LAUNCH NEBRASKA

Nebraska Department of Education • Effective June 15, 2020

Digital Learning Guidance

for Summer Programming and Beyond

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Digital Learning Profile and Plan

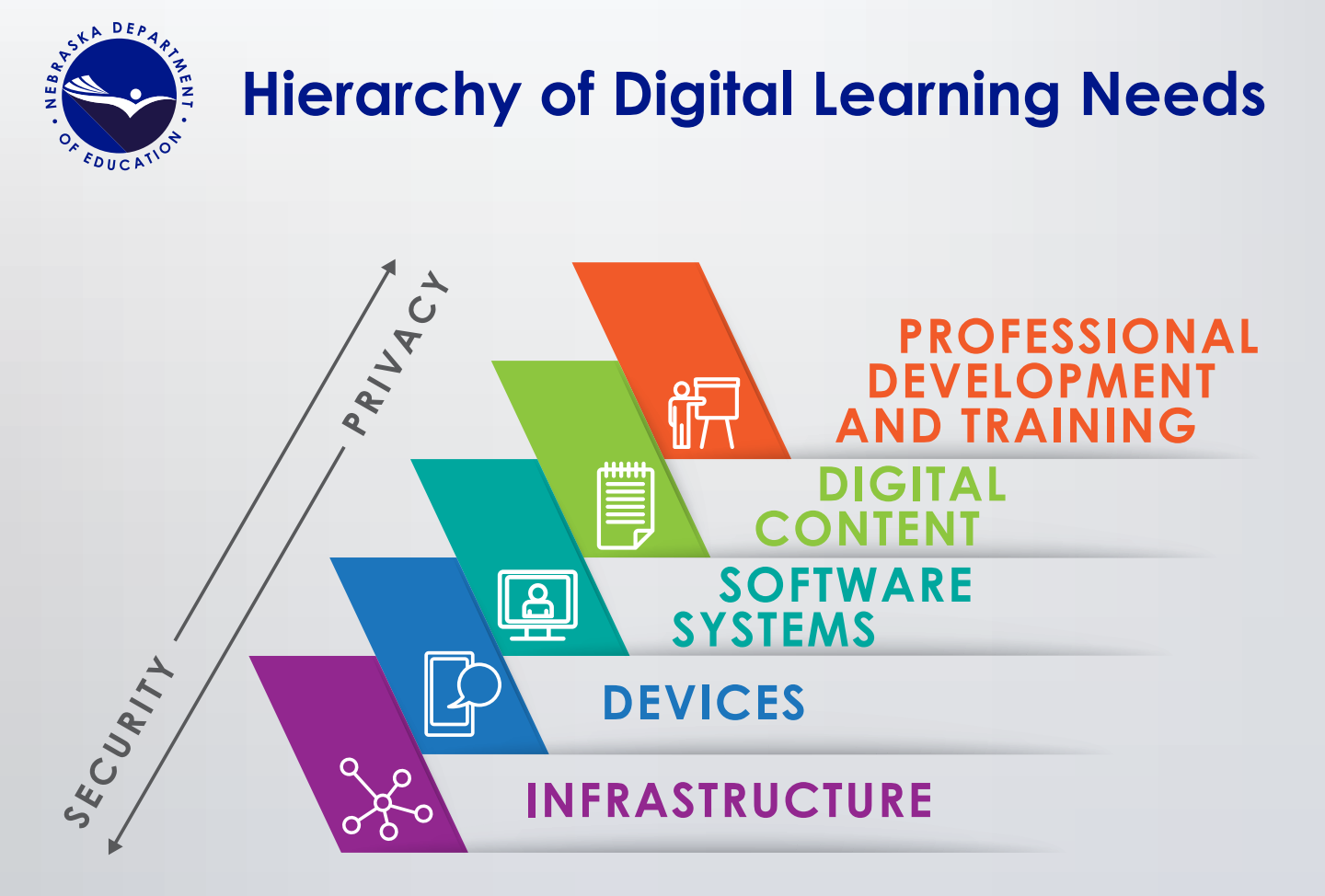
An important step in determining statewide project priorities is collecting specific status and technology-based needs of public and nonpublic schools. This will be accomplished through an online submission of a **Digital Learning Profile and Plan**.

All public and nonpublic schools that desire to be considered for GEERS and ESSER funds, resources, and supports addressing digital inequities and gaps highlighted by COVID-19 should promptly complete the Digital Learning Profile and Plan by July 6, 2020.

Hierarchy of Digital Learning Needs

As part of its Future Ready Nebraska initiative, the Nebraska Department of Education developed the Hierarchy of Digital Learning Needs to provide a framework and touchstone for delivering and sustaining the systems needed for equitable, digital learning.

Identifying Strategies for Digital Learning

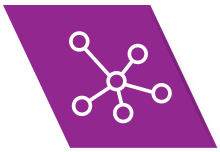


The ***Hierarchy of Digital Learning Needs*** model is based on systems theory thinking, in that for any of the elements to work effectively, each must be solidly implemented with fidelity starting with the bottom layer. In addition, assuring equity to every student, no matter the location or situation, is a high priority of this model. Each strategy should be fully planned and implemented otherwise the structure will not be sound and effectiveness will be minimized. A sample planning grid is included below.

Implicit to any online learning for students is privacy and security of the system. Each of the elements includes considerations for security and privacy, and is requisite in any educational environment, physical or virtual.

Strategies Described

Teachers and students must have equal access to the same resources to ensure that the virtual classroom is equitable and consistent across the board. It is important to note that the Hierarchy is essential for both the learner and the instructor, and be available both during and after school hours.



INFRASTRUCTURE

Equity of broadband internet access to every home.

As the base of the model, infrastructure is vital to the success of these strategies. There are many elements to consider including but not limited to: urban/ rural availability, cost and data limits, and travel from home to location(s) where wireless access is available.

Actions:

- Identify areas where access to broadband is weak or non-existent
- Identify methods for bringing broadband to these locations
- Implement appropriate solutions for each area

DEVICES

A computing device for every student.

A number of districts may have one-to-one programs and some of these programs include both upper level and lower level grades. For students who must work from home who do not have school-provided devices, it is necessary for them to use their own device (BYOD = bring your own device). This creates an inequity for those students who do not have a device capable of accessing the Internet with the tools needed to perform the work required.

Actions:

- Identify districts with student populations that need devices
- Identify types and numbers of devices needed
- Implement solutions for device acquisition and distribution
- Consider supports and systems

SOFTWARE SYSTEMS

Learning Management, Content Management, Collaborative Learning Technologies, and the integration of these systems.

This strategy provides the means to interface the curriculum and learning tools with teachers and students. It may be the most complex of the five as it provides a plethora of options and is the pivot point for what occurs before and what comes after in the hierarchy. It is not necessary for each learning institution to use the same tools, but when common tools are used there are efficiencies to professional development, a common language, enterprise technical support, and transitional ease between grade levels and to other learning environments.

Actions:

- Identify the basic software(s) needed for effective remote learning
- Implement solutions for software acquisition, development, integration, training, communication and distribution

DIGITAL CONTENT

Online digital resources.

Essential to any learning environment is a place to host, develop, store, and recover content for teaching and learning. A robust content management system must be available for viable digital learning environments and is enhanced when this system is utilized statewide for consistency in access no matter where or when it is needed.

Actions:

- Identify the best practices for the creation, storage, recovery of open content
- Implement solutions for acquisition and integration

PROFESSIONAL DEVELOPMENT AND TRAINING

Effective methods for teaching and learning in a digital world, whether virtual or face-to-face.

Teachers need the skills to create and deliver class work online. This includes everything from logging in, to creating content, to delivery to students via remote location and so on. This is the top of the model as it is the most important to successful implementation of the system and effective use of Strategies 1-4. Parents, students, school technicians and other district personnel must be included as having unique professional learning needs as part of a whole system.

Actions:

- Identify the common methods to create online class work
- Identify solutions in Strategies 1-4 above that will require professional development
- Identify groups or programs to best create and deliver the professional development

Communication

Regular and effective communication is essential to the success of any plan. All stakeholders affected by the implementation need to have an understanding of the purpose and process, and the opportunity for input to outcomes. Using multiple methods of communication should be used to assure all stakeholders receive the needed information.

Sample Planning Grid

Based on a project outline, complete the following for each consideration, such as: Infrastructure might include considerations of mobile hotspots, for TV whitespace, for WiFi on busses, etc. Planning grids have been completed in the Opportunities and Solutions section that follows.

Consideration:	*Proposed solution (create one grid per recommendation).*
Installation Timeline:	*Identify the timeframe in which the solution can realistically be implemented.*
Rough Cost Estimate:	*Use commercial pricing for products, and hourly cost for installation, etc.*
Sustainability:	*Once installed, identify how the solution will be maintained over long term.*
Pros:	*Reasons why this is the best solution, especially long term.*
Cons:	*Barriers, reasons why this might not be the right solution, including limitations.*
Scaling Statewide:	*Benefits, timelines, resources need, etc. of taking the solution statewide.*

Opportunities and Solutions

The Nebraska Department of Education, in partnership with the Educational Service Unit Coordinating Council, Network Nebraska, and Bring Up Nebraska Collaborative, have identified the following as statewide opportunities for a coordinated solution to equitable digital learning.

INFRASTRUCTURE

Recommended Solutions:
Resource for Schools and Communities to provide equitable Internet access

Objective: Internet access for every student when away from school

Things that school districts can do now (1-4 weeks)

1. ANTECEDENT: Assess the number of student households without internet access or computing device access, down to the address level and maintain confidentiality with the data.
   a. A model questionnaire can be provided, or use anecdotal data
   b. Map the addresses using mapping software (e.g. Google maps, Google Earth, ArcGIS, etc…)
2. Parking Lot Wi-Fi
   a. Do a walking Wi-Fi assessment to determine if the school building Wi-Fi signal is robust enough to allow connectivity from vehicles
   b. If insufficient, wire and install additional wireless access points at the closest interior wall or exterior surface with a directional signal to the parking lot;
3. Temporary Outside Learning
   a. Do a walking Wi-Fi assessment to determine if other sheltered areas adjacent to the school are sufficient to allow walk-up access
   b. Consider setting up temporary outside seating within range of the Wi-Fi signal, with electricity, along with signage for physical distancing requirements
4. Purchase and install mobile wireless equipment for school buses and park buses in strategic areas as remote Homework Hotspots
   a. Upfront costs and/or ongoing costs are to be expected from major providers
   b. A source of electricity is required to the parked bus
   c. Supervised interior seating may be provided, observing strict physical distancing requirements
   d. Unsupervised exterior seating may be provided, observing strict physical distancing requirements
   e. At present, these equipment and subscription costs are not E-rate eligible

5. Purchase mobile wireless hotspots and check them out to families that are most in need
    a. Upfront costs and/or ongoing costs are to be expected from major providers
    b. Some providers require a minimum term agreement (e.g. 1 year) to start a service
    c. Some school districts and public libraries have had success cataloguing and checking out the mobile wireless hotspots as media center items
    d. At present, these equipment and subscription costs are not E-rate eligible

Things that school districts can do in the near future (5-26 weeks)

1. Common Area Homework Hotspots (if directed health measures are relaxed)
    a. Convert school common areas (e.g. cafeteria, gym, etc..) to supervised study areas that can be opened for students without home internet several days or evenings per week;
    b. Each common area must have no more than 10 persons (i.e. 8 students, 2 staff), and each table of one person should be at least 6' apart from the next
2. In rural areas, purchase and install high bandwidth fixed base wireless equipment to provide internet sharing from the school building(s) to community centers, libraries or other spaces that can host Homework Hotspots
    a. Connections must be line-of-sight, unimpeded by foliage, terrain or other buildings
    b. Directed Health Measures would have to be enforced at the remote sites
    c. At present, E-rate cost allocation is required for serving ineligible locations
3. In rural areas, purchase and install TV White Space for wireless coverage in the 1-9 mile range from each school [See Project—TV White Space]
    a. Base station radios and antennas can be installed on school rooftops or utility poles or towers on school property
    b. Base station radios must be wired by Ethernet into the school district switch
    c. Each student address must have customer premise equipment installed, consisting of a TVWS antenna, TVWS radio, and a Wi-Fi router
    d. TVWS connections are NON line-of-sight, and will penetrate foliage and buildings
    e. At present, E-rate cost allocation is required for serving ineligible locations
4. In rural areas, school districts may apply for FCC waivers for new EBS licenses to provide 2.5GHz wireless coverage in the 1-7 mile range from each school or antenna location [See Project—Wireless EBS]
    a. EBS antenna arrays may be installed on towers on school property or other community high points, but must have fiber or high bandwidth microwave internet access
    b. Each student device must have a SIM card installed, or use a My-Fi hotspot, or can use a customer premise antenna for longer range
    c. The 4G/LTE network must have a physical or cloud-based core to facilitate simultaneous mobile sessions
    d. Connections are considered NEAR line-of-sight, and will penetrate foliage and buildings
    e. At present, E-rate cost allocation is required for serving ineligible locations

5. In urban areas, school districts may work with terrestrial and wireless internet service providers to provide low cost, pay-by-the-month internet access for student domiciles.
6. Some terrestrial service providers may consider advertising a "hidden" school district SSID address from residential and business subscribers, thereby enabling any Wi-Fi router to be a Homework Hotspot for district-owned student computers that are within range.
7. At least one company is in the process of deploying Low Earth Orbiting (LEO) satellites that are capable of bi-directional internet access with low latency, projected to go live in late 2020. These services are particularly appropriate for student families who are in sparsely populated areas, and unable to be reached by any other internet technologies (e.g. terrestrial, fixed base wireless, mobile cellular).
8. School districts may work with local charities and philanthropies to purchase new computers and/or refurbish donated computers and provide to student households that are without a computing device. *(See Layer 2—A Computing Device for Every Student for more information.)*

Project Plans on subsequent pages:

A. Project—Mobile Cellular Hotspots
B. Project—Homework Hotspots at Community Anchor Institutions
C. Project—Working with Local Internet Providers
D. Project—TV White Space (TVWS) [470-698 MHz]
E. Project—Wireless Education Broadband Services (EBS) [2.5 Ghz]
F. Project—Low Earth Orbiting (LEO) Satellite Service

Project Planning

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)

Additional Details

1. Consider regional or statewide enterprise contract to help bring down costs.
2. Districts can use Title 1 funding transfer to support this option for students
3. School Bus Wi-Fi options exist at higher up front and ongoing costs.
4. Major providers include Verizon, Viaero, Kajeet, T-Mobile, etc.

B. Project—Homework Hotspots at Community Anchor Institutions

Installation Timeline:	1-2 weeks
Rough Cost Estimate:	$200-$1,000 for initial microwave wireless equipment and wireless access point costs; $0 ongoing
Sustainability:	Shared internet access from school district to remote Homework Hotspot is limited only by what the school district is willing/able to share; no additional costs associated, and the school district cannot charge for sharing internet access, according to E-rate rules.
Pros:	Low cost, simple, straightforward wireless connection, with wireless access point at remote site managed as an extension of the school district's network. District-owned computing devices would connect automatically to the wireless access point.
Cons:	Rooftop to rooftop line-of-sight connections will not penetrate building or foliage obstructions. End users must drive from home to Homework Hotspot, which may be inconvenient or weather-dependent. Supervision may be provided at the remote site. May require E-rate cost allocation for sharing internet with ineligible locations.
Scaling Statewide:	200 sites x $500 per site = $100,000

Additional Details

1. Libraries, hospitals, community centers, churches, Extension offices, and postsecondary campuses are all possible options for school districts to sponsor Homework Hotspots.
2. Public libraries and school districts may apply for E-rate consortium status and then the equipment costs to interconnect the two locations would be eligible for E-rate under Category 1 and no E-rate cost allocation would be necessary.

C. Project—Working with Local Internet Providers

Installation Timeline:	6 – 12 months to work out agreements for low-cost, non-subscription internet service to be offered to economically challenged families.
Rough Cost Estimate:	$10-$20/month
Sustainability:	Very sustainable.
Pros:	Provides a low-cost, pay-by-the-month, internet option for families that tend to be more mobile and/or who may have a deficient credit record and are unable to qualify for a service contract.
Cons:	May be limited to urban areas or larger service providers.
Scaling Statewide:	TBD

Additional Details:

1. Providers may be reluctant to engage or embrace this service level offering as it represents a community service that will not generate positive revenue for the provider.
2. The advertisement of the "hidden" school district SSID address from residential and business subscribers, thereby enabling any Wi-Fi router to be a Homework Hotspot for district-owned student computers that are within range, is somewhat promising.

D. Project—TV White Space (TVWS) [470-698 MHz]

Installation Timeline:	8-12 weeks to order/receive equipment + installation time to install at every student domicile
Rough Cost Estimate:	$1,600 to $2,000 per school base station + $350-$500 Customer Premise Equipment (CPE) per student domicile
Sustainability:	Equipment expected to last 4-5 years with firmware upgrades, with minimal ongoing costs for equipment installation and relocation.
Pros:	Uses school district filtered internet. Can restrict use to students and staff using SSID. Minimal ongoing costs except for CPE reclamation or relocation when students move, graduate, or leave the school district.
Cons:	Large-scale TVWS implementations are untested within the education sector and may be considered an emerging technology. Significant upfront costs, installation at student homes has associated risks, bandwidth performance per user is modest at less than 5Mbps. May be restricted to students who are on free/reduced lunch, without home internet, and confined to district-owned devices.
Scaling Statewide:	250 rural schools x $2,000 = $500,000 40 CPEs per school x 250 = 10,000 x $500/CPE = $5,000,000 10,000 CPEs x $100/CPE installation = $1,000,000 Estimated Cost = $6,500,000

Additional Details

1. Base Station
    a. Recommends four (4) 90-degree sector antennas, four TVWS radios, and exterior Power over Ethernet (PoE) cabling for each TVWS radio
    b. Mounted at any height using a non-penetrating roof pedestal, bracket attached to the side of a building, utility mono-pole, metal tower; the higher the better.
    c. Must be located within 300' of the school's main switch for Ethernet access
    d. May reach up to 9 miles, Non-Line-of-Sight (NLoS), and can penetrate foliage and buildings
    e. Confined by the 6MHz channels granted by the FCC
    f. Can deliver 25-30Mbps per directional sector antenna and TVWS base station radio, divided among the simultaneous users in that sector
    g. Budgeted equipment cost per Base Station = $1,800 - $2,000, depending on mounting hardware (installation is extra)
    h. Realistic equipment cost per Base Station = $1,600-$1,750, for volume purchases
    i. Maintenance options: 1 year up to 5 years
    j. Annual cost of registry with the Nominet (**https://usa.wavedb.com**) Database of TVWS installations
    k. Scaling statewide: 250 placements x $2,000 = $500,000

2. Customer Premise Equipment
    a. Consists of a 12" x 12" flat external antenna, external TVWS radio, PoE injector, and Ethernet cabling to the district's choice of an interior Wi-Fi router or Wireless Access Point (WAP)
    b. Antenna and TVWS radio mounted on a pole, side of house, or rooftop
    c. Must be within 300' of the house's Wi-Fi router or WAP
    d. Budgeted equipment cost per CPE = $500
    e. Scaling statewide: 10,000 CPEs x $500 = $5,000,000
    f. Installation represents an additional cost; 10,000 CPEs x ~$100/CPE = $1,000,000
    g. *Installation could be performed by commercial installers, with ownership of the student home equipment retained by the school district, and recovered if a student moves to an area that does have internet, graduates, or leaves the district.

3. Company Contacts

    Steve Rovarino, Red Rover LTD, steve@redroverltd.com; 408-921-8945

    Manufacturers: Adaptrum, Carlson Wireless, Radwind, Redline, 6Harmonics, etc.

E. Project—Wireless Education Broadband Services (EBS) [2.5 Ghz]

Installation Timeline:	3-6 months to order/receive equipment + installation time for customized SIM card on every device
Rough Cost Estimate:	$40,000-$50,000 for each set of core equipment per tower + $80-$250 Customer Premise Equipment (CPE) per student domicile
Sustainability:	Core LTE equipment expected to last 4-5 years with firmware upgrades. Customer premise equipment and SIM cards can be managed as a storefront for potential subscribers.
Pros:	Uses school district filtered internet. More complex, managed as a private 4G/LTE wireless network for fixed and mobile subscribers; would allow roving access by students to different towers. Bandwidth performance in the 25Mbps/5Mbps level. SIM card access can be enabled or disabled at the network administrator level.
Cons:	FCC licensing terms limit development to tribal lands unless public/private partnership is formed with commercial provider(s) who can apply for FCC licenses. Must have a source of fiber-based or microwave internet to each tower of 500-1,000Mbps.
Scaling Statewide	150 smallest rural districts x $50,000 tower equipment = $7,500,000 40 CPEs per district x 150 = 6,000 x $167 = $1,000,000 6,000 CPEs x $100/CPE installation = $600,000 6,000 SIM cards x $3/card = $18,000 Estimated Cost = $9,118,000

Additional Details

1. Base Station
    a. Tower, pole, or pedestal placement with base station would be located on or near a school district source of the internet; the greater the height, the better.
    b. Must be located within 300' of the school's main switch for Ethernet access
    c. May reach up to 7 miles, near Line-of-Sight, and can penetrate minor foliage and buildings, but not appropriate coverage for valleys or ravines.
    d. Can deliver between 500Mbps and 1,000Mbps in 360 degrees radiated from the base station and shared by all the subscribers within that tower footprint.
    e. New EBS licenses to cover unserved areas are not available due to FCC ruling. A petition for reconsideration is pending.
    f. It may be possible to partner with a Wireless Internet Service Provider and subsidize their build-out to areas that they otherwise would not build, due to the lack of revenue/profit.
    g. Better to approach EBS as a county-wide or regional deployment with multiple towers to simulate a commercial grade mesh wireless network.
    h. Ongoing costs and maintenance are unprojected at this point.

2. Customer Premise Equipment
    a. Customer premise equipment ranges from $80 per unit for a MiFi hotspot to a high power external antenna for $250 per unit. The higher the cost, the longer the range from the base station, up to seven (7) miles.
    b. Each device (e.g. iPad, Chromebook, smart phone, etc…) will need a SIM card installed, and these cards cost up to $6 each for small quantities, and as little as $1 each in very large quantities.
    c. Other regional EBS networks in northern Michigan and California report that additional resources will be needed to provide technical support to the end users/subscribers.

F. Project—Low Earth Orbiting (LEO) Satellite Service

Installation Timeline:	2-4 weeks after request for service is submitted online to receive equipment and installation on customer premises.
Rough Cost Estimate:	$100-$300 up front for equipment; ~$80-$100/month ongoing
Sustainability:	Long-term sustainability at comparable service levels of up to 100Mbps.
Pros:	Should be able to reach remote rural areas where no other broadband exists. High bandwidth speeds available with some providers at low latency. LEO service may be adaptable to moving vehicles.
Cons:	Major providers are still testing new satellite arrays and building up capacity for go-live service. Some services may have data limits. Customer costs may be higher than other service options. Service interruptions may occur during heavy rain or snow. Latency can be a problem. Not practical for municipal or dense population areas.
Scaling Statewide:	TBD; Consumer grade service may not be conducive to public investments.

Additional Details

1. Satellite service providers are found under the names: SpaceX-StarLink, TeleSat, OneWeb, Amazon-Kuiper, HughesNet, Viasat, DISH, Direct TV.
2. The more remote the subscriber and the lower the population density, the better the service.

DEVICES

A computing device, in concert with broadband access, optimal software systems and digital content for every student, will prepare all for face-to-face, remote and hybrid learning environments. School districts will assess needs and place orders for appropriate devices for their student population.

Installation Timeline:	3-6 weeks after an order is placed by the school district
Rough Cost Estimate:	$300 per device
Sustainability:	**Operational support:** School district IT support staff will be needed to configure, install apps, maintain, train and support the use of devices. **Replacement:** With care and maintenance, devices have a useful life of 3-4+ years. Districts will need to plan for the life cycle of devices and the need for replacement or retirement at their end of life.
Pros:	An equipped and connected device for every student supports an array of flexible learning options which may be required by conditions or preferred by students' individual learning styles.
Cons:	Districts issuing devices to students will need to plan for repair and replacement costs in future years when devices are at their end-of-life.
Scaling Statewide:	According to public school data, 143,325 students were without a school-issued device as of November, 2019. At $300 per device, about $43 million.

Additional Details

1. ESUCC COOP Purchasing is working with vendors to collect most commonly-purchased device configurations and negotiate options for bulk pricing and finalize the purchasing process.
2. Capture the data on the specific needs (e.g., numbers, models, options, etc.) to determine supports needed.

SOFTWARE SYSTEMS

Objective: Organized access to quality content and collaboration

A. Project—Canvas Learning Management System

Installation Timeline:	Important Dates: **June 19, 2020:** Districts/schools sign up via launchne.com to indicate their commitment to participate **June-July, 2020:** Implementation projects are worked for each district/school participating, including technical work and professional development **August, 2020:** The system is operational for participating districts/schools.
Rough Cost Estimate:	$3 per Canvas user account annually (includes students and staff)
Sustainability:	**Operational support:** Project plans and pricing include Canvas Tier 1 support, training and integration consultants to help participating districts in the transition to the system and answer questions. **Annual Cost:** After the initial 3-year group purchase contract (July, 2020 through June, 2023), the per user cost will adjust based on the total number of user accounts licensed by participating district/schools
Pros:	Builds access to equitable technology services. Single system creates simplicity, resources sharing and cost savings benefits. Ties into current Nebraska Post-Secondary University and College systems.
Cons:	Some districts have already invested in other LMS systems and may need to finish their contract.
Scaling Statewide:	$3 x 350,000 users = $1,050,000 annually

Additional Details:

1. **Why a Learning Management System (LMS)? document**
2. Optional - Assessment Management system (**Mastery Connect**) is under consideration.
3. The Canvas LMS was selected because it is already in use in Nebraska by 74 K-12 districts, the University of Nebraska system and the Nebraska State Colleges.

DIGITAL CONTENT

A. Assessment Management System - UNDER Consideration

B. Project—Content Management / Learning Object Repository

Providing storage, security and accessibility for learning objects, including video, images, documents and more, for public, semi-private and private content.

Installation Timeline:	Summer-Fall, 2020
Rough Cost Estimate:	Year 1: $300,000 to achieve statewide availability Year 2 and Subsequent Years: $60,000 annual hosting, maintenance and upkeep
Sustainability:	An open-source software solution and existing hosting capabilities will be used to provide this service. The $60,000 annual cost projection after implementation includes hosting, maintenance and support.
Pros:	This system includes features to allow users to: easily upload and store content configure access to stored content to allow users, groups, or public access as needed restrict access to follow license agreements store content that may be too large to fit on other platforms embed/link content from learning management systems and web sites
Cons:	
Scaling Statewide:	The implementation is designed for statewide availability from the beginning. Additional communications and training will extend the knowledge and usage of the system.

C. Project—Collaborative Learning Technologies

Through the already-in-place Nebraska Cloud single sign-on framework, partner applications such as Microsoft Teams can be made available and integrated with other components in the learning environment

Collaborative Software is the resource that serves as a communication, connection, and coordination resource. In some cases that may include video conferencing, chat, discussion groups, planning and calendar and integration of applications.

Collaborative Software

- **Microsoft Teams**
- **Zoom**
- **WebEx**
- **Google Meet** in Classroom

Installation Timeline:	Summer-Fall, 2020
Rough Cost Estimate:	Year 1: $300,000 to explore statewide availability Year 2 and Subsequent Years: $50,000 annual hosting, maintenance and upkeep
Sustainability:	Open-source and Microsoft "free tier" software services are planned for this implementation, along with utilizing existing hosting agreements. The annual maintenance is to support the hosting costs, maintenance of software and adaptation of new features.
Pros:	Virtual face-to-face meetings, screen share, shared whiteboard and collaborative documents, organized by classes, groups, committees, etc. Interfaces to learning management systems.
Cons:	
Scaling Statewide:	The implementation is designed for statewide availability from the beginning. Additional communications and training will extend the knowledge and usage of the system.

D. Device Management System

The role of the device management system is to centrally manage and support the deployed devices with updates, security, access, etc. Several different options exist depending upon the devices deployed by district. Options supported include Microsoft, Google, Apple, and other tools..

PROFESSIONAL DEVELOPMENT AND TRAINING

1. Each incident of Professional development and training will be unique depending on who the audience is:
   a. Teachers
   Administrators
   Technical staff
   Students
   Parents
   Others
2. NDE offers Nebraska OER training and plans to adjust for creating and storing professional development materials
3. Consider using short "just in time" training videos specific to each topic.
4. Develop the statewide clearinghouse of digital professional learning opportunities.

NEBRASKA DEPARTMENT OF EDUCATION

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