[15] Rafalow, M. H. (2018). "Disciplining Play: Digital Youth Culture as Capital at School." American Journal of Sociology, 123(5), 1416-52. https://doi.org/10.1086/695766.

maintain OER repositories where professional development resources are curated, created, and shared alongside student learning resources.

Play in Practice

Oregon Open Learning Hub provides a digital resource repository and collaboration space for Oregon educators

The Oregon Open Learning Hub is a digital resource repository and collaboration space for Oregon educators, administrators, and other educational partners. In addition to finding resources and curating them on Oregon's Hub, educators are also encouraged to revise and remix existing resources, as well as add lessons and content they create.

More than 750 educators, specialists, and administrators have engaged in virtual professional learning sessions about OER and Oregon Open Learning, and over 300 have joined groups on the Hub. Teachers appreciate the search features that allow them to quickly find resources they can modify for their classes and are excited about statewide collaboration possibilities. The Hub also enables teachers to rate and review content on the Hub, connecting teachers with other educators' perspectives and experience using the material. Additionally, educators involved in national workgroups and communities value the ease with which resources can be shared across the site.

Before launching the Oregon Open Learning Hub, the Oregon Open Learning team connected with other state leaders that had launched their own OER Hubs and Microsites. These conversations provided valuable insight into designing an OER Hub and the programming needed to support the initiative. Another key component in setting up the Hub was the creation of a plan for how to involve educators through professional learning, collaboration, and community building. The Oregon Open Learning team hosted a launch webinar that drew over 400 educators to learn about the new Hub and continued offering OER workshops as standalone events and sessions at virtual conferences. The team also engaged specialists within the Oregon Department of Education in professional learning opportunities, contributing to the direction of the work, identifying and posting locally developed resources to the Hub, and sharing the Hub with their networks of educators.

Here are a few examples of student learning OER resources currently available in Oregon Open Learning:

- A Grade 7 math lesson, Electric Motorcycle Race, features Oregon and Washington geography as the backdrop for a motorcycle race, highlighting the ability to localize learning resources.
- Tribal History, Shared History is a series of lessons funded by Oregon's Senate Bill 13 that can be found on Oregon Open Learning, including this Grade 4 example, Health: Cultural Bias, Stereotypes, and the Effects of Boarding Schools.
- The Healthcare Occupations Scavenger Hunt activity is designed to introduce students to a variety of healthcare occupations through the Health Sciences Career and Technical Education (CTE) Program of Study.

- Science in Elementary Classrooms for Oregon Administrators showcases the ability of Oregon Open Learning to provide high-quality professional learning resources for educators and administrators across Oregon.

Nevada launches a one-stop-shop for learning

In response to the abrupt shift to remote learning caused by the COVID-19 pandemic, the Nevada Department of Education launched the Nevada Digital Learning Collaborative (NvDLC), a statewide collaborative for digital learning resources. These resources support the nearly 500,000 students and the nearly 25,000 educators in Nevada.

NvDLC is a central website where students, families, and educators can search for resources in a range of formats (e.g., books, webinars, videos) by a range of categories including school subject (e.g., math, science, computer science, etc.), grade level (e.g., elementary, middle, and high school), and types of pedagogies (e.g., hybrid teaching model, remote teaching). Elementary teachers, for example, can use this site to gather tips on how to use technology with young learners. Students will find materials to supplement what they learn in the classroom as well as digital literacy tools. Families can use the site to find technology training or resources to support students.

Along with instructional materials, the NvDLC also houses what are known as Digital Engineers. A Digital Engineer is a seasoned classroom, school, or district leader equipped with the ability to provide training and coaching services. Digital Engineers are responsible for outcomes around leadership and coaching, developing digital academic content and professional learning, and providing resources and support that align digital learning with effective teaching practices.

Checklist & Key Questions

- ☐ **Identify professional learning goals and priorities aligned with your vision for how technology is used to support teaching and learning.**
  - What are your goals for learning, both in school and at home? What skills or competencies do educators need to realize this vision?
  - Can your goals and priorities benefit from available tools for technology and online learning (e.g., ISTE Standards for Educators or Students, National Standards for Quality Online Learning)?
- ☐ **Determine opportunities for state-level support and coordination of professional development opportunities and collaborative training resource development to maximize return on investment and save districts time, money, and capacity.**
  - Are there particular skills or competencies that most teachers across the state need additional support in developing?
  - How would you prioritize the required skills or competencies by greatest need for development and most impactful for student learning?
- ☐ **Establish a state professional development committee or team.**
  - Who are the digital learning experts in your state (e.g., classroom teachers, school librarians, instructional coaches, school or district administration, Tribal educational agency, and regional educational service agency staff)?
  - How might a statewide effort draw on and amplify their expertise?
  - How will the professional development committee or team contribute to the development of collaborative professional development opportunities or resources? Will they help establish the state goals and priorities, help identify, evaluate, and curate existing professional development opportunities or resources, support the development of new opportunities or resources, or support outreach and engagement among educators?
- ☐ **Identify, evaluate, and curate professional development and materials.**
  - Have districts or other states or organizations created professional development opportunities or resources (e.g., micro credentials) that can be aggregated and shared with other districts across the state? Are these training resources openly licensed to allow for local customization?
  - Are there external collaborators (e.g., libraries, postsecondary institutions, local businesses) that can support training or curating professional development content?

Checklist & Key Questions

- Is funding available to pay teachers with specialized expertise to curate or create professional development opportunities and resources?
- Do the professional development training opportunities or resources help educators leverage technology to accommodate students with disabilities and English learners? Do they include trauma-informed practices? Do they address different delivery formats or schedules (e.g., synchronous, asynchronous, hybrid)?

☐ **Determine how professional development and resources will be accessed and disseminated.**

- Is there a state repository or learning management system that can be used to organize and share curated professional development training opportunities or resources?
- Is the storage solution freely accessible, or does it require a log-in?
- How will teachers demonstrate their learning?
- Will teachers earn continuing education units, digital badges, or another form of recognition once training has been completed?
- Who will be responsible for granting credits (e.g., state vs. district)?

Conclusion

The COVID-19 pandemic prompted federal, Tribal, state, and local leaders to double down on efforts to address the digital divide, which has long impacted students and families with limited access to affordable broadband internet at home. A sense of urgency catalyzed leaders at all levels around the goal of ensuring continuity of learning for our nation's students. As a result, long-standing barriers—siloes that can prevent cross-sector collaboration, bureaucratic red tape that can stall projects and limit action—were overcome to connect students and families on accelerated timelines.

The digital divide is a national challenge that requires coordinated federal, Tribal, state, and local efforts and tailored, localized solutions. Although progress was made during the pandemic, it is imperative to maintain a collective sense of urgency to ensure equitable access to home internet access and high-quality education for students.

States can continue to support schools and districts by adapting and implementing the strategies highlighted in the Home Access Playbook:

- ☐ **Play 1 – Find or Form a State Broadband Coalition**

  Coordinate statewide broadband or digital inclusion efforts to leverage resources, capacity, and expertise across multiple state agencies and create a greater collective—and ensure education leaders are included.

- ☐ **Play 2 – Collect Data on Broadband Availability, Affordability, Adoption, and Quality and Use It to Drive Decision-Making**

  Collect data to drive decision-making, understand the existing barriers to broadband access and adoption, identify the most appropriate long-term solutions, target resources, assess progress, and build public support for broadband initiatives.

- ☐ **Play 3 – Identify Needs and Recruit Partners to Fill Specific Gaps**

  Build collaborative, cross-sector partnerships to increase capacity to implement solutions, introduce new expertise and skills, build broad project support, and open new avenues for funding or leadership support.

- ☐ **Play 4 – Assist Districts with a Menu of Options**

  Equip districts with information on the available broadband solutions and the factors that will impact their effectiveness to support informed local decision-making.

- ☐ **Play 5 – Leverage Bulk Purchasing to Optimize Use of Funds**

  Support districts by offering centrally managed procurement vehicles or contracts that leverage bulk purchasing power or longer contract timelines to increase affordability.

- [ ] **Play 6 – Provide Training and Technical Support for Families to Enhance Basic Digital Literacy Skills and Effectively Support Remote Learning**

  Provide families training and support on the use of technology and platforms provided by the school.

- [ ] **Play 7 – Provide Professional Learning and Resources for Educators to Drive Meaningful Classroom Learning**

  Provide professional learning opportunities that support improvements in instructional design and empower educators to effectively use technology to support student learning.

Acknowledgements

Project Team

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Subject Matter Experts

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Alyssa Kenney, Director of Digital Access, Public Service Commission of Wisconsin

Tom Rolfes, Education IT Manager, State Office of the Chief Information Officer, Nebraska

Carla Wade, Digital Innovations Lead, Office of Teaching, Learning, and Assessment, Oregon Department of Education

Listening Session Participants

In addition, we would like to thank the state leaders that participated in a series of six listening sessions that informed the development of the Home Access Playbook. These conversations provided invaluable insight into the evolving digital equity challenges facing students, families, and educators and the actions states are taking to expand home access.

Infrastructure – Wednesday, July 29, 2020

State	Leader	Organization
Nebraska	Tom Rolfes	Nebraska Office of the Chief Information Officer
Nebraska	Ron Cone	Nebraska Educational Service Unit #10
Michigan	Joe Polasek	Michigan Department of Education
Virginia	Susan Clair	Virginia Department of Education
Wisconsin	Alyssa Kenney	Wisconsin Public Service Commission
New Mexico	John Chadwick	New Mexico Public Education Department

State	Leader	Organization
New Jersey	Christopher Cox	New Jersey Department of Education

Training – Thursday, July 30, 2020

State	Leader	Organization
Oregon	Carla Wade	Oregon Department of Education
Texas	Henry Stokes	Texas State Library and Archives Commission
Maine	Beth Lambert	Maine Department of Education
Montana	Dylan Klapmeier	Montana Office of Public Instruction
Nevada	Cindi Chang	Nevada Department of Education

Affordability & Sustainability – Monday, August 3, 2020

State	Leader	Organization
Louisiana	Carol Mosley	Louisiana Department of Education
Wisconsin	Kurt Kiefer	Wisconsin Department of Public Instruction
Alaska	Patience Frederiksen	Alaska Department of Education and Early Development/Libraries, Archives and Museums
California	Geoff Belleau	California Department of Education
Texas	Cindy Fisher	Texas State Library and Archives Commission

Partnerships – Tuesday, August 4, 2020

State	Leader	Organization
Nevada	Jaynie Malorni	Nevada Department of Education
Washington	Dennis Small	Washington Office of Superintendent of Public Instruction
Michigan	Ann-Marie Mapes	Michigan Department of Education
Ohio	Evan Struble	State Library of Ohio
South Carolina	Andrew Epting	South Carolina Department of Administration
Maine	Peggy Schaffer	ConnectMaine

State	Leader	Organization
North Carolina	Abigail Waldrupe	State Library of North Carolina
Texas	Liz Philippi	Texas State Library & Archives Commission

Data – Wednesday, August 5, 2020

State	Leader	Organization
New Mexico	Gar Clarke	New Mexico Department of Information Technology
Hawaii	Brook Conner	Hawaii Department of Education
Arizona	Nicole Umayam	Arizona State Library, Archives and Public Records

Policy – Thursday, August 6, 2020

State	Leader	Organization
Louisiana	Kim Nesmith	Louisiana Department of Education
Louisiana	Leslie Durham	Louisiana Office of the Governor
Ohio	Tina Lyden	Connected Nation Ohio
Ohio	Wendy Knapp	State Library of Ohio
Nebraska	SuAnn Witt	Nebraska Department of Education

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