Connectivity — Administrative Summary

Gary Needham, Technology Direct, Educational Service Unit 9, Hastings, Nebraska

The emphasis on remote learning has brought some known digital equity issues to the forefront. This section attempts to assess the current issues in digital equity and detail district actions necessary to address them among Nebraska schools.

First, Governor's Emergency Education Relief (GEER) funds are being used to address both device availability and Internet availability for students. NDE has been and continues to gather data to support the use of these funds. School Student Information Systems (SIS) have been modified to include device and Internet availability information that will automatically report to ADVISER. Each district should try to complete the data reporting for the first time no later than December 18, 2020. Data gathered from these reports will further direct state funding in the area of digital equity.

Second, schools may need to proactively work with providers and / or create their own methods of connecting student devices to support remote learning. Each district's situation will be different based on the geography, demographics, and provider options available to the district. Various possibilities are explored within this report.

Finally, school administrators should review their compliance with the Children's Internet Protection Act (CIPA) in light of remote learning. Adjustments to filtering of school devices while not on school property and more proactive monitoring of Internet usage will likely be needed. Today's filtering solutions are designed with real time and administrator-focused monitoring reports which provide timely notifications and depend less on technical understanding.

Potential action items regarding each of these topics are detailed in the body of the report below. We encourage each district to evaluate them and take appropriate action.

Connectivity — Digital Equity Playbook

A. DEVICE & INTERNET AVAILABILITY

1. There are five questions in ADVISER that **all** districts should collect information on for **every student**. This information is entered into your Student Information System (SIS) and then is uploaded to ADVISER. GEERs Funds (~$3.2M) will likely be attached to getting students and families connectivity; this may not go directly to schools, but will go to improving student connectivity. Districts should try to provide information for **every student household** for these questions **by December 18**. [See Appendix A]:
    a. *Can the student access the internet on their primary learning device at home?*
    b. *What is the primary type of internet service used at the residence?*
    c. *Can the student stream a video on their primary learning device without interruption?*
    d. *What device does the student most often use to complete schoolwork at home?*
    e. *Is the primary learning device a personal device or school-provided? & Is the primary learning device shared with anyone else in the household?*
2. Optionally, use a table and mapping tool to also map the addresses of students without Internet access and with inadequate Internet access. This will be useful to the district when considering the options for Internet Availability in the following sections.
3. Many rural schools in Nebraska have adequate student devices. For schools who are currently in need of devices, please use the following considerations:

- Many vendors are currently backordered
- Check availability on ESUCC State Purchasing Website
- Some stores are getting Christmas stock in and may have availability (verify adequate management options are available)

B. EXPLORING EXISTING INFRASTRUCTURE OPTIONS

1. To confirm available providers, visit the Nebraska Broadband Map https://gis.ne.gov/portal/apps/webappviewer/index.html?id=ba42a254d4f14f4783a14193c12a443e to determine the wired, fixed wireless, and mobile cellular internet providers for each household address without sufficient broadband
    a. CAVEAT: *The Nebraska broadband map is constructed using FCC Form 477 data that is self-reported by providers at the census block level, and may over-represent the speeds of the services that are available to a particular address or area*
2. To learn if special student / school pricing is available, visit the NDE website, https://www.launchne.com/wp-content/uploads/2020/11/internet_for_education_catalog_v1.pdf to examine the Request For Information (RFI) Internet Service Provider offerings that may be available in the district's geographic area
3. Talk to parents and community members about the availability, affordability, and reliability of various internet service providers
4. Be prepared to share student and staff address data with service providers who are serious about helping the school district lessen its Homework Gap

C. EVALUATING INFRASTRUCTURE SOLUTIONS

These options are presented in order of preference, based on a desire to keep each school's focus on its primary educational mission and the long-term sustainability of the infrastructure.

1. **Provider-based internet solutions** are those that are commercially available and school districts assist families in finding and subscribing to the service, whether mobile cellular, fixed wireless, wired, or dish-based. Some school districts may elect to subsidize costs or arrange charitable support for economically challenged families.
2. **Public-Private Partnerships** are arrangements between school districts and (most typically) wireless providers that leverage school district assets to help lower the provider's capital or operational costs in exchange for free or discounted services to student and/or staff homes or school district devices
    - **a.** Example 1: Providing access to a school rooftop to erect a non-penetrating pedestal, or providing land to erect a tower, or allowing access to school district fiber that enables a provider to deploy fixed wireless services within X miles of the school district.
    - **b.** Example 2: Working with a mobile cellular provider to construct a virtual private network (VPN) over wireless backhaul to the school district's source of internet (e.g. Network Nebraska), thus avoiding data limits when using mobile cellular hotspots.
3. **School District-based internet solutions** are those in which the school district plays a pivotal role in developing and managing a wireless network that provides school district internet directly to student and staff homes. These networks often utilize a private wireless network over available spectrum (e.g. TVWS, EBS, CBRS) that is either licensed or unlicensed from the FCC. The school district would fund the equipment and installation and then would typically contract with an integrator or wireless provider to maintain the network.
4. **Homework Hotspots** act in lieu of, or in addition to, Internet-to-the-home. School districts may create and manage homework hotspots at community locations such as public libraries, community centers, entertainment venues, on school buses, or at other student gathering places by wirelessly sharing school district internet with the remote locations, whether in town, or in nearby towns or villages.

Table 1: Infrastructure Evaluation Matrix

Infrastructure Solution	Upfront Costs	Ongoing Costs	Technical Expertise	Risk
Provider-based Infrastructure	Low	High	Low	Low
Public-Private Partnerships	Medium	Medium	Medium	Medium
School District-based Infrastructure	High	Medium	High	High
Homework Hotspots	Medium	Low	Low	Low

D. SELECTING INFRASTRUCTURE SOLUTIONS

1. There is no “one size fits all” or “silver bullet” technology solution to overcome the Homework Gap for the entire State. It will likely take a hybrid collection of different infrastructure solutions to reach every student. In a state the size of Nebraska, with rural population densities often fewer than five persons per square mile, internet service providers often are reluctant to build out new infrastructure unless there is a suitable return on investment. An internet service provider either will seek capital construction subsidies to build out to an unserved address, or partner with a public entity to increase the level of revenue.

2. School districts must take stock of available funds, unmet needs, severity of the Homework Gap, geographical challenges, and internal technical expertise before deciding on any infrastructure solution.

3. Sample pilot projects are listed below with a short description and contact information:

- a. Tri County Public Schools/Plymouth Public Library Homework Hotspot
  - i. Testing Wireless School-to-Library internet sharing
  - ii. Ryan McDowell, ESU 5, rmcdowell@esu5.org, 402-223-5277
- b. ESU 10/Central Valley Public Schools:
  - i. Testing wireless internet to the home
  - ii. Exploring SpaceX/Starlink Low Earth Orbiting satellite internet service
  - iii. Ron Cone, ESU 10, rcone@esu10.org, 308-698-1964
- c. Grand Island Public Schools:
  - i. Testing private LTE over CBRS
  - ii. Cory Gearhart, GIPS, cgearhart@gips.org, 308-385-5900 x157
- d. Northeast Nebraska Tribal Education Broadband Service(NNTEBS)
  - i. Testing private LTE over EBS
  - ii. Jon Cerny, Bancroft Rosalie Public Schools, jcerny@esu2.org, 402-648-3336

E. CHILDREN’S INTERNET PROTECTION ACT (CIPA)

Schools should have a filtering solution for each device, including when the device leaves the school network, in order to appropriately monitor online student behavior during school hours in a remote learning environment. Schools who need to look into an off-site filtering solution may utilize one of the ESUCC Coop options (Securly, Netsweeper, Impero), Many ESUs have also decided locally on a preferred solution that they will best be able to support. Finally, schools that are allowing family-owned devices for learning may have other issues they need to address related to monitoring and filtering.

CIPA has these main requirements:

1. Each school must have an Internet Safety Policy.
   a. The policy must be passed in a way that has provided an opportunity for public input via a board hearing. Evidence of the hearing should be on file and readily available. (Most schools did this back in the late 1990’s, and may have to dig up the evidence to copy into an erate file.)

b. The policy must delineate specific categories of inappropriate and prohibited activity.
c. The policy must include active monitoring of the online activities of minors. When class is in person, the monitoring may be via either supervisory observation or software.
d. As of 2012 (in the Protecting Children in the 21st Century Act), the policy also requires that the school document their education of students regarding appropriate online behavior, including social networking and cyberbullying. This may be a specific class or interspersed through the curriculum.

2. Each school must use a "technology protection measure" (web filter) to restrict access to material that is obscene or child pornography. The filter is only required for computers accessed by minors. The web filter may filter additional categories and be installed on all district devices to help enforce the policy in an automated manner.

Additional reading: https://www.usac.org/e-rate/applicant-process/starting-services/cipa/

F. ADDITIONAL RESOURCES

1. NDE's Digital Learning Guidance (6/15/2020) document: https://www.launchne.com/wp-content/uploads/2020/06/DigitalLearningGuidanceFinal2020.pdf Includes the **Hierarchy** of Digital Learning needs
2. LaunchNE.com website for Infrastructure (connectivity): https://www.launchne.com/leadership-and-planning/technology/infrastructure/
3. CommonSense Media has recently published two reports: https://www.commonsensemedia.org/kids-action/publications/closing-the-k-12-digital-divide-in-the-age-of-distance-learning
4. Education SuperHighway has been partnering with NDE on digital equity: https://digitalbridgek12.org/
5. The National Rural Education Association has several resources listed on its website: https://www.nrea.net/Resources
6. ESU 10 remote landing page we have shared with teachers and principals: https://dl.esu10.org/
7. ESUCC https://www.esucc.org/digital-learning/ https://sites.google.com/esucc.org/dlplaybooklunchbunch/home
8. ESU 16 https://www.esu16.org/page/teaching-and-learning
9. IOWA AEA Presentation with links: https://docs.google.com/presentation/d/1-fSa2ZeSR-zoIwxpPxn0r24E-XP1G9EOLAA_OIcTz54/edit?usp=sharing
10. Internet options for students on low income https://www.reviews.com/utilities/internet/internet-options-for-students/

Appendix A: DIGITAL EQUITY DATA ELEMENTS

Note: See the original NDE Bulletin item on August 12, 2020 for a list of these elements, also available on the ADVISER Resources website.

Survey Questions	*Response Options*
Can the student access the internet on their primary learning device at home?	· **Yes** · **No – Not Available** · **No – Not Affordable** · **No – Other**
What is the primary type of internet service used at the residence?	· **Residential Broadband** (e.g., DSL, Cable, Fiber) · **Cellular Network** · **School Provided Hot Spot** · **Satellite** · **Dial-up** · **Other** · **None**
Can the student stream a video on their primary learning device without interruption?	· **Yes – No issues** · **Yes – But not consistent** · **No**
What device does the student most often use to complete school work at home?	· **Desktop/Laptop** · **Tablet** · **Chromebook** · **Smart Phone** · **None** · **Other**
Is the primary learning device a personal device or school-provided? Is the primary learning device shared with anyone else in the household?	· **Personal – Dedicated (one person per machine)** · **Personal – Shared (sharing among others in household)** · **School Provided – Dedicated** · **School Provided – Shared** · **None**