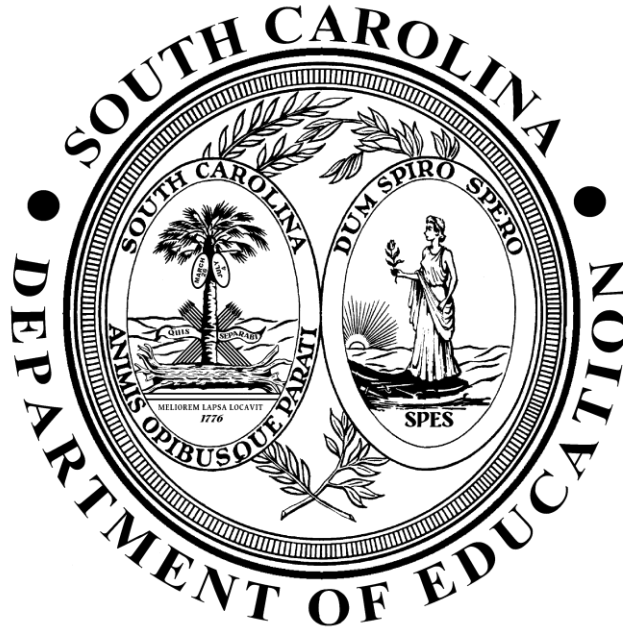


STATE OF SOUTH CAROLINA
DEPARTMENT OF EDUCATION

MOLLY M. SPEARMAN
STATE SUPERINTENDENT OF EDUCATION



2020–24 South Carolina
Educational Technology Plan:
Empowering Education with Technology

Pursuant to Proviso 1.70 of 2019
February 1, 2020

The South Carolina Department of Education does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, veteran status, or disability in admission to, treatment in, or employment in its programs and activities. Inquiries regarding the nondiscrimination policies should be made to the Employee Relations Manager, 1429 Senate Street, Columbia, South Carolina 29201, 803-734-8781. For further information on federal non-discrimination regulations, including Title IX, contact the Assistant Secretary for Civil Rights at OCR.DC@ed.gov or call 1-800-421-3481.



STATE OF SOUTH CAROLINA
DEPARTMENT OF EDUCATION

MOLLY M. SPEARMAN
STATE SUPERINTENDENT OF EDUCATION

The South Carolina Department of Education (SCDE) believes that every child should have the knowledge and tools they need to be successful when they graduate high school. Technology plays an important role in this. Teachers must ensure that technology resources are integrated across the curriculum and enhance student learning experiences. Educators and students must be empowered and ready for innovation in digital content creation, virtual collaboration, and mobile learning.

The SCDE's 2020–24 Educational Technology Plan addresses the current state of technology and defines the strategies for successful technology innovation, support, and professional development, as directed by Proviso 1.70 of H.4000, Act 91 of 2019. This plan provides a tool to help districts to adequately prepare for online testing, digital curriculum, and personalized learning. We have many priorities to address; however, we are confident this plan will allow us to focus on our core mission of providing leadership and support so that all students graduate prepared for success.

Most sincerely,

A handwritten signature in blue ink that reads "Molly M. Spearman".

Molly M. Spearman
State Superintendent of Education

Contents

Introduction.....	1
I. Goals of the South Carolina Educational Technology Plan.....	1
A. Goal: Infrastructure, Connectivity, Security & Privacy.....	1
B. Goal: Teaching and Learning.....	1
C. Goal: State-hosted services, collaboration opportunities, and shared services	2
II. The Role of the National Education Technology Plan	2
III. The South Carolina Department of Education.....	5
IV. Challenges with Technology in South Carolina’s School Districts.....	7
A. Infrastructure and Connectivity Challenges.....	7
1. Networking and Capabilities	7
2. Cybersecurity Threats.....	7
3. Internet at Home	7
4. 1:1 Devices and Simultaneous Use	8
B. Teaching and Learning Challenges	8
C. Technology Support and Shared Resources Challenges	8
D. Instructional Technology Challenges.....	9
V. State Technology Plan Recommendations Overview.....	10
A. Infrastructure and Connectivity.....	10
B. Teaching and Learning.....	10
C. State-Hosted Services, Collaboration Opportunities and Shared Services	11
VI. Infrastructure and Connectivity	12
A. Infrastructure and Connectivity Goals	13
B. District Technology Plan Topics.....	14
C. Safety, Security, and Privacy	15
1. Security.....	15
2. Protections for Student Data and Privacy.....	16
3. Internet Safety Standards for South Carolina K–12	16
4. Social Media Monitoring.....	16
5. Physical Security in Schools.....	17
6. Cybersecurity.....	17
D. Bandwidth and Connectivity.....	18
1. Ubiquitous Connectivity.....	18

2.	Statewide internet access map	19
3.	Connectivity at School.....	19
4.	Wi-Fi in Schools.....	20
5.	Connectivity at Home.....	21
6.	Wi-Fi on School Buses.....	24
7.	Data Caching	26
E.	Hardware and Software.....	26
F.	Infrastructure and Connectivity Summary.....	26
G.	Infrastructure and Connectivity Initiatives.....	27
H.	Projected Costs for Infrastructure and Connectivity.....	28
VII.	Teaching and Learning	28
A.	Teaching and Learning Goals	28
B.	Online Testing.....	29
C.	Digital Electronic Assessment at the Local Level	30
D.	Equitable Access to Technology for All	30
E.	Statewide Learning Management System.....	31
F.	Learning Objects Repository.....	32
G.	Digital Technology Coaches	33
H.	VirtualSC.....	33
I.	Programs for Computer Science Immersion	34
1.	South Carolina Spotlight: Richland School District Two	34
J.	Career and Technical Education	34
K.	Teaching and Learning Initiatives.....	35
L.	Projected Costs for Teaching and Learning.....	36
VIII.	State-Hosted Services, Collaboration, and Shared Services Opportunities.....	36
A.	Collaboration Goals.....	36
B.	Student Information Systems	36
C.	Regional Support Centers.....	39
D.	Statewide Procurements	40
E.	Data Backup and Recovery	40
F.	Vulnerability Scanning.....	41
G.	Disaster Recovery	41
H.	Single Sign-On.....	42

I. Mobile Device Management	42
J. District Consolidation	43
K. State-Hosted Services, Collaboration, and Shared Services Opportunities Initiatives ..	44
L. Projected Costs for State-Hosted Services, Collaboration, and Shared Services Opportunities.....	45
References.....	46
Appendix A: Projected Costs, Infrastructure and Connectivity.....	48
Appendix B: Projected Costs, Teaching and Learning.....	50
Appendix C: Projected Costs for State-Hosted Services, Collaboration, and Shared Services Opportunities.....	52
Appendix D: Bus Route Times and Ridership.....	54
Appendix E: Acknowledgments	60
Project Team	60
Stakeholders	60
Internal Engagement	60
External Engagement	61

Introduction

In accordance with Proviso 1.70 of H.4000, Act 91 of 2019, the South Carolina Department of Education (SCDE) has developed a statewide technology plan for schools and districts.

Of the funds appropriated for the K–12 Technology Initiative, the department is authorized to withhold up to \$350,000 in order to develop a statewide technology plan for schools and districts. The plan must address, at a minimum, infrastructure and connectivity needs, online testing requirements, equipment, educational technology, digital literacy and a statewide learning management system to connect teachers and students. The plan must take into account the need for some districts to utilize a regional approach to services that may include, but is not limited to, purchasing, training and support services. This plan, including cost projections, shall be presented to the Governor, the Chairman of the House Ways and Means Committee, and the Chairman of the Senate Finance Committee by February 1, 2020. Remaining funds shall be used to provide technology technical assistance to school districts.

The SCDE has grouped the topics covered in this plan into three general categories:

1. Infrastructure and connectivity, including security and privacy;
2. Teaching and learning, including a Learning Management System and online testing; and
3. State-hosted services, collaboration opportunities, and shared services.

After a brief discussion of the National Education Technology Plan and the agency, this plan will identify challenges facing South Carolina's school districts and proposals for addressing each of the three sections, including relevant industry research, best practices, and proposed initiatives for reaching the goals.

I. Goals of the South Carolina Educational Technology Plan

A. Goal: Infrastructure, Connectivity, Security & Privacy

To support the state's learning goals, by 2024 South Carolina's public schools will have more secure networks, fast and stable technology infrastructure, and up-to-date computing devices. Public school students will have improved access to broadband internet at school and at home.

B. Goal: Teaching and Learning

To promote students' meeting the *Profile of the South Carolina Graduate* and to support Personalized Learning, by 2024 South Carolina's public schools will have more accessible tools for "anytime, anywhere, any pace" learning.

C. Goal: State-hosted services, collaboration opportunities, and shared services

To better support districts, create efficiencies and improve effectiveness and quality, by 2024 the state will increase and expand state-level technology systems and services, including state-hosted regional technology support centers, backup and recovery services, procurement assistance, coordination of training, an updated student information system (SIS) with district operational data stores, and single sign-on.

II. The Role of the National Education Technology Plan

South Carolina has worked in the past to ensure the state’s educational technology plans were properly synchronized with federal guidelines surrounding educational technology. In 2017, the U.S. Department of Education created the National Education Technology Plan (NETP). This plan calls for applying advanced technologies to the state’s education system to improve student learning, accelerate and increase the adoption of effective practices, and use data and information to affect continuous improvements. The NETP presents five goals, with recommendations, for states and districts to consider when examining how technology can and should be integrated into the education process. These five goals encompass the primary elements of a learning process that is effectively imbued with and supported by technology: Learning, Teaching, Leadership, Assessment, and Infrastructure.

The five primary goals of the NETP are as follows:

- **Learning: Engaging and Empowering Learning Through Technology:** All learners will have engaging and empowering learning experiences both in and out of school that prepare them to be active, creative, knowledgeable, and ethical participants in a globally networked society.¹
- **Teaching: Teaching with Technology:** Educators will be supported by technology that connects them to people, data, content, resources, expertise, and learning experiences that can empower and inspire them to provide more effective teaching for all learners.²
- **Leadership: Creating a Culture and Conditions for Innovation and Change:** Embed an understanding of technology-enabled education within the roles and responsibilities of education leaders at all levels and set state, regional, and local visions for technology in learning.³
- **Assessment: Measuring for Learning:** At all levels, our education system will leverage the power of technology to measure what matters and use assessment data to improve learning.⁴

¹ Reimagining the Role of Technology in Education: 2017 National Education Technology Plan Update (2017) p. 9

² Ibid., p. 28

³ Ibid., p. 46

⁴ Ibid., p. 59

- **Infrastructure: Enabling Access and Effective Use:** All students and educators will have access to a robust and comprehensive infrastructure when and where they need it for learning.⁵

South Carolina’s 2020 Educational Technology Plan uses the NETP’s goals as a foundation for recommendations and periodically highlights successes in specific areas that exemplify highly effective practices currently in place within a particular county, district, or school. There are several distinct factors that state educators use as a baseline for all decisions pertaining to technology:

- Professional development policies, procedures, and processes that are tailored to support educators at all levels with the integration of technology into the overall curriculum.
- Multi-tiered technical support models that help the districts, schools, and staff plan for and implement new technologies.
- Opportunities for equal levels of access to digital technologies by students, teachers, administrators, and technologists.
- Integration of the technical support models at the state, district, and individual school levels to help ensure stable and secure learning platforms.

South Carolina is currently following many of the steps outlined in the NETP. The development of this *State Technology Plan* offers an opportunity for the state, local school districts, business, families, and the wider community to make greater use of technology to impact the education process in a positive manner. Many stakeholders were involved in the analysis and planning of goals and objectives associated with the different content areas of this document. Through this iterative decision-making process, stakeholders helped identify the objectives, targets, and strategies that could be shared and ultimately used by the districts to augment their own district level technology plans.

⁵ Ibid., p. 73

Figure 1: Profile of the South Carolina Graduate



Figure 1 *The Profile of the South Carolina Graduate* represents the SCDE’s vision for student learning in the state, and has been adopted by a wide body of stakeholders and the state’s General Assembly. Source: South Carolina Department of Education. (2017). Retrieved from <http://ed.sc.gov/newsroom/profile-of-the-south-carolina-graduate/>

III. The South Carolina Department of Education

Mission

The mission of the South Carolina Department of Education (SCDE) is to provide leadership and support so that all public education students graduate prepared for success.

Vision

All students graduate prepared for success in college, careers, and citizenship. By 2022, districts will have available a system of personalized and digital learning that supports students in a safe learning environment to meet the *Profile of the South Carolina Graduate*.

Who We Serve

**Table 1: State of South Carolina Enrollment and Statistics
Our Schools**



	<u>2020 Budget</u>	
General Fund		\$3,279,867,262
Earmarked		\$40,747,909
Restricted		\$862,635,000
Federal		\$879,200,886

<u>Enrollment as of January 8, 2020</u>	
Total Students	792,495
Elementary (PK3–5)	379,575
Middle (6–8)	186,972
High (9–12)	225,948

<u>End of Year 2017–18</u>	
Educators	52,733
Schools	1,272
<u>Current Year 2019–2020</u>	
Geographic Districts	79
Charter Districts	2

<u>Our Students 2018–19</u>		
<u>180 Day Active Student Headcount</u>		
White	388,531	50.1%
Black/African American	256,361	33.1%
Hispanic	79,588	10.3%
Two or More Races	34,107	4.4%
Asian/Pacific Islander	12,709	1.6%
American Indian/Alaskan Native	2,476	0.3%
Hawaiian or Other Pacific Islander	1,028	0.1%
Not Reported	20	0.0%
Total	774,820	100.0%

51% Male	49% Female
----------	------------

2017–18 Graduation Rate	81.0%
2018–19 Graduation Rate	81.1%

Student enrollment and demographics retrieved from <https://ed.sc.gov/>.

IV. Challenges with Technology in South Carolina’s School Districts

What makes technology challenging in South Carolina is that some school districts have more resources than others. Technology will continue to be a critical issue in all districts. Leadership must take steps to ensure all parties have a seat at the table when discussing how to meet educational needs and to invest in future technological resources.

A. *Infrastructure and Connectivity Challenges*

Technology will continue to be a critical need within our school districts. A number of districts need assistance with funding and resources. Some are at risk as they attempt to support their environments of aging equipment with limited tools and scarce resources at their disposal. This opens their environments up for cyber-attacks, ransomware, malware, and computer viruses. In a December 2019 survey, fourteen districts reported attempted cyber-attacks on their systems in the past thirty-six months. Aging infrastructure also creates the risk that some districts will not be fully equipped to utilize the available technology.

1. Networking and Capabilities

Local school boards are authorized to independently make procurement and purchasing decisions related to technology in their jurisdiction. Multiple operating systems are currently in use across the school districts in South Carolina. Several types of servers are deployed, and server roles are handled by district personnel and various third-party vendor management packages. The information technology (IT) staff skill sets across the districts ranges from a single certified media specialist to multiple staff members with various industry-level certifications. This *State Technology Plan* addresses the need for district collaboration to address networking standards, as well as best practices with recommendations for cohesiveness and effectiveness.

2. Cybersecurity Threats

Security specialists are faced with different types of security threats and are responsible for keeping all the technology secure from malicious cyber-attacks that attempt to breach private information or gain control of internal systems. Beyond data breaches, school districts may find themselves held hostage by external entities demanding money so that student data will not be deleted from the system or sold.

3. Internet at Home

Based on 2010 Census Block Data, approximately nine percent of households in South Carolina lacked internet access at home, with a higher percentage of those in low-income households. Even if students are assigned a district-owned computing device, disparities exist in out-of-school internet access, creating inequities in opportunity and access related to homework, digital make-up days, and student enrichment.

4. 1:1 Devices and Simultaneous Use

Students and teachers in South Carolina need access to high-speed Wi-Fi enabled devices to interact with digital resources, for communication and collaboration, and to create content. Not all districts have internal school switches with sufficient bandwidth to accommodate effectively all students using devices at once.

Districts that have 1:1 devices for all students must plan for periodic refreshes of the computers, related equipment, training, software patching, upgrades, maintenance, and inventory tracking systems. Investments in computers are not a “one and done” proposition.

B. Teaching and Learning Challenges

A Learning Management System (LMS) is a software application for the administration, documentation, tracking, reporting, and delivery of educational courses, training programs, or learning and development programs.

A 2018 Technology Survey shows less than half of South Carolina school districts had an LMS. The districts with an LMS have a variety of systems being used for a range of purposes. There is not a statewide standard for an LMS. A statewide LMS for all districts, adoption of standards for digital content, curation of open source content, and interoperability standards would allow greater collaboration and sharing among districts. Those currently using another LMS could decide whether to migrate their content or continue with their system but have access to shared content.

The SCDE will work to align state, district and school LMSs to share content, promote personalized learning, improve achievement, and enable students to meet the *Profile of the South Carolina Graduate*.

C. Technology Support and Shared Resources Challenges

Proper technology support and staffing are essential to the successful sustainability of education technology in school districts. Over the last several years, the number of technology devices in schools has increased significantly with 1:1 initiatives, mandated online testing, and the decreasing technology costs. Unfortunately, the number of technology support staff has not increased to accommodate the increasing number of devices. This creates a burden on each district’s technology staff as technicians attempt to provide services for students, teachers, and administrative staff.

Establishing technology resources would help to address leadership, funding, and sustainability issues in implementing district technology plans. Proposed state-hosted regional support centers would address the following:

- Assist to educate district leaders, the school board, the community, and state leaders about needs, plans, and successes regarding educational technology;
- Continue to seek grants, leverage available funding, and identify other forms of resources;
- Offer centralized procurement resources to increase buying power, reduce inter-district variation, and streamline regional services;
- Manage the total cost of ownership across the life cycle of technology equipment and supplies needed over the term of district technology plans;
- Explore collaboration with neighboring and regional districts;
- Examine other means for acquiring and managing technology across the districts; and
- Maximize the use of federal E-Rate funding.

D. Instructional Technology Challenges

The online resource *Educational Technology* discusses the challenge of fully using technology in teaching:

Educational technology is a field of study that investigates the process of analyzing, designing, developing, implementing, and evaluating the instructional environment and learning materials in order to improve teaching and learning. It is important to keep in mind that the purpose of educational technology (also referred to as instructional technology) is to improve education. We must define the goals and needs of education first and then we use all our knowledge, including technology, to design the most effective learning environment for students. (Serhat, K., 2015)⁶

Teachers must have the ability to collaborate more and to reach outside the boundaries of their classrooms using technology and integrate that technology into lesson plans. Districts and the SCDE need the capacity to help teachers in learning how to access and efficiently use technology that can assist in these efforts.

The SCDE proposes promotion of the use of readily available open source materials and the compilation of a learning objects repository, curated by content experts and coordinated by state-level staff. To keep the repository up-to-date will require constant review and updating as content standards change, new technologies emerge, and better resources become available.

⁶ <https://educationaltechnology.net/educational-technology-an-overview/>

V. State Technology Plan Recommendations Overview

To address educational technology challenges in our public schools, the SCDE offers the following recommendations in accordance with the Proviso 1.70 of H.4000, Act 91 of 2019:

A. *Infrastructure and Connectivity*

- Provide guidance to local districts regarding networks, devices, and infrastructure;
- Participate in statewide efforts to make broadband connectivity available to all homes;
- Provide guidance regarding cybersecurity training and awareness, including annual risk assessments and security standards;
- After researching the status of district broadband usage, lead the initiative to reach the goal of 250 kbps per student in schools and districts, especially in those with high daily internet usage;
- Expand Wi-Fi for state-owned school buses, starting with those with the longest ride times;
- Work with districts on device refresh initiatives; and
- Provide data-caching in schools.

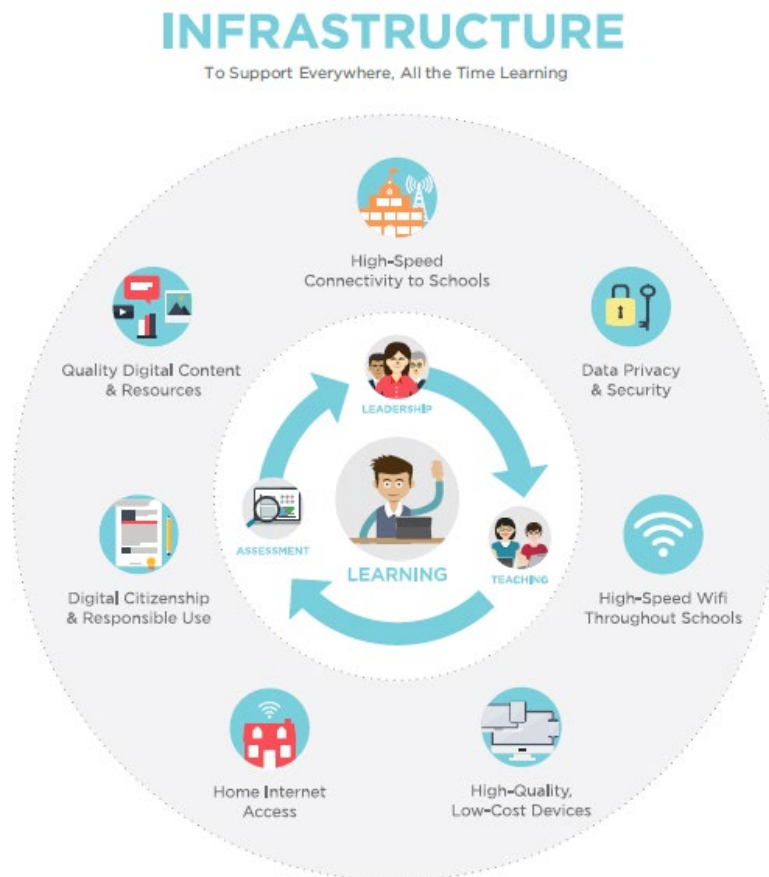
B. *Teaching and Learning*

- Develop method for out-of-classroom instruction, particularly in addressing “anytime, anywhere, any pace” personalized learning and school make-up days;
- Develop a Learning Objects Repository, using technology for cross-district sharing, expert curation, and state coordination;
- Advance data driven instructional decision-making promoting personalized learning;
- Support district leadership teams in planning and implementing digital learning initiatives;
- Provide training for digital literacy state standards as guidance to districts developing their curriculum;
- Implement a statewide Learning Management System that would be available to schools and districts;
- Explore state support for coding programs, like Girls Who Code or Code to the Future;
- Extend and modify Career and Technology Education (CTE) IT courses; and
- Ensure greater equity for small and rural districts by increasing funding for additional teachers and course designers for VirtualSC to expand offerings to middle schools and cover the current unmet high school course need.

C. State-Hosted Services, Collaboration Opportunities and Shared Services

- Procure and implement the next Student Information System, with local-level operational data store (ODS) capabilities and Ed-Fi interoperability;
- Develop Regional Technology Support Centers staffed to build and support capacity of smaller and rural districts;
- Establish state-level technology procurements from which districts may purchase software, technology, and training more efficiently;
- Expand state-hosted data backup and recovery services;
- Improve district mobile device management;
- Explore a Single Sign-On Initiative; and
- Assist with district service sharing and consolidation efforts.

VI. Infrastructure and Connectivity



Source: <https://tech.ed.gov/netp/infrastructure>

Infrastructure is the backbone of a district's operations. A school district's infrastructure foundation should support the following:

- File sharing;
- Shared printers and applications;
- Streaming video;
- Electronic mail;
- Web hosting for the district and schools' public websites;
- Application servers for systems such as the student information system (SIS), the individualized education program (IEP) system, the learning management system (LMS), financial and accounting systems, personnel systems, and other teaching and administrative applications;
- Teacher and student access to the software necessary to support the full range of curriculum and instruction;
- Teacher and student access to a wide range of specialized peripherals such as interactive whiteboards, digital media projectors, large format printers for CAD, 3D printers, color

printers, digital tablets for drawing, scanners, digital cameras, probes (science measurement devices), and music keyboard (MIDI) interfaces;

- Student and teacher access to information via the web which provides a full range of textual, audio, and visual resources;
- Sufficient broadband access for simultaneous, robust use of online resources;
- The ability to use search tools and browsers and all appropriate internet resources;
- Access for parents and other community members to district and school information;
- Assistive technology for special needs students; and
- Help Desk support available for any technical issues pertaining to hardware, software, or connectivity on the network.

A. Infrastructure and Connectivity Goals

To promote learning goals, South Carolina's goal is for public schools to have more secure networks, fast and stable technology infrastructure, and up-to-date computing devices. Public school students will need improved access to broadband internet at school. Additionally, to support “anytime, anywhere, any pace” personalized learning, students require sufficient broadband access in and out of school, such as on school buses and in their homes. To accomplish this by 2024, with appropriate resources the state will undertake the following initiatives:

- Provide guidance to local districts regarding networks, devices, and infrastructure;
- Participate in state and federal efforts to make broadband connectivity available to all homes;
- Provide guidance regarding cybersecurity training and awareness, including annual risk assessments and security standards;
- With research into the status of broadband usage in schools, lead the initiative to reach 250 kbps per student in schools and districts, especially in schools with high usage rates;
- Expand Wi-Fi for state-owned school buses;
- Work with districts on device refresh initiatives; and
- Support data-caching in schools.

Technical infrastructure is the underlying framework that makes it possible for educators to successfully educate students in today’s connected classrooms. Technology is part of the education ecosystem; without it, students and teachers are at a distinct disadvantage over their peers who are leveraging technology.

Our goal is to support districts and schools in maintaining cost-effective IT infrastructures that maximize student learning, support statewide testing, and ensure safe and secure transactions. The SCDE is working collaboratively with public and private sectors to identify internet services to rural communities to allow student learning to occur at home.

Infrastructure is defined as the hardware, software, and technical support needed to operate a district and school-networking infrastructure safely, securely, and with sufficient capacity to support teaching and learning. Infrastructure is further defined as ways to increase student learning outside of the classroom through the delivery of internet connectivity and mobile devices.

Our long-term vision is to have greater consistency in our district and school infrastructures to drive down total costs, increase quality, and enable remote support provided by state-hosted technical staff.

The NETP sets out these parameters related to infrastructure:

Preparing students to be successful for the future requires a robust and flexible learning infrastructure capable of supporting new types of engagement and providing ubiquitous access to the technology tools that allow students to create, design, and explore. The essential components of an infrastructure capable of supporting transformational learning experiences include the following:

- **Ubiquitous connectivity.** Persistent access to high-speed internet in and out of school
- **Powerful learning devices.** Access to mobile devices that connect learners and educators to the vast resources of the internet and facilitate communication and collaboration
- **High-quality digital learning content.** Digital learning content and tools that can be used to design and deliver engaging and relevant learning experiences
- **Responsible Use Policies (RUPs).** Guidelines to safeguard students and ensure that the infrastructure is used to support learning

Building a robust infrastructure for learning begins with an understanding of the goals and desired outcomes that support engaging and empowering learning experiences. When based on learning goals, technology infrastructure decisions become clear. (National Education Technology Plan, 2017.)⁷

With these targets in mind, the SCDE has outlined goals for enhancements to school districts' infrastructure over the next four years.

B. District Technology Plan Topics

Districts should consider integrating several industry best practices and standards into their district technology plans.

The following topics are considered by districts in their technology plans:

⁷ Reimagining the Role of Technology in Education: 2017 National Education Technology Plan Update (2017) p. 69

- **Security:** The ability to secure all student and employee data.
- **Website requirements:** Attention to state and federal website requirements, including compliance with the Americans with Disabilities Act (ADA).
- **Disaster recovery:** The ability to ensure all mission critical systems and data are available to ensure there are no gaps in service.
- **Compensation models:** Consistent analysis of market compensation to ensure districts can successfully attract and retain staff.
- **Thoughtful strategic planning:** Collaborative planning around technology acquisitions, support models, professional development, and refresh strategies.
- **Staffing models:** Evaluation and implementation of staffing to ensure districts are able to support new and existing technology, and are planning for imminent retirements.
- **Network bandwidth:** Stability of the network’s available bandwidth to ensure students and educators have no disruption in service.
- **Cyber response plans:** The actions a district would take in the event of a cybersecurity incident.

C. Safety, Security, and Privacy

1. Security

Security concerns are one of the most mentioned issues across South Carolina school districts’ technology leaders. Security is a broad topic and potentially impacts many technology areas including:

- Student Information Systems (SIS), Websites, Teaching Portals;
- Employee Data-HR/Payroll Systems;
- Financial Data-Accounting and Finance Systems; and
- Physical access to servers and devices.

There is a strong need for a comprehensive security approach to protecting institutional and personal data. The federal and state government both have stringent guidelines for data security. The consequences of a breach can be grave. For example, the City of Atlanta had a security breach in 2018 that ultimately cost significant taxpayer dollars in recovery and protection efforts, a compelling demonstration of the need for enhanced infrastructure and additional security measures.

- It is important the state and K–12 educational institutions have security protocols and plans in place to identify ways to proactively audit security risks and implement targeted solutions to address the specific needs at the school district level.
- Additional training around information security and privacy is needed at the state and local level, as well as ongoing simulated phishing testing.

- All districts should have an incident response plan in place that identifies the actions to take place in the event of a security breach, with regular tabletop exercises.
- District information security staff should work collaboratively in addressing these concerns.

These security issues have a broader scope than the typical and often-mistaken assumption that an organization is secure through purchase of products and contractual services alone. Information security is not only about installing anti-virus software, implementing the latest firewall, or locking down your laptops or web servers. The overall approach to information security should be strategic as well as operational. All students and staff need periodic training on how to reduce cyber security risks. Different security initiatives should be prioritized, integrated, and cross-referenced to ensure overall effectiveness.

2. Protections for Student Data and Privacy

The National Education Technology Plan recognizes that student privacy protections are essential:

The use of student data is crucial for personalized learning and continuous improvement. Acting as the stewards of student data presents educators with several responsibilities. School officials, families, and software developers have to be mindful of how data privacy, confidentiality, and security practices affect students. Schools and districts have an obligation to tell students and families what kind of student data the school or third parties (e.g., online educational service providers) are collecting and how the data can be used. As they plan, schools and other educational institutions should be certain that policies are in place regarding who has access to student data and that students and families understand their rights and responsibilities concerning data collection. (National Education Technology Plan, 2017.)⁸

3. Internet Safety Standards for South Carolina K–12

The South Carolina K–12 Internet Safety Standards for districts in South Carolina K–12 are available on the SCDE’s website. Internet Safety Standards can be found at <https://ed.sc.gov/districts-schools/school-safety/resources-and-training/safety-resources/> ; <https://ed.sc.gov/districts-schools/school-safety/resources-and-training/safety-resources/south-carolina-internet-safety-standards-2009/>

4. Social Media Monitoring

Reports of recent school tragedies have highlighted the role that social media can play in connection with violent attacks. School districts may want to include

⁸ Reimagining the Role of Technology in Education: 2017 National Education Technology Plan Update (2017) p. 79

provisions in their technology plans for working with law enforcement to utilize this tool.

A federal bill introduced by Sen. Cornyn of Texas in October 2019, seeks to heighten school security in part by encouraging adoption of social media monitoring programs:

“Programs that monitor students' social media and email, which have grown in popularity in recent years, are seen as a means of heading off the next tragic shooting. New legislation would dramatically expand their use.” (Ropek, L., 2019)⁹

5. Physical Security in Schools

Efforts exist to keep students safe extend beyond school walls, both in the real world and online. Today, it is common for K–12 schools to coordinate physical and digital security efforts with local law enforcement, first responders, and other community organizations. Districts need the infrastructure to support this initiative.

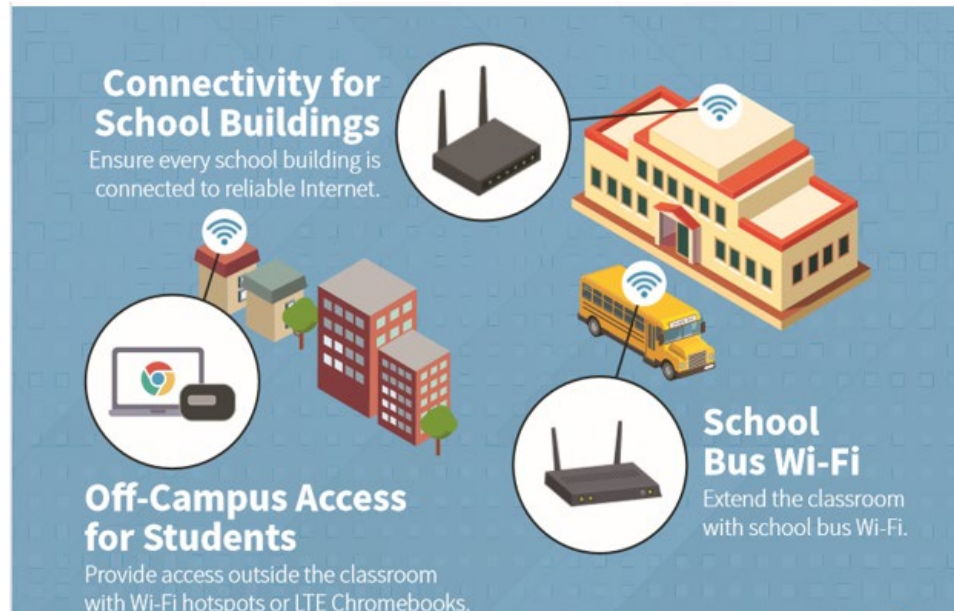
6. Cybersecurity

Cybersecurity is becoming increasingly important, especially in education, as districts, schools, and classrooms become more connected, due to the increase of internet-connected devices. Despite the increase of internet-connected devices, there has been little increase in the support staff that manage and secure these devices.

The SCDE plans to assist in remediating some of these gaps, utilizing the proposed state-hosted Regional Support Centers, as well as providing security and privacy best practices, policy and procedure templates, and consultation with district and school information technology and security professionals. With this knowledge and potential toolsets, districts can increase the security and privacy of students, teachers, and support staff.

⁹ <https://www.govtech.com/education/New-Bill-Would-Require-Schools-to-Monitor-Social-Media.html>

D. Bandwidth and Connectivity



Source: https://www.eschoolnews.com/files/2019/10/31/School_News_K12_Digital_Mobile_Learning_Guide.pdf

Retrieved from: <https://www.eschoolnews.com/2019/10/31/digital-mobile-learning/>

1. Ubiquitous Connectivity

The NETP makes the case for all public school students to have access to “ubiquitous connectivity”:

Reliable connectivity, like water and electricity, is foundational to creating an effective learning environment. Students and teachers cannot take advantage of the opportunities to connect and engage globally or leverage high-quality learning resources without consistent and reliable access to the internet. In addition, the U.S. Department of Education’s Office for Civil Rights issued a Dear Colleague letter in October 2014 that included access to technology as an important component of equity of access within U.S. schools. (National Education Technology Plan, 2017.)¹⁰

¹⁰ Reimagining the Role of Technology in Education: 2017 National Education Technology Plan Update (2017) p. 72

2. Statewide internet access map

Figure 2: Statewide internet minimum coverage as of July 31, 2019

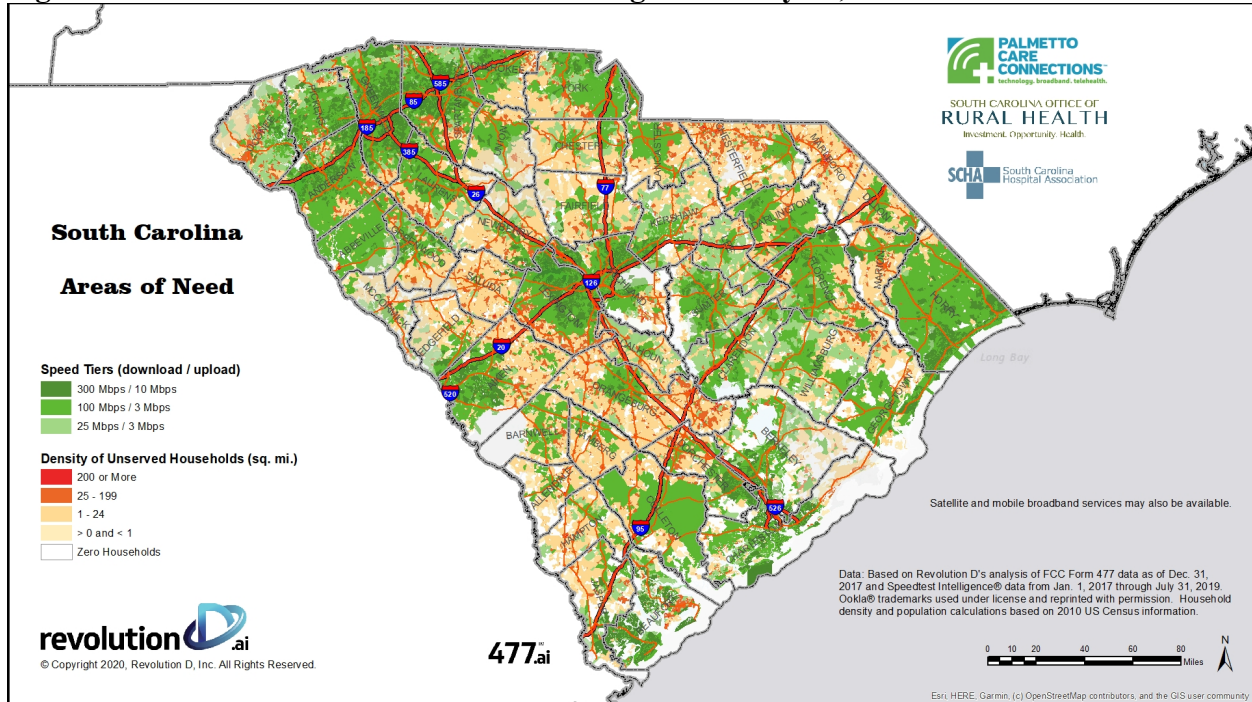


Figure 2: The areas in green have been identified as having the minimum requirement of 25 Mbps upload and 3 Mbps download coverage as of July 31, 2019. Areas not having the minimum recommended coverage are in other colors, denoted by household density. (Map provided by Revolution D, Inc.)¹¹

3. Connectivity at School

The National Education Technology Plan discusses the 2018 standards for connectivity:

The National ConnectED initiative set a goal for 99 percent of students in the country to have internet access at a minimum of 100 megabits per second per 1,000 students, with a target speed of one gigabit per second by 2018. Efforts by federal, state, and local institutions in recent years have made huge strides toward this goal. The modernization of the E-Rate program in 2014 provided billions of additional dollars to help districts improve the speed of and access to internet connectivity.

Although unprecedented resources are available to reach this goal, still significant work remains for many schools and districts. Organizations that are part of the Future Ready network, including EducationSuperHighway and

¹¹ Data: Based on Revolution D's analysis of FCC Form 477 data as of Dec. 31, 2017 and Speedtest Intelligence® data from Jan. 1, 2017 through July 31, 2019. Ookla® trademarks used under license and reprinted with permission. Household density and population calculations based on 2010 US Census information.

Consortium for School Networking (CoSN), are committed to supporting schools throughout this transition. (National Education Technology Plan, 2017.)¹²

Through K–12 Technology Initiative Aid to Districts – Technology state funding and proviso (e.g., Proviso 1A.76 of 2018), South Carolina promoted the goal of 100 kilobits per second (kbps), per student in all schools by 2019.

One hundred kbps was the E-Rate standard adopted by the Federal Communications Commission (FCC) in 2014, as recommended for the short-term goal by the State Education Technology Directors Association (SETDA). <https://www.fcc.gov/general/summary-e-rate-modernization-order> The SETDA report, *The Broadband Imperative*, (Broadband Imperative, 2019)¹³ indicates that for online learning, the recommended download speed is actually 250 kbps per student. To facilitate the state’s goals for personalized and online learning, a higher standard is needed. (Bleiberg, J., 2019)¹⁴ The SCDE, therefore, proposes that within five years and when historical usage warrants an expansion, the goal be set at a minimum of 250 kbps per student.

4. Wi-Fi in Schools

Resources are needed not only to bring internet to a school building, but also to support broadband reaching each classroom. The infrastructure that brings internet connectivity to school buildings and classrooms benefits from significant discounts provided through the FCC’s E-Rate program. E-Rate provides discounts up to 90 percent on eligible services including school fiber optic connections, internet access, internal wiring, Wi-Fi networks, data switching and routing equipment, and network security appliances (e.g. Firewalls). The primary connectivity challenge is providing adequate and sustainable network infrastructure *inside* of schools.

The 2019 School Report Cards indicate 96 percent of South Carolina *schools* are 100 percent wireless. More data is needed on how many of the *classrooms* in those schools are at the standard 100 kbps per student. Usage reports will be studied to identify areas in which technical assistance is needed to expand classroom broadband access to 250 kbps.

¹² Reimagining the Role of Technology in Education: 2017 National Education Technology Plan Update (2017) p. 42

¹³ SETDA, *The Broadband Initiative*, (2019, Nov). p. 21. Retrieved from https://www.setda.org/wp-content/uploads/2019/11/SETDA_Broadband-Imperative-III_110519.pdf

¹⁴ *See also*, Brown Center Chalkboard, Joshua Bleiberg, (2019, September). Are slow internet connections holding back American schools? Brookings, <https://www.brookings.edu/blog/brown-center-chalkboard/2019/09/16/are-slow-internet-connections-holding-back-american-schools/>

a) South Carolina Showcase: Pickens County

Pickens County announced a public-private partnership to expand higher speed internet infrastructure:

Pickens County schools now have internet service that is up to 100 times faster, and county businesses will soon have access to new internet infrastructure, thanks to a partnership between the school district and Conterra Networks. SDPC has completed the special construction of a multi-year agreement with Conterra Networks to deploy an all fiber optical network to support the data, video, and voice requirements of its schools.

“We are thrilled we are able to give our students a network that is up to 100 times faster than our existing network without spending additional dollars,” said Dr. Danny Merck, SDPC Superintendent. “By rethinking how we spend existing funds and taking advantage of E-Rate, we are bringing money Pickens’ residents pay in their phone bills back to the county’s students.” (SDPC Celebrates, 2019)¹⁵

5. Connectivity at Home

Internet connectivity out of school is also critical to “anytime, anywhere, any pace” personalized learning to support the *Profile of the South Carolina Graduate*. The NETP emphasizes this point:

Learning does not stop at the end of the school day, and access to digital learning resources should not either. According to a report from the Council of Economic Advisers, approximately 55 percent of low-income children under the age of ten in the United States lack internet access at home.

These statistics along with consideration of the amount of time spent out of school have given rise to concerns about a “homework gap” between students whose internet connections at home are slow or non-existent—a problem disproportionately common in rural and underserved communities—and those who have home connections with adequate speed. They also give credence to the view that connectivity at home for students is an essential component of a twenty-first century education—not something merely nice to have—if we are to avoid exacerbating pre-existing inequities in unconnected homes.

Educational leaders should work to ensure learners have access to connectivity and devices when they leave school grounds so that they are not limited in their ability to experience high-quality connected learning fully. To

¹⁵ http://www.pickens.k12.sc.us/about_us/what_s_new/high-speed_internet_network_now_online

support schools in this effort, organizations such as EveryoneOn focus on providing highly subsidized internet access to low-income households. In addition, the U.S. Department of Housing and Urban Development launched ConnectHome in 2015 to focus on bringing high-speed internet to low-income communities so everyone can participate in our increasingly connected society. (National Education Technology Plan, 2017.)¹⁶

Several state and federal leaders are supporting home internet expansion as a matter of equity, educational opportunity, and economic development. The following are some approaches to increasing out-of-school internet access.

a) Home Internet Mapping

Current internet mapping based upon census blocks does not provide enough accuracy and detail to support strategic internet expansion. A local consulting firm, Revolution D, is working on a project to map out current data on which students' homes have internet access and which do not. By identifying students without internet access, leaders can strategize how best to give those students access to the technology they need. Kershaw, Pickens, and Richland Two districts were mapped in 2019. The projects used questions added to school enrollment forms, mapping those responses based on home address, and free internet speed testing by Ookla to identify not only gaps in coverage, but also gaps in internet speed or bandwidth. The SCDE estimates that it would cost approximately \$10,000 per county to complete this more detailed mapping across the state.

b) South Carolina Spotlight: Berkeley County School District

An example of a South Carolina school district recognizing the importance of connectivity both at school and at home is Berkeley County, which has rolled out an initiative for one-to-one digital learning. The pilot program will be rolled out in four phases:

The goal of OneBerkeley Connects, a one-to-one digital learning initiative, is to support every student in their educational journey by providing them with a digital device to be used both at school and at home. Berkeley County School District provides relevant twenty-first century tools that will empower all students for success. OneBerkeley Connects will provide Chromebook devices to students in four phases. Phase one includes third through eighth-grade students in twenty-three schools. All remaining third through eighth-grade students will be part of phase two. Phases three and four will provide Chromebook devices for high school students. The infusion of technology in teaching and learning

¹⁶Reimagining the Role of Technology in Education: 2017 National Education Technology Plan Update (2017) p. 73

ignites a passion for innovation, personal growth, and promotes the pursuit of world class knowledge and skills as outlined in the *Profile of a South Carolina Graduate*.

In 2019, thirty-five thousand Chrome books have been issued to the students in grades one through twelve as part of this one-to-one initiative for the Berkeley County School District.

- There is in-house software that keeps track of the check-in and check-out of thirty-five thousand Chromebooks. Audits are done by the teachers periodically during the year to make sure the students still have the Chromebook.
- Traffic on the Wi-Fi devices is monitored daily.
- All Chromebooks are Dell and have Complete Care Warranty packages.
- Most Chromebooks are collected at the end of the school year and serviced over the summer. (www.bcsdschools.net, n.d.)¹⁷

c) South Carolina Spotlight: Orangeburg County

In 2019, Orangeburg County received a \$9.75 million award from the U.S. Department of Agriculture (USDA) for rural high-speed broadband infrastructure in almost 4,000 rural households as part of USDA’s ReConnect Pilot Program investments.

South Carolina Gov. Henry McMaster [stated], “We are grateful for the leadership President Trump and Secretary Perdue have shown in focusing on increasing broadband connectivity in rural areas. From enhanced health care access to modernizing our educational and workforce resources, these funds will be instrumental in ensuring that Orangeburg County, and all of South Carolina, will remain competitive in the global economy.” . . .

Orangeburg, County, S.C., will use ReConnect Program grant funding to deploy a fiber to the home (FTTH) broadband network capable of simultaneous transmission rates of 100 megabits per second (Mbps) or greater. The funded service areas include 3,911 households, 21 farms, 17 rural businesses, 13 educational facilities, nine critical community facilities and a health care center. The project will facilitate more access to services and information for local residents, and it will improve the overall quality of life for people in the community. (www.usda.gov, 2019)¹⁸

¹⁷ <https://www.bcsdschools.net/site/Default.aspx?PageID=23842>

¹⁸ <https://www.usda.gov/media/press-releases/2019/10/22/usda-invests-975-million-rural-broadband-south-carolina-families>

d) South Carolina Spotlight: Richland School District Two

Richland Two found that some families, in particular in the Hispanic community, lacked internet access at home, hampering students' ability to complete homework assignments despite a 1:1 initiative. In 2018, the district began a pilot program to provide hotspot devices with filtering. The program has had a positive impact on the students' test scores and grades.

e) South Carolina Spotlight: South Carolina State Library

Public libraries in South Carolina are allowing patrons to check out Wi-Fi devices to assist students who have low or no internet access in their areas. The K–12 Technology Initiative provided funding for the libraries in Charleston, Clarendon, Colleton, Dillon, Florence, Georgetown, Horry, and Union for this project. Libraries in Beaufort and Orangeburg also make “MiFi” devices available to patrons. (Bowers, P., 2019)¹⁹

After seeing that students had to go to the library to access the internet on school issued devices, Beaufort County started a pilot program signing out hotspots at the library, allowing students to use their library cards. The library system has seen a one-hundred percent return rate of the devices. The program contains filtering, allowing access to education-related websites only.

6. Wi-Fi on School Buses

Supplying Wi-Fi on state-owned school buses with longer routes is one approach to providing internet access to students outside of school. The SCDE conducted pilot programs in Chesterfield and Marion County School Districts [former Marion 7] in 2007, but a sustainable funding source was not available. Currently, the strategy has not been widely adopted by school districts. The SCDE is investigating the barriers to expansion but believes them to be the monthly access fees and need for district and school staff to monitor or provide content. For example, in Berkeley County School District a coding curriculum is offered as part of the bus Wi-Fi project.

a) Current Access on Buses in South Carolina

Currently, local school districts pay for any Wi-Fi equipment and connectivity on state- or district-owned school buses. In researching to develop this plan, the SCDE's Office of Transportation polled school districts about the use of Wi-Fi on state- and district-owned school buses. Not all districts responded; however, the following is a partial picture of the status of Wi-Fi on school buses in late 2019.

¹⁹ https://www.postandcourier.com/news/wi-fi-devices-from-the-library-could-help-fill-internet/article_870c29d8-4981-11e9-8ab1-1f2da98456f9.html

State-Owned School Buses

- Total: 5,641
- Have GPS: 58.9 percent (3,321/5,641)
- Have Wi-Fi Hardware: 36.2 percent (2,041/5,641)*
- Wi-Fi is Active: 8.9 percent (503/5,641)*
- Wi-Fi is accessible by students: 7.6 percent (429/5,641)*

District-Owned Buses

- Total: 1,106
- Have Wi-Fi Hardware: 16.9 percent (187/1,106)*
- Wi-Fi is Active: 14.6 percent (162/1,106)*
- Wi-Fi is accessible to students: 13.6 percent (150/1,106)*

**Not all districts reported on the survey*

To implement this portion of the plan, the SCDE would need to do more complete polling on the status, and compile research on which districts have the longest routes with the most students. Preliminary information on route times and ridership is listed in Appendix D.

b) South Carolina Spotlight: Berkeley County

In March 2017, 28 buses serving six Berkeley County schools began offering free Wi-Fi for students, paid for by a Google grant. Along with the Wi-Fi access, Google also donated more than 1,700 backpacks with Chromebooks for students as part of the Rolling Study Hall initiative. The Chromebooks are laptops that run on a Google-designed internet-focused operating system. Google has a server farm in Berkeley County.

The pilot program brings supervised Wi-Fi accessibility to 28 Berkeley County school buses serving six Title I schools: Cross Elementary School, Cross High School, JK Gourdin Elementary, St. Stephen Elementary, St. Stephen Middle School and Timberland High.

Today [2017], Berkeley County school district has 73 buses with Wi-Fi active. (Google brings, 2017) ²⁰

In 2019, with another Google grant, all of the Activity buses were equipped with Wi-Fi.

RSH (Rolling Study Hall) was a pilot program that takes advantage of long school bus commutes to create an innovative learning space for students. By equipping buses with FREE internet, RSH gives students the access during

²⁰ <https://charlestonbusiness.com/news/education/71788/>

their bus ride to and from school that they may not have at home. Students can complete homework on the bus ride and participate in school technology challenges, such as keyboarding or coding.

c) South Carolina Spotlight: Greenville

The School District of Greenville County installed Wi-Fi in all school buses, beginning in 2016. The State of South Carolina awarded the Mobile Device Access Management (MODAM) grant and fully funded the project in the amount of \$1.2 million. As of 2019, all 425 regular and special education buses have internet access and the 26,108 students who ride the bus can continue their learning on the way to and from school.

7. Data Caching

To bring additional value to existing broadband capabilities and to improve performance and response time, schools can add data caching devices to their local networks. Caching can greatly reduce the amount of traffic on the network by temporarily storing widely-used data or content locally. This is especially effective at peak times when many students are attempting to retrieve the same, large-sized material from the internet, such as video or online assessments. This is also an economical solution, as a caching device is far less expensive than adding additional bandwidth, and it can extend the life of the school's network configuration.

The SCDE proposes to ameliorate some internal broadband issues with state-supported data caching. Cost estimates are included in the budget section.

E. Hardware and Software

Computing devices have a limited useful life. In five years a 1:1 device will need to be replaced due to technology changes, wear and tear, and changing software requirements. All schools must have plans for a continual refresh and repurchase of devices.

The SCDE is recommending a five-year refresh period on all student and educator devices. One-fifth of the devices would be approximately 160,000 student and 10,000 educator devices annually. The SCDE proposes state support of \$200 per student device and \$300 per educator device in the budget section of this plan.

F. Infrastructure and Connectivity Summary

The state will support the K–12 communities in maintaining cost-effective IT infrastructures that maximize student learning, support statewide testing, and ensure safe and secure transactions. The state will work collaboratively with public and

private sectors to deliver internet services to rural communities to allow student learning to occur at home.

Infrastructure is defined as the hardware, software, and technical support needed to operate a district/school networking infrastructure safely, securely, and with enough capacity to support teaching and learning. Infrastructure is further defined as ways to increase student learning outside of the classroom through the delivery of internet connectivity and mobile devices.

Our long-term vision is to have state-level contracts for local infrastructures to drive down total cost, increase quality, and better enable remote support provided by state and regional technical staff. See Section III, State-Hosted Services, Collaboration Opportunities and Shared Services, for more detail.

G. Infrastructure and Connectivity Initiatives

Infrastructure	
Near-Term	Provide districts and schools with recommended bandwidth, software, and hardware infrastructure guidelines to support student learning, testing, and administrative activities.
Mid-Term	Create a combination of statewide contracts for districts to purchase selected infrastructure components to reduce costs, leverage bulk purchasing, and facilitate common training and support. Contracts to include student and educator devices for refresh and data caching devices.
Long-Term	As increased consistency occurs in district and school infrastructures, drive cost savings through volume infrastructure purchases and by providing remote support.
Connectivity for Students Out of School	
Near-Term	Identify current challenges with out-of-school connectivity for students and identify public-private partners for solution development. Develop strategy and budget requirements.
Mid-Term	After obtaining public-private partners and a budget for student at-home connectivity, begin implementing strategy.
Long-Term	Assess strategy, adjust, and then continue implementation of increased out-of-school connectivity for students.
Policy Development	
Near-Term	Work with the South Carolina School Boards Association to collect, develop, and issue policy statements based on best practices—at the request of districts or schools—to support local decision-making.
Computer Refresh	
Near-Term	Evaluate the condition of district equipment inventories.
Mid-Term	Assist with ongoing refresh of devices and equipment as resources allow.

Wi-Fi in Buses	
Near-Term	Beginning with the state-owned buses with the longest routes, begin supplying internet connectivity.
Mid-Term	Complete installation on buses with shorter routes.

H. Projected Costs for Infrastructure and Connectivity

Projected costs for this section can be found at the back of the document in Appendix A. [Infrastructure](#).

VII. Teaching and Learning



South Carolina Framework for Personalized Learning

A. Teaching and Learning Goals

To promote students' meeting the *Profile of the South Carolina Graduate* and to support Personalized Learning, by 2024 South Carolina's public schools will have more accessible tools for "anytime, anywhere, any pace" learning. This will include virtual courses, digital make-up day systems, and infrastructure for a state-level learning management system and learning objects repository. Included will be professional development for educators on fully using the systems and making data-driven instructional decisions. To accomplish this, with appropriate resources the SCDE will undertake the following initiatives to be completed by 2024:

- Develop methods for out-of-classroom instruction, particularly in addressing personalized instruction, virtual courses, and school make-up days;
- Develop a Learning Objects Repository, using technology for cross-district sharing, expert curation, and state coordination;
- Support data-driven instructional decision-making, advancing personalized learning;

- Support district leadership teams in planning and implementing digital learning initiatives, including support through digital or instructional technology coaches;
- Provide training for digital literacy state standards as guidance to districts developing their curriculum;
- Implement a statewide Learning Management System that would be available to schools and districts;
- Explore state-support for coding programs like Girls Who Code or Code to the Future;
- Extend and modify CTE IT courses; and
- Ensure greater equity among districts by increasing funding for additional teachers and course designers for VirtualSC to expand offerings to middle schools and cover the current unmet need.

B. Online Testing

District & Special Schools (86 Entities) Paper-Pencil Testing Requests 2018–19²¹

District Waiver Requests	3rd	4th	5th	6th	7th	8th	RTF Home
ELA	37 (43%)	27 (31%)	22 (26%)	13 (15%)	13 (15%)	13 (15%)	9 (10%)
Math	18 (21%)	12 (14%)	11 (13%)	8 (9%)	8 (9%)	8 (9%)	9 (10%)

District (79 Entities) Paper-Pencil Testing Requests 2019–2020 (through 1/23/2020)

District Waiver Requests	3rd	4th	5th	6th	7th	8th	RTF Home
ELA	30 (38%)	24 (30%)	22 (28%)	11 (14%)	11 (14%)	11 (14%)	10 (13%)
Math	15 (19%)	13 (16%)	11 (14%)	8 (10%)	8 (10%)	8 (10%)	5 (6%)

The Education Accountability Act, S.C. Code Ann. § 59-18-325(C)(1)(g), requires the summative annual assessments in English language arts (ELA) and mathematics for grades three through eight to be administered “in a computer-based format.” Budget provisos have allowed districts to seek waivers from the State Board of Education to permit paper and pencil testing when needed. The tables above identify by grade level the number of districts seeking full or partial (e.g., only some schools) waivers for SC READY ELA and math last school year, and for this year’s spring testing. The numbers of waiver requests decline as the grade level increases. The SCDE’s goal is to assist all districts to test online by identifying roadblocks and helping districts overcome them. Some of the roadblocks identified include:

- Equipment is aging and upgrades are needed in some districts.

²¹ The South Carolina Public Charter District and the Charter Institute at Erskine were removed from both tables because those districts requested waivers for specific charter schools, not the entire district.

- Younger students do not have the keyboarding skills, so that online testing would not assess students' content knowledge of English Language Arts or mathematics.
- Some schools have different devices used for testing compared to what the students use in the classroom, which also creates issues of whether online testing is assessing students' content knowledge (versus familiarity with the equipment).
- Testing vendors' change of technical specifications impacts the number of available testing devices.
- Technical support and reliability issues, and lack of available internal, simultaneous Wi-Fi coverage.
- There are issues with the juvenile justice facilities' computers not permitting internet access for security reasons.

C. Digital Electronic Assessment at the Local Level

The increasing advancement in digitalization of education will demand meaningful assessment *for* learning. Continued advances in technology will expand the use of ongoing, formative, and embedded assessments that are less disruptive and more useful for improving learning. These advances also ensure all students have the best opportunity to demonstrate their knowledge and skills on later statewide summative assessments. The focus is on real-world skills and complex demonstrations of understanding. Meaningful assessment is an essential part of ensuring students have equitable access to high-quality educational experiences. South Carolina needs technology resources to support online administration of not only summative assessments, but also the daily assessments of learning.

D. Equitable Access to Technology for All

This *State Technology Plan* recognizes the fundamental need to provide equitable access to technology for all students and staff in several areas, including:

- Curriculum, learning objects, open source materials, and a learning management system via interactive online services, and virtual learning capabilities;
- Content provided in alternative formats to accommodate diverse learners;
- Connectivity and software available in and out of school;
- Interactive learning material, conferences, and tutorials;
- Collaboration tools through various platforms as are appropriate to the local district's mission; and
- Information through online resources and subscription services.

In addition, districts promote the integration of technology as a digital resource into curriculum and aim to increase the number of educators effectively using technology by providing:

- Digitally rich model lessons in core content areas;
- Aligned and searchable digital resources; and
- Technical coaching, guidance, and training on content and tools (to include available built-in accessibility and assistive technology resources) necessary to implement the curriculum.

Classroom management can also be supported through technology. Effective instruction begins with a strong lesson plan prior to students arriving on school campus. Districts provide teachers with a variety of applications to prepare and plan for the school day as well as manage the classroom. Applications can include:

- A digital repository of lesson plans, activities, multi-media, and resources in accessible formats for the purpose of planning and implementing engaging and effective classroom instruction;
- A comprehensive online suite of productivity tools (word processor, e-mail, spreadsheets, presentation maker, form maker, etc.) which can be accessed anywhere and anytime for the purpose of creating effective lesson plans, assignments, and assessments;
- An assistive technology digital toolkit (built-in or compatible) designed to address diverse learners' needs based on the Universal Design for Learning (UDL) framework;
- Assessment software where teachers can create accessible tests, quizzes, and surveys which can be disseminated to students via Local Area Networks (LAN), internet, and wireless-based technologies; and
- Electronic whiteboard software to engage students in lessons, to record lessons, prepare lessons in advance, share lessons with other teachers and students, and for use as a self-evaluation tool for digitally capturing, editing, and storing documents and images.

E. Statewide Learning Management System

A learning management system brings together curriculum and assessment to better manage the flow of information between students, parents, teachers and schools. Curriculum is transferrable among teachers allowing broad access to resources and encouraging collaboration across the state focused on South Carolina state standards and the competencies for the *Profile of the South Carolina Graduate*. All educators will be able to participate in professional learning and it will increase equity of access to training and support. Teachers can participate in professional learning without having to miss valuable class time with their students or incur travel expense. Professional learning modules can be done anytime, anywhere.

When teachers have access to the kind of classroom-based student assessment data and teacher-created materials a learning management system provides, they are able to design and assign work that is targeted to the individual needs of the student. Teachers are able to spend more time conferencing with students, instructing small groups on targeted areas of need, and acting as a facilitator of learning.

A learning management system allows for student voice and choice in the work because student and teacher are able to communicate and collaborate around the content and better identify goals and objectives for individual students. This modern approach to the integration of content and instructional materials is an essential tool in the personalization of learning.²²

District LMS 2018 Status

Approximately half of the school districts in South Carolina are currently using various LMS (Learning Management Systems). The ways they are using them vary from district to district.

Adopting a statewide LMS system that is available for all districts would provide an option to districts currently without a system. A state-hosted system could also support a broader spectrum of LMS use in districts.

The state-adopted Learning Management System would be available to all school districts. Currently, South Carolina has made large investments in technology infrastructure: improving bandwidth, providing learning devices, and developing assessment systems. The effectiveness of this investment is rooted in teacher and student access to the curriculum.

The results of a 2018 Technology Survey showed 49 percent of the districts currently have LMS software used for varying purposes:

- Thirty-eight districts of varying size and poverty level reported having an LMS²³
- Thirty-nine districts did not have an LMS
- One district did not respond.

F. Learning Objects Repository

A learning objects repository is often referred to as a digital library. A learning object can be many things, such as a presentation, an image, a quiz, a document, or a video. While the vetting, sharing, managing, and use of educational content occurs within

²² B1 request. Connect K–12 - LMS, Recurring Operating Request

²³ The districts were: Aiken, Anderson 02 and 03, Bamberg 01, Beaufort, Berkeley, Cherokee, Clarendon 02, Darlington, Dorchester 02, Fairfield, Florence 04, Greenville, Greenwood 50, Greenwood 51, Horry, Jasper, Lancaster, Lee, Lexington 01, 02, and 04, Marlboro, Oconee Orangeburg 04 and 05 Pickens, Richland 01, SC Governor's School for the Arts and Humanities, SC School for the Deaf & the Blind, Spartanburg 03, 04, 05, 06 and 07, Sumter, Union, and York 01, 02, and 03.

many individual school districts, the SCDE has found little sharing of content across district borders. The development of a central repository with vetted content will allow the sharing of content statewide. This will improve quality, consistency, efficiency, and costs for content development by encouraging sharing of the best ideas and learning objects. It could also relieve some burden on teachers to find or develop content independently.

G. Digital Technology Coaches

The SCDE proposes using regional digital or instructional technology coaches to assist teachers with integrating technology into their classrooms and lessons, using the LMS, and choosing learning objects. Districts make a huge investment in technology, so it is reasonable to expect that ongoing training and coaching of teachers is required to make the most of that investment. If funded, the SCDE proposes three digital technology coaches in each of four regions in years one and two of this plan. In year three, three more regions would be added with three coaches added to each region. In total, seven regional offices will be created with twenty-one regional digital technology coaches, three in each region.

H. VirtualSC

The SCDE proposes that the state support expansion of the SCDE's VirtualSC program to promote equity, opportunity, and flexible learning environments.

VirtualSC has had a broad reach. VirtualSC serves students currently attending public, private, and home schools in grades seven through twelve and Adult Education Programs. Last year, the program served 45,912 student course enrollments across South Carolina. Course offerings include all core content areas, career and technology education, world language, computer science, and fine arts. Courses are being offered at the credit recovery, college preparatory, honors, and Advanced Placement (AP) levels. Keyboarding courses are offered for all grade levels. Courses are taught by South Carolina certified, highly qualified teachers. VirtualSC has continually ranked as one of the top five largest state virtual programs in the nation. Students are able to take classes while enrolled in their home school districts. All VirtualSC initial credit courses require a proctored final exam. (See www.virtualsc.org, n.d.)²⁴

Despite that broad reach, VirtualSC has requests for courses it cannot supply. For the past three years, demand for VirtualSC courses has surpassed the availability because the program does not have funding to pay teachers for additional classes. The program was unable to serve 4,930 requested student enrollments in school year 2018–19. Over the past three years, due to a lack of funding, VirtualSC has had to turn away 10,742 course requests by students who were seeking to take courses through its program.

²⁴Information retrieved from: <https://www.virtualsc.org>

I. Programs for Computer Science Immersion

In the ever-changing digital world in which we live, accruing computer science and coding skills empowers children to create, and not merely utilize, new technologies. Computer science education entails the study of computers and algorithmic processes (coding), further delineated into computing principles, hardware and software designs, applications, and societal impact. Computer science education exposes students to problem-solving and inquiry-based learning experiences, which provides invaluable opportunities to develop essential, transferable skills that will help them achieve across all subject areas and along all chosen career paths. Thus, they will have the knowledge, experience, and skill set to become the leaders and innovators of the future. (Why Computer: July 2019).²⁵

The SCDE will explore Computer Science Immersion programs like “Code to the Future” and “Girls Who Code” and collaborate with school programs in South Carolina to allow the students to develop coding skills as part of their daily curriculum.

1. South Carolina Spotlight: Richland School District Two

In 2020 Richland Two is adding Computer Science to one elementary school using the “Code to the Future” program. Sandlapper Elementary School is transforming into a Computer Science Immersion School where all students, from kindergarten to fifth grade will develop coding skills daily to prepare students to become effective collaborators and communicators.

J. Career and Technical Education

The Office of Career and Technical Education (CTE) supports the use of valid and reliable technical skill assessments and certified programs. South Carolina has placed a significant effort and funding focus on increasing the number of students earning approved certifications. The SCDE will add and modify current CTE IT courses over the next five years by:

- Evaluating current CTE programs in fields requiring IT skills;
- Evaluating and growing IT skills concentrating on CTE programs where there is a shortage of workers;
- Expanding the offering of courses based on the job market needs; and
- Updating IT course needs as technology requirements change.

²⁵ Information retrieved from <https://www.kyrene.org/Page/44876>

The SCDE’s budget information includes funding for Education Associates to perform this ongoing work.

K. Teaching and Learning Initiatives

Out-of-School Instruction	
Near-Term	Work with ten school districts currently using outside-of-school instructional alternatives (digital makeup days); evaluate and expand those processes.
Mid-Term	Using lessons learned, work with twenty-five school districts on expanding availability of out-of-school instruction. Explore using instructional technology coaches to assist with adding personalized learning units to the LMS.
Long-Term	Using lessons learned, work with remaining forty-five districts on expansion; continue roll out of LMS content.
Learning Management System	
Near-Term	Using district subject matter experts, develop statewide requirements for an LMS. Either develop an RFP or choose a product already on state contract.
Mid-Term	Provide a state standard and financing for a Learning Management System. Implement plans for learning objects repository and standards.
Long-Term	Support ongoing training. Facilitate development and sharing of content.
Research Coding Programs	
Near-Term	Evaluate programs that introduce coding to students at various grade levels.
Mid-Term	Implement coding programs as appropriate.
Long-Term	Evaluate and enhance, as requirements change.
Evaluate and Grow CTE IT Courses	
Near-Term	Evaluate career fields needing IT skills, concentrating where there is a shortage of workers.
Mid-Term	Expand the offering of IT courses based on job market needs. Look for certification options for technology teachers.
Long-Term	Update course needs as requirements change
VirtualSC Teachers	
Near-Term	Provide funding for the development of new courses and the teaching of six hundred additional classes. Obtain national certification on existing virtual classes (eighty).
Mid-Term	Provide funding for the development of new courses and the teaching of additional classes. Obtain certification on new virtual classes. Provide online test proctoring.
Long-Term	Provide funding for thirty new courses and the teaching of additional classes. Obtain certification on new virtual classes.

L. Projected Costs for Teaching and Learning

Projected costs for this section can be found at the back of the document in Appendix B [Teaching](#).

VIII. State-Hosted Services, Collaboration, and Shared Services Opportunities

A. Collaboration Goals

To better support districts, create efficiencies and improve effectiveness and quality, by 2024 the State will increase and expand state-level technology systems and services, including an updated SIS with district-level operational data stores, regional technology support centers, backup and recovery services, procurement assistance, coordination of training, and single sign-on. To accomplish this by 2024, the SCDE will undertake the following initiatives:

- Procure and implement the next Student Information System, with local level operational data store capabilities and Ed-Fi interoperability;
- Develop Regional Technology Support Centers staffed with state-hosted personnel to support district capacity, starting with smaller and rural districts;
- Establish state-level technology procurements from which districts may purchase software, technology, and training more efficiently;
- Expand state-hosted data backup and recovery services;
- Improve district mobile device management;
- Explore a Single Sign-on Initiative; and
- Assist with district service sharing and consolidation efforts.

B. Student Information Systems

The SCDE's current student information system (SIS), PowerSchool, has been in place for approximately ten years, most recently under an extended procurement that gives the state little bargaining power with the vendor as changes are needed. In addition, the state sponsors a special education data system (currently Enrich IEP), an assessment data system (Enrich Assess), and a data collection system (Enrich Collection). These data systems are used by all South Carolina school districts to manage student registration, course selection, grading, attendance, assessment, analytics, state reporting, special education, individual graduation plans, incident management (safety, expulsions, suspensions), and school funding (Education Finance Act codes and average daily membership). The SCDE collects some data from these systems for mandated state and federal reporting. Meanwhile, districts have various other systems in use, such as food service systems, Single Sign-On solutions, Medicaid billing systems, personnel and accounting systems, formative assessment systems, and an LMS, if one is being used. Currently validation of state-

collected data and any matching and integration of student records is done after collection. Figure 3 is a depiction of the current data landscape in schools and at SCDE.

Figure 3: Current Landscape

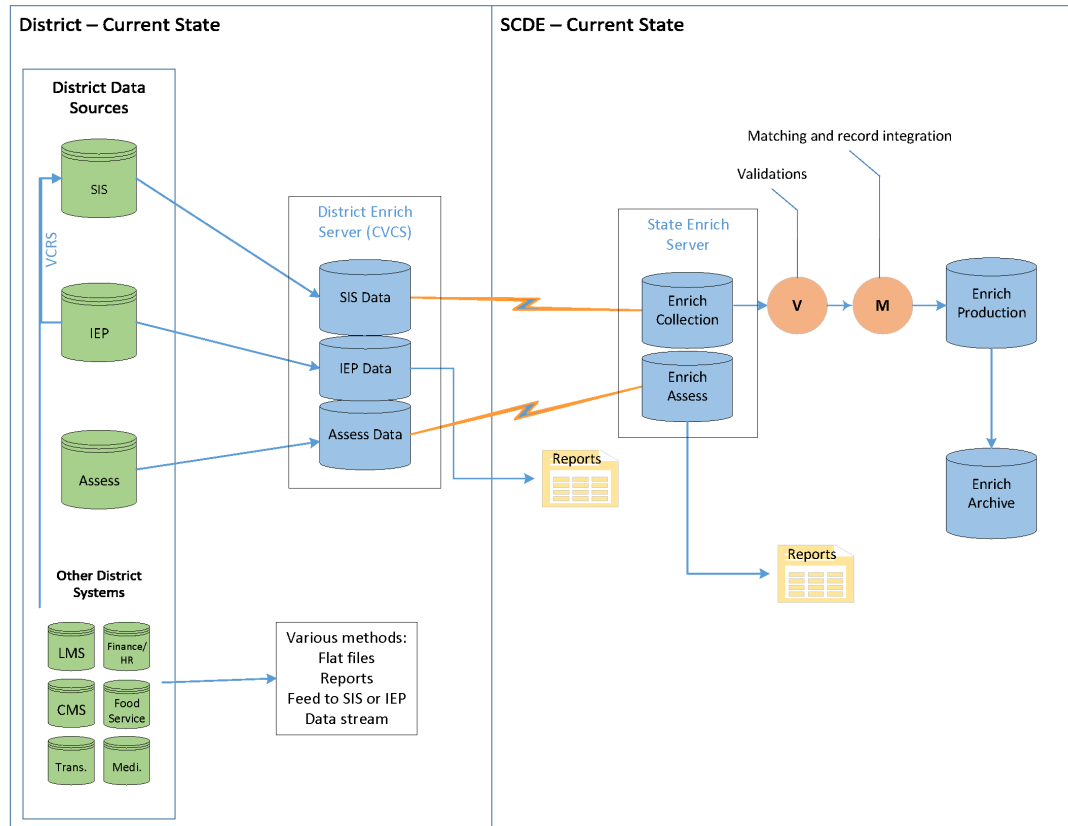


Figure 3 depicts the current landscape related to data systems in districts and at the SCDE.

Although the systems might have been state of the art at the time of purchase, several inefficiencies and lost opportunities exist. For example, the SCDE and districts expend resources validating data, getting it corrected, and dealing with data anomalies. If data is not corrected until after the close of a data collection (e.g., the 180th day of the school year), the state runs the risk of having differing versions of data, not all of which have been formally approved by the district. In addition, significant effort is needed to match student records among systems for the current school year and between years. This makes the availability of the current year’s matched district student records, as well as any true district longitudinal data warehouse, an expensive proposition out of reach for many districts. Because different systems have differing methods of handling data structures for tasks, such as class rostering, district staff work daily to make systems “talk” to each other. To have true data-based instructional decision making, districts need integrated student records for the state-sponsored systems and for other local data. And to increase

usability and reduce administrative burden, data standards for all systems can be adopted.

The SCDE proposes district and state data systems that will conform to education data standards for data sets and interoperability, so that current and historical student data will be matched and integrated starting at the district level. The SCDE has already done the work to match most of SCDE’s collected student record sets to the national Common Education Data Standard (CEDS) system. The new systems would incorporate CEDS and other data standards, for example, the Ed-Fi data interoperability standards. Other standards could be adopted statewide as vendor requirements to assist with uniform data collection and use, e.g., the OneRoster standard for class rostering among applications.

In addition, the new procurement would include not only basic SIS functions, but also the other functions currently in these and other disparate systems (IEP, Assessment, Collection, etc.). The proposed procurement includes providing district-level operational data stores (ODS) utilizing the Ed-Fi data standard for application interfaces. The configuration of the proposed new system is depicted in Figure 4.

Figure 4: Proposed new Student Information Systems Configuration

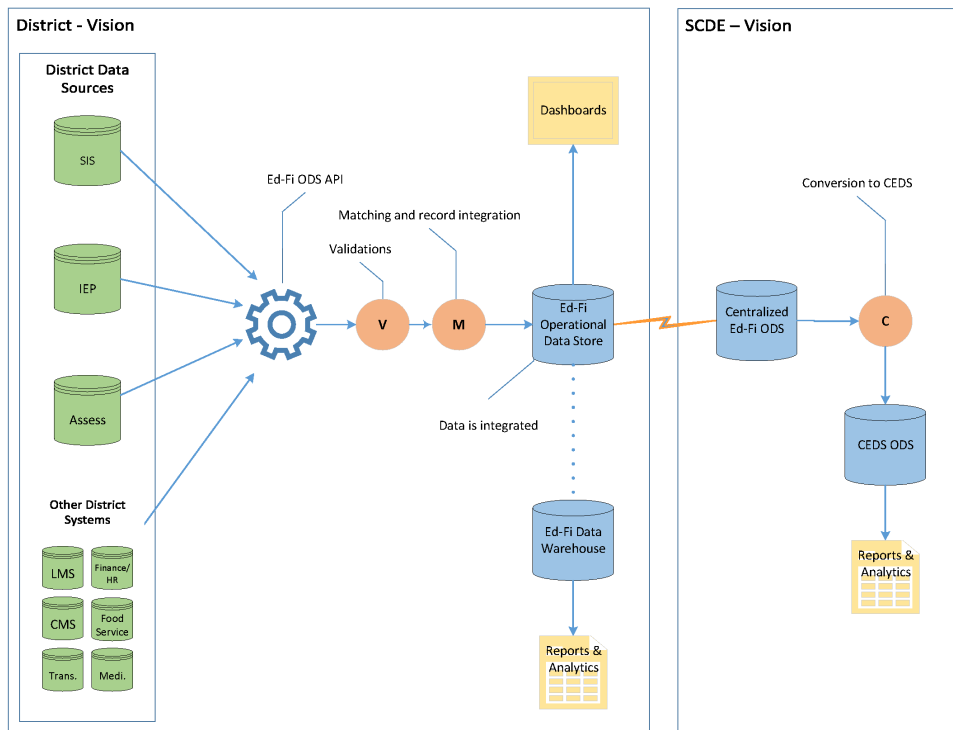


Figure 4 is a depiction of what Student Information Systems would look like under the new proposal.

By providing districts with an Ed-Fi compliant ODS, not only could all current district data be integrated and matched by student, but districts also could develop

longitudinal collections of such data into a district-level data warehouse. Using the Ed-Fi standard, the districts will also have available open source templates for data dashboards and reporting.

The agency issued a request for information (RFI) in the fall of 2019 to get present-day data on SIS functions and to obtain a budgetary estimate for a new solution. The results of the RFI indicate that the agency will need an increase in one-time funds for implementation and an increase in recurring funding for ongoing support. The agency anticipates that implementation will take at least eighteen months and during that time, there will be a need for both the current systems and the new system to be running concurrently. Should the budget request be funded, the agency anticipates issuing a request for proposal (RFP) in July 2020.

C. Regional Support Centers

Figure 5: Proposed Regional Support Centers

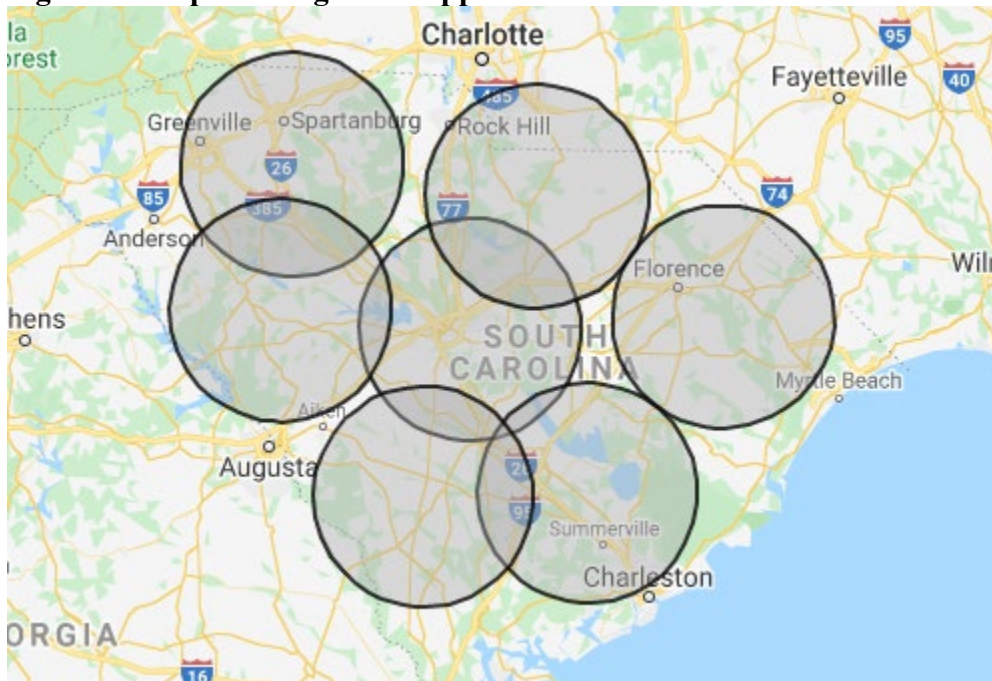


Figure 5: South Carolina Regional Support Areas as proposed by the SCDE.

Most other states have funded regional or topical educational service agencies for a variety of purposes, such as handling finance and payroll operations for multiple districts, pooling special education resources, conducting professional development, or providing technical support.²⁶ Although South Carolina has voluntary regional

²⁶ For more information on educational service agencies nationwide, please see the website of the Association of Educational Service Agencies, at aesa.us. These entities have varying names across the country, such as “BOCES” (Boards of Cooperative Education Services) in New York, “CESA” (Cooperative Education Service Agency) in Wisconsin, and “RESA” in Georgia.

consortia, those consortia are funded entirely by districts and do not include all districts. The SCDE proposes state-hosted regional support centers as an efficient means of getting needed technical support to districts for infrastructure, instructional coaching, and data systems. This approach also could be a vehicle to expand shared or consolidated administrative services among smaller districts.

As to technology infrastructure, one of the challenges for South Carolina's school districts is hiring, training, and retaining the full range of IT expertise needed to support the modern school technology environment. The SCDE proposes using state-hosted Regional Support Centers to provide IT infrastructure technical assistance to school districts. Technical assistance would include items such as performing technology health checks, assisting with plans for better readiness for online testing, evaluating infrastructure, providing network troubleshooting, formulating action plans, providing consolidation consultation services, and setting up data backup processes. With appropriated resources, two regional offices could be established the first year, with expansion to seven locations as additional resources become available. Two technicians would work out of each location. The circles above each represent a thirty-five mile radius, which would equal approximately one-hour of travel time.

Regional support centers may also be shared with other personnel such as the instructional technology coaches and SIS experts.

D. Statewide Procurements

The SCDE proposes a state-level coordinator for IT contracts and procurement to improve equity and reduce costs for district IT purchases. By establishing open-ended statewide contracts, school districts would be able to leverage the collective needs of participating districts to gain lower prices through volume discounts. This process could prove cost effective and efficient in the procurement of items such as PCs, laptops, notebooks, networking equipment, software, and training. Districts will need to provide details of their needs in each of these areas so the appropriate RFPs can be developed, advertised, and awarded.

E. Data Backup and Recovery

Data backups are essential to business continuity in the event of catastrophes, such as machine failure, data corruption, destruction from inclement weather, or cyber-attack. Having a backup to an offsite location is best practice.

With funds from the K–12 Technology Initiative, the SCDE began offering periodic backups of data, as requested by districts. This service also provides for necessary data restores due to data loss or corruption, and monitoring for successful completion of backup processes.

In 2020, the SCDE will implement monthly charges based upon the amount of district data that is protected and stored. The charge is the number of gigabytes (GB) of compressed, de-duplicated data, multiplied by a rate of \$.12. Billing is based on the physical amount of space required by the backup. All data backup parameters will be agreed upon by the district and the SCDE. Standard parameters include scheduled nightly backups and 30-day retention. Districts with special backup needs will be accommodated on a case-by-case basis. Besides the main target for the data backup at the SCDE's primary data center in Columbia, the data is also replicated to the SCDE's secondary data center at Clemson. In reality districts are getting their data backed up to two separate locations, providing added protection.

The SCDE will monitor backups, address technical issues, correct errors, and notify customers of instances when information has not been backed up according to plan. Customers are responsible for testing to ensure that the backed-up data is accurate and complete, and can schedule such tests with the SCDE. Data server backup and recovery efforts do not constitute full disaster recovery services.

The SCDE proposes expanding this service to cover most small- and medium-sized school districts.

F. Vulnerability Scanning

System security is not static: hackers create new ways to attack systems and vendors release update "patches" to address security concerns. Districts need methods to ensure vulnerabilities have been identified and all necessary patches have been installed.

The SCDE has licensed vulnerability-scanning software that districts may use to scan systems for security vulnerabilities. The scan generates a report that identifies ways that the district can increase the security of its systems. Approximately 85 percent of South Carolina school districts have utilized this shared service and many of them have requested additional scans be done on their network systems.

Currently this program only allows for vulnerability scanners to be mailed out or to have a security analyst go on-site to perform the scan and generate the report. This is not a scalable solution so the proposal is to supply each regional support office with a copy of the vulnerability software so that they can coordinate scanning for the districts.

G. Disaster Recovery

Computer disasters happen, whether because of cyber-attack, hurricanes, fire, or malicious destruction. All systems need plans in place for recovery from potential disasters. School districts across the state of South Carolina implement various elements of disaster recovery (DR) planning. Districts that do not have such plans in

place should consider taking steps to identify cost-effective solutions to protect mission critical systems and data. Note that having system backups is necessary, but not sufficient. A DR plan needs to address what equipment would run the data that has been backed up, which systems need to be operational first, and other priorities for communication and education. Districts should conduct regular testing of their DR plans to ensure they are current and effective.

H. Single Sign-On

Single Sign-On (SSO) is a system that enables users to securely authenticate with multiple applications and websites by logging in only once (with just one set of credentials: username and password). With SSO, the application or website that the user is trying to access relies on a trusted system to verify user identity.

Although some districts have purchased SSO solutions, the price variations cause it to be cost prohibitive for many. By sponsoring a state SSO solution, South Carolina could promote equity of access that would streamline educators' ability to use the LMS, SIS, and district purchased systems, reducing some of their administrative burden. The SCDE proposes exploring the viability of a state-sponsored solution.

A well-defined identity and access management roadmap is key to successful Single Sign-On (SSO) deployment.

On a typical day, employees log into a myriad of software programs, from email to benefits systems, and other applications designed to simplify daily tasks. Remembering all of the usernames and passwords associated with these products can be a challenge. Single Sign-On systems (SSO) are crucial in alleviating the need for — and stress of — recalling a multitude of credentials. Providing a good SSO user experience has become more complex because the technical professionals responsible for implementing identity and access management (IAM) initiatives must balance user convenience with enterprise security risk. (Garfinkel, J., 2018)²⁷

I. Mobile Device Management

With expansion of 1:1 initiatives comes the challenge of providing inventory records, updates, tracking, and security for those devices, including remote “wiping” of lost or stolen equipment. Providing access of mobile devices to connect students and educators to the resources of the internet and collaborative learning applications requires mobile device management. The mobile devices are not limited to a smartphone; laptops and tablets would be included in device management.

²⁷ <https://www.gartner.com/smarterwithgartner/7-steps-to-implement-single-sign-on/>

Schools provide multiple types of the mobile devices. Bring your own device (BYOD) programs present additional security and management challenges. Secure and personal information could be compromised when using a mobile device not owned by the district. Providing mobile devices to students unable to afford them will alleviate the monetary concern for the students and parents.

Students and educators need to agree to a responsible use policy or agreement for the assigned mobile devices. Such agreements are written in clear, plain terminology covering the expectations from the students, parents and educators. The agreements include information on safeguarding data privacy, physical care of the device, consequences of misuse and understanding digital ethical behavior.

Additionally, with mobile device management, schools have the ability to implement a remote security push to any mobile device reported stolen or lost. It would wipe the mobile device of all information and render it deactivated or locked. Remote access can also enforce passcodes to prevent any unauthorized access.

Components of mobile device management may include:

- Content Management;
- Security Management (filtering);
- Asset Management;
- Profile Management (student, educator);
- Application Management (learning applications installed);
- Email Management (prevent virus, outside spam content);
- Document Sharing Management (information between user devices);
- Remote Control;
- Insurance and Warranty;
- Help Desk, Technical Support; and
- Maintenance and Device Upgrades.

J. District Consolidation

Some districts have found that they can see improved quality and efficiencies through district consolidation, fully or through a shared administrative or professional services model. The SCDE proposes to provide services such as data conversion, data migration, website development, and website hosting to aid these efforts. Districts find when they enter the consolidation discussion, many of their administrative applications are not the same or compatible. This requires them to choose a solution to which one or both must adapt. The merging of data and processes can require time and effort, which necessitates additional technology services on a temporary basis.

K. State-Hosted Services, Collaboration, and Shared Services Opportunities Initiatives

Student Information System	
Near-Term	Procure the next student information system and plan implementation.
Mid-Term	Convert districts to the new system and conduct training and support.
Long-Term	Assist with ODS data governance and efforts to promote data-driven instructional decisions. Assist with implementing open source resources for data modeling and reporting.
Technology Support Centers	
Near-Term	Provide staffing for two regional offices.
Mid-Term	Provide staffing for two additional regional offices.
Long-Term	Provide staffing for three additional regional offices.
Statewide Procurement	
Near-Term	Assist in development of statewide contracts for software, hardware, and training.
Mid-Term	Develop requirements for a Single Sign-On solution and issue RFP.
Long-Term	Look at other state standards for areas such as HR and Finance.
Security	
Near-Term	Conduct security vulnerability scans at a district's request and provide results for district remediation.
Mid-Term	Using remotely placed IT professionals, provide security remediation consulting services to districts based on vulnerability scan results.
Long-Term	Provide districts with remote security monitoring services as increased consistency in district and school infrastructures occurs.
Shared Technical Support	
Near-Term	Place technical staff in four regions to work with districts and schools on improved connectivity and enhanced IT security.
Mid-Term	Retain and train regional technical staff to deliver infrastructure best-practices for districts and schools
Long-Term	Leverage shared technical staff to begin driving infrastructure consistency across the districts and schools in order to increase savings and increase shared support services.

Shared Technical Training	
Near-Term	Assess the technical training needs of the district and school technical staff and construct a plan and a budget and cost-recovery model for delivery of shared technical training. Create a statewide contract of training needs.
Mid-Term	After budget or cost-recovery mechanism for shared technical training for district and school technical staff is established, begin implementing strategy.
Long-Term	Assess strategy, adjust, and then continue implementation of shared technical training for district and school technical staff.
Continuity of Operations Plans (COOP)	
Near-Term	Extend the Department’s ability to back up additional district and school data to support local COOP.
Mid-Term	Enhance the Department’s support for local COOP by establishing regular tests, such as the ability to test data restoration.
Long-Term	Enhance the Department’s support for local COOP by enhancing support for comprehensive IT backups for districts and schools in such a way to enable the districts and schools to operate on departmental systems in the event of disasters or cyber-attacks.
Backup and Recovery	
Near-Term	Expand state-hosted backup and recovery resources.
Mid-Term	Expand backup and recovery to include business continuity.
Long-Term	Expand business continuity options.
Mobile Device Management	
Near-Term	Evaluate need for mobile device management at the district level.
Mid-Term	Implement mobile device management, where needed.
Long-Term	Continue implementation.
Consolidations	
Near-Term	Assist with district consolidation efforts at the district level. These are complex due to the lack of standards from district to district. In addition, there are thirteen districts with under fifteen-hundred students. Many of these do not have the resources to address a consolidation.
Mid-Term	Assist with district consolidation efforts at the district level.
Long-Term	Assist with district consolidation efforts at the district level.

L. Projected Costs for State-Hosted Services, Collaboration, and Shared Services Opportunities

Projected costs for this section can be found at the back of the document in Appendix C [Collaboration](#).

References

- Bleiberg, J. (2019, September 16). *Are slow internet connections holding back American schools?* Retrieved from <https://www.brookings.edu/blog/brown-center-chalkboard/2019/09/16/are-slow-internet-connections-holding-back-american-schools/>
- Bowers, P. (2019, March 18). *Wi-Fi Devices from the library could help fill internet deserts in South Carolina.* Retrieved from https://www.postandcourier.com/news/wi-fi-devices-from-the-library-could-help-fill-internet/article_870c29d8-4981-11e9-8ab1-1f2da98456f9.html
- Cabbagestalk, S. (2019, October 11). *Allendale County School District launches new app.* Retrieved from <https://www.wjbf.com/news/allendale-county-school-district-launches-new-app/>
- Google brings Wi-Fi to Berkeley County school buses. (2017, March 22). *Charleston Regional Business Journal Online.* Retrieved from <https://charlestonbusiness.com/news/education/71788/>
- Garfinkel, J. Smarter with Gartner. (2018, September 26). *Seven steps to implement single sign-on.* Retrieved from <https://www.gartner.com/smarterwithgartner/7-steps-to-implement-single-sign-on/>
- OneBerkeley Connects. (n.d.). Retrieved from <https://www.bcsdschools.net/site/Default.aspx?PageID=23842>
- Ropek, L. (2019, November 5). *New bill would require schools to monitor social media.* Retrieved from <https://www.govtech.com/education/New-Bill-Would-Require-Schools-to-Monitor-Social-Media.html>
- School District of Pickens County Online. (2019, November 7). *SDPC celebrates completion of high-speed network.* Retrieved from http://www.pickens.k12.sc.us/about_us/what_s_new/high-speed_internet_network_now_online
- Serhat, K. (2015, November 18). *Educational technology: An overview.* Retrieved from <https://educationaltechnology.net/educational-technology-an-overview/>
- State Educational Technology Directors Association (SETDA). (2019, Nov.). *The Broadband Initiative.* Retrieved from https://www.setda.org/wp-content/uploads/2019/11/SETDA_Broadband-Imperative-III_110519.pdf

U.S. Department of Agriculture Online. (2017, October 27). *USDA invests \$9.75 million in rural broadband for South Carolina families*. Retrieved from <https://www.usda.gov/media/press-releases/2019/10/22/usda-invests-975-million-rural-broadband-south-carolina-families>

U.S. Department of Education Online. (2017, January). *Reimagining the role of technology in education: 2017 National education technology plan update*. Retrieved from <http://tech.ed.gov>

VirtualSC Online (n.d.). *Final Exam Information*. Information retrieved from: <https://www.virtualsc.org>

Why Computer Immersion. (2019, July 19). *Kyrene de la Mariposa*. Retrieved from <https://www.kyrene.org/Page/44876>

Appendix A: Projected Costs, Infrastructure and Connectivity

I. INFRASTRUCTURE AND CONNECTIVITY (including Security and Privacy)		
1. Provide guidance to local districts regarding networks, devices, and infrastructure		
	Funding	Budget explanation
Year 1	Existing	Provide guidelines
Year 2	\$105,000	Contracts Manager (one FTE)
Year 3	\$105,000	Maintain
Year 4	\$105,000	Maintain
Year 5	\$105,000	Maintain
2. Participate in statewide efforts to make broadband connectivity available to all homes		
	Funding	Budget explanation
Year 1	\$105,000	Broadband Coordinator (One FTE)
Year 2	\$305,000	\$200,000 for pilots and assistance
Year 3	\$305,000	\$200,000 for pilots and assistance
Year 4	\$305,000	\$200,000 for pilots and assistance
Year 5	\$305,000	\$200,000 for pilots and assistance
3. Provide guidance regarding cybersecurity training and awareness, including annual risk assessments and minimum security standards		
	Funding	Budget explanation
Year 1	\$4,000	Licenses of vulnerability software for two regional offices
Year 2	\$8,000	Licenses of vulnerability software for four regional offices
Year 3	\$14,000	Licenses of vulnerability software for seven regional offices
Year 4	\$14,000	Licenses of vulnerability software for seven regional offices
Year 5	\$14,000	Licenses of vulnerability software for seven regional offices
4. Lead the initiative to reach goal of 250 kbps per student within five years in high usage districts		
	Funding	Budget explanation
Year 1	Existing	Determine need per school and classroom
Year 2	TBD	Equipment upgrades
Year 3	TBD	Equipment upgrades
Year 4	TBD	Equipment upgrades
Year 5	TBD	Equipment upgrades
5. Expand Wi-Fi for state-owned buses		
	Funding	Budget explanation
Year 1	Existing	Determine need and implementation plan.
Year 2	\$1,446,000	Equip 800 buses, Wi-Fi for 2350
Year 3	\$2,711,000	Equip 1500 more buses, Wi-Fi for 1500 more
Year 4	\$3,626,000	Equip 1500 more buses, Wi-Fi for 1500 more
Year 5	\$2,876,000	Maintain

6. Work with districts on student device refresh initiatives		
	Funding	Budget explanation
Year 1	\$32,000,000	Replace/supply 1/5 of devices statewide, (160,000 at \$200)
Year 2	\$32,000,000	Replace/supply 1/5 of devices statewide, (160,000 at \$200)
Year 3	\$32,000,000	Replace/supply 1/5 of devices statewide, (160,000 at \$200)
Year 4	\$32,000,000	Replace/supply 1/5 of devices statewide, (160,000 at \$200)
Year 5	\$32,000,000	Replace/supply 1/5 of devices statewide, (160,000 at \$200)
7. Provide sustainable funding for continuous refresh of personal computing devices for educators		
	Funding	Budget explanation
Year 1	\$3,000,000	Replace/supply 1/5 of devices statewide (10,000 at \$300)
Year 2	\$3,000,000	Replace/supply 1/5 of devices statewide (10,000 at \$300)
Year 3	\$3,000,000	Replace/supply 1/5 of devices statewide (10,000 at \$300)
Year 4	\$3,000,000	Replace/supply 1/5 of devices statewide (10,000 at \$300)
Year 5	\$3,000,000	Replace/supply 1/5 of devices statewide (10,000 at \$300)
8. Providing data caching in schools		
	Funding	Budget explanation
Year 1	Existing	Planning, sizing, procurement, and prioritization
Year 2	\$4,000,000	Initial 500 schools
Year 3	\$4,000,000	Add 500 more schools
Year 4	\$0	Under warranty
Year 5	\$0	Under warranty

Appendix B: Projected Costs, Teaching and Learning

II. TEACHING AND LEARNING		
1. Develop outside-of-classroom instructional alternatives, particularly in addressing school make-up days and personalized learning. Develop regional digital-instructional technology coaches.		
	Funding	Budget explanation
Year 1	\$1,260,000	4 regions - 12 total digital coaches (12 FTEs)
Year 2	\$1,260,000	4 regions - 12 total digital coaches
Year 3	\$2,205,000	7 regions - 21 total digital coaches (Add 9 more FTEs, total of 21 FTEs)
Year 4	\$2,205,000	7 regions - 21 total digital coaches
Year 5	\$2,205,000	7 regions - 21 total digital coaches
2. Develop a Learning Objectives Repository using technology for cross-district sharing		
	Funding	Budget explanation
Year 1	Existing	Planning
Year 2	\$200,000	Repository
Year 3	\$200,000	Repository
Year 4	\$200,000	Repository
Year 5	\$200,000	Repository
3. Advance data-driven instructional decision making, enabling personalized learning		
	Funding	Budget explanation
Year 1	Existing	Planning
Year 2	\$300,000	2 FTE, data analytic tools, visual tools
Year 3	\$300,000	Maintain
Year 4	\$300,000	Maintain
Year 5	\$300,000	Maintain
4. Support district leadership teams in planning and implementing digital learning initiatives		
	Funding	Budget explanation
Year 1		See II.1
Year 2		
Year 3		
Year 4		
Year 5		
5. Provide training for digital literacy state standards as guidance to districts developing their curriculum		
	Funding	Budget explanation
Year 1		See II.1
Year 2		
Year 3		
Year 4		

Year 5		
--------	--	--

6. Implement a statewide Learning Management System that would be available to schools and districts. <i>See Agency FY 2021 Budget Request 8 (in part to fund a professional development learning management system).</i>		
	Funding	Budget explanation
Year 1	\$364,000	Contractor for research, two FTEs to run LMS program
Year 2	\$1,524,000	Implement for 20 districts, software licensing
Year 3	\$2,824,000	Implement for 20 additional districts, software licensing
Year 4	\$3,474,000	implement for 10 additional districts, software licensing
Year 5	\$3,474,000	Maintain
7. Explore coding programs like Girls Who Code or Code to the Future		
	Funding	Budget explanation
Year 1	Existing	Research and Plan
Year 2	\$875,000	Initial 35 schools, PLOs and certification
Year 3	\$245,000	35 more schools
Year 4	\$140,000	Evaluate future needs/expansion
Year 5	\$140,000	Maintain
8. Extend and modify CTE IT courses		
	Funding	Budget explanation
Year 1	\$568,000	4 FTEs, operating expenses, travel and supplies, evaluate and expand offerings
Year 2	\$568,000	Maintain
Year 3	\$568,000	Maintain
Year 4	\$568,000	Maintain
Year 5	\$568,000	Maintain
9. Increase funding for additional teachers and course designers for Virtual SC to expand offerings to middle schools and cover the current unmet need. <i>See Agency FY 2021 Budget Request 6.</i>		
	Funding	Budget explanation
Year 1	\$2,770,000	Teachers for content development (7 FTEs), Adjunct teachers for 600 classes, remote test proctoring, and course review
Year 2	\$2,690,000	Teachers for content development (7 FTEs), Adjunct teachers for 600 classes, and remote test proctoring
Year 3	\$2,690,000	Maintain
Year 4	\$2,690,000	Maintain
Year 5	\$2,690,000	Maintain

Appendix C: Projected Costs for State-Hosted Services, Collaboration, and Shared Services Opportunities

III. STATE HOSTED SERVICES, COLLABORATION, SHARED SERVICES OPPORTUNITIES		
1. Procurement and implementation of the next Student Information System, with local operational data store and Ed-Fi interoperability (\$18.4 m one time; \$5.16 m additional recurring). <i>See Agency FY 2021 Budget Requests 4 (recurring) and 5 (non-recurring).</i>		
	Funding	Budget explanation
Year 1	\$21,862,000	RFP, Development (Licensing & Contracting - L&C), one-time fees in years 1 and 2, \$7.5M in existing recurring SIS funds
Year 2	\$21,862,000	Development and implementation (L&C)
Year 3	\$12,660,000	Maintain - Licensing, Contracting, and Training
Year 4	\$12,660,000	Maintain - Licensing, Contracting, and Training
Year 5	\$12,660,000	Maintain - Licensing, Contracting, and Training
2 Develop Regional Technology Support Centers staffed with IT support personnel to support capacity of smaller and rural districts		
	Funding	Budget explanation
Year 1	\$365,000	Two regions, 4 FTE, transportation, equipment, rent
Year 2	\$730,000	Increase to four regions, 8 FTE
Year 3	\$1,232,000	Increase to seven regions, 14 FTE
Year 4	\$1,232,000	Maintain
Year 5	\$1,232,000	Maintain
3. Establish state-level technology procurements from which districts may purchase software, technology and training more efficiently		
	Funding	Budget explanation
Year 1		See I.1
Year 2		
Year 3		
Year 4		
Year 5		
4. Expand data backup and recovery services for local school districts		
	Funding	Budget explanation
Year 1	\$90,500	Expand backup/recovery for districts (one FTE), training and equipment
Year 2	\$84,000	Maintain
Year 3	\$84,000	Maintain
Year 4	\$84,000	Maintain
Year 5	\$84,000	Maintain

5. Improve mobile device management		
	Funding	Budget explanation
Year 1	Existing	Evaluate needs
Year 2	TBD	Prioritize and begin implementation
Year 3	TBD	
Year 4	TBD	
Year 5	TBD	
6. Single Sign-On initiative		
	Funding	Budget explanation
Year 1	Existing	See I.1
Year 2	Existing	Determine need
Year 3	TBD	Draft RFP and evaluate responses
Year 4	TBD	Implementation
Year 5	TBD	Maintain
7. Assist with service sharing and district consolidation efforts		
	Funding	Budget explanation
Year 1	\$525,000	5 temporary contractors (technical personnel) to provide assistance
Year 2	\$525,000	Maintain
Year 3	\$525,000	Maintain
Year 4	\$525,000	Maintain
Year 5	\$525,000	Maintain

Appendix D: Bus Route Times and Ridership

BASED ON SINGLE MAX ROUTE MINUTES PER STATE-OWNED BUS

Column Pairs Max Route # Total Buses in the district meeting the criteria
 Peak-Load Total riders for all AM or PM routes, whichever is higher, for the buses counted in the category

ID	DISTRICT-NM	MAX-ROUTE-UNDER-30-MIN	PEAK-LOAD	MAX-ROUTE-30-45-MIN	PEAK-LOAD	MAX-ROUTE-45-60-MIN	PEAK-LOAD	MAX-ROUTE-60-75-MIN	PEAK-LOAD	MAX-ROUTE-OVER-75-MIN	PEAK-LOAD	Total Route Buses 1-23-2020
0160	Abbeville 60	1	20	1	60	2	120	3	258	23	3,355	29
0201	Aiken	1	90	18	2,020	17	2,228	30	4,235	95	13,362	164
0301	Allendale	-	-	-	-	2	106	5	374	8	814	19
0401	Anderson 1	2	275	6	915	3	346	9	1,008	27	3,720	47
0402	Anderson 2	-	-	-	-	-	-	1	90	24	2,828	25
0403	Anderson 3	-	-	-	-	2	121	8	874	20	2,801	30
0404	Anderson 4	-	-	-	-	2	316	7	1,269	12	1,807	21
0405	Anderson 5	12	954	25	3,026	11	1,486	12	1,352	23	3,059	83
0501	Bamberg 1	-	-	-	-	1	55	3	236	10	1,418	15
0502	Bamberg 2	-	-	-	-	1	50	3	225	6	585	11
0619	Barnwell 19	-	-	-	-	-	-	1	45	5	642	7
0629	Barnwell 29	-	-	2	85	-	-	4	315	2	190	8

ID	DISTRICT-NM	MAX-ROUTE-UNDER-30-MIN	PEAK-LOAD	MAX-ROUTE-30-45-MIN	PEAK-LOAD	MAX-ROUTE-45-60-MIN	PEAK-LOAD	MAX-ROUTE-60-75-MIN	PEAK-LOAD	MAX-ROUTE-OVER-75-MIN	PEAK-LOAD	Total Route Buses 1-23-2020
0645	Barnwell 45	1	90	3	187	4	305	3	243	13	1,428	24
0701	Beaufort	16	1,400	32	2,949	35	3,536	18	2,035	19	2,336	129
0801	Berkeley	32	3,542	44	5,515	28	3,629	18	2,458	70	12,369	192
0901	Calhoun	1	60	-	-	-	-	3	213	17	1,440	22
1001	Charleston	26	1,887	57	5,714	64	6,972	45	5,280	54	7,475	250
1101	Cherokee	3	417	8	748	5	767	6	1,127	30	4,681	51
1201	Chester	4	331	7	606	6	534	11	937	22	2,915	53
1301	Chesterfield	1	130	5	412	8	567	15	1,393	61	6,847	89
1401	Clarendon 1	1	80	-	-	-	-	-	-	9	982	9
1402	Clarendon 2	-	-	1	132	2	183	5	395	13	1,574	21
1403	Clarendon 3	-	-	-	-	1	43	4	304	8	833	12
1501	Colleton	10	767	9	486	11	645	5	399	44	4,937	71
1601	Darlington	-	-	13	1,368	12	1,359	17	1,970	51	6,584	92
1703	Dillon 3	-	-	1	130	1	94	2	337	4	608	8
1704	Dillon 4	2	222	2	186	5	502	2	207	20	2,044	31
1802	Dorchester 2	60	6,994	43	6,294	10	1,544	11	1,823	7	1,301	130

ID	DISTRICT-NM	MAX-ROUTE-UNDER-30-MIN	PEAK-LOAD	MAX-ROUTE-30-45-MIN	PEAK-LOAD	MAX-ROUTE-45-60-MIN	PEAK-LOAD	MAX-ROUTE-60-75-MIN	PEAK-LOAD	MAX-ROUTE-OVER-75-MIN	PEAK-LOAD	Total Route Buses 1-23-2020
1804	Dorchester 4	1	96	-	-	2	250	4	370	25	2,337	30
1901	Edgefield	2	245	4	417	8	1,023	5	515	27	4,034	47
2001	Fairfield	-	-	2	205	4	315	6	727	30	3,877	42
2101	Florence 1	-	-	11	1,998	21	2,576	11	1,638	29	5,641	70
2102	Florence 2	-	-	2	53	4	439	1	77	5	624	11
2103	Florence 3	5	564	2	126	1	234	2	230	11	1,839	23
2104	Florence 4	4	337	-	-	1	80	-	-	2	260	8
2105	Florence 5	1	79	3	218	2	144	2	244	2	254	11
2201	Georgetown	5	221	7	424	7	452	3	167	59	8,431	80
2301	Greenville	38	6,047	54	8,034	56	8,795	35	5,325	164	32,820	351
2450	Greenwood 50	2	141	2	357	-	-	2	186	41	7,846	55
2451	Greenwood 51	1	90	-	-	3	255	2	199	1	93	7
2452	Greenwood 52	-	-	-	-	2	128	5	415	2	165	11
2501	Hampton 1	-	-	-	-	1	60	-	-	17	2,062	20
2502	Hampton 2	2	45	3	115	-	-	1	75	5	605	11
2601	Horry	14	1,481	48	5,992	83	11,329	88	12,994	83	12,495	328

ID	DISTRICT-NM	MAX-ROUTE-UNDER-30-MIN	PEAK-LOAD	MAX-ROUTE-30-45-MIN	PEAK-LOAD	MAX-ROUTE-45-60-MIN	PEAK-LOAD	MAX-ROUTE-60-75-MIN	PEAK-LOAD	MAX-ROUTE-OVER-75-MIN	PEAK-LOAD	Total Route Buses 1-23-2020
2701	Jasper	1	34	4	520	10	1,150	3	220	17	1,830	40
2801	Kershaw	4	408	3	325	6	678	14	1,302	65	8,159	113
2901	Lancaster	2	109	6	688	23	3,120	26	4,092	15	2,505	74
3055	Laurens 55	2	254	5	412	8	677	15	1,442	21	2,658	52
3056	Laurens 56	2	164	3	164	2	166	4	326	16	1,965	27
3101	Lee	-	-	1	50	1	60	1	137	37	4,592	40
3201	Lexington 1	7	870	28	3,805	22	3,391	21	3,343	79	13,470	167
3202	Lexington 2	5	663	19	2,649	14	2,035	14	2,043	14	2,095	70
3203	Lexington 3	-	-	1	130	1	140	3	660	14	2,390	19
3204	Lexington 4	-	-	2	210	6	720	9	1,206	20	3,034	36
3205	Lexington 5	4	520	20	3,510	38	6,442	22	3,644	18	2,920	103
3301	McCormick	-	-	-	-	2	130	-	-	11	1,280	13
3401	Marion	9	972	3	281	1	60	3	384	38	5,162	54
3501	Marlboro	1	50	4	426	5	412	2	250	36	4,347	47
3601	Newberry	4	430	10	993	6	680	5	379	30	3,678	58
3701	Oconee	-	-	8	1,191	15	1,927	14	1,892	53	6,969	91

ID	DISTRICT-NM	MAX-ROUTE-UNDER-30-MIN	PEAK-LOAD	MAX-ROUTE-30-45-MIN	PEAK-LOAD	MAX-ROUTE-45-60-MIN	PEAK-LOAD	MAX-ROUTE-60-75-MIN	PEAK-LOAD	MAX-ROUTE-OVER-75-MIN	PEAK-LOAD	Total Route Buses 1-23-2020
3803	Orangeburg 3	-	-	-	-	3	205	9	707	38	3,603	172
3804	Orangeburg 4	-	-	9	385	18	1,052	11	864	20	2,084	
3805	Orangeburg 5	-	-	6	650	7	700	7	665	45	5,102	
3901	Pickens	6	538	5	548	6	799	21	2,326	64	8,276	104
4001	Richland 1	36	2,783	43	3,651	27	3,020	19	2,373	37	4,682	168
4002	Richland 2	20	2,081	50	5,638	25	3,189	6	935	17	2,125	122
4101	Saluda	-	-	-	-	-	-	1	93	19	3,004	20
4201	Spartanburg 1	-	-	2	188	2	222	5	514	19	2,337	28
4202	Spartanburg 2	-	-	6	650	12	1,543	14	2,045	19	3,002	53
4203	Spartanburg 3	-	-	-	-	5	378	7	808	11	1,379	23
4204	Spartanburg 4	-	-	1	145	3	287	4	255	17	1,919	25
4205	Spartanburg 5	1	168	-	-	1	148	11	1,701	24	3,239	37
4206	Spartanburg 6	1	101	3	263	4	604	4	694	30	5,009	43
4207	Spartanburg 7	6	649	13	1,431	7	890	7	699	31	3,819	65
4301	Sumter	7	799	12	1,448	19	2,380	9	1,506	52	9,152	122
4401	Union	3	315	3	402	1	70	6	687	24	3,207	38

ID	DISTRICT-NM	MAX-ROUTE-UNDER-30-MIN	PEAK-LOAD	MAX-ROUTE-30-45-MIN	PEAK-LOAD	MAX-ROUTE-45-60-MIN	PEAK-LOAD	MAX-ROUTE-60-75-MIN	PEAK-LOAD	MAX-ROUTE-OVER-75-MIN	PEAK-LOAD	Total Route Buses 1-23-2020
4501	Williamsburg	1	153	2	210	3	299	1	157	40	6,161	59
4601	York 1	-	-	2	153	13	2,076	12	1,793	15	2,481	42
4602	York 2	-	-	14	2,209	18	2,874	8	1,287	5	649	48
4603	York 3	19	1,852	21	2,373	22	2,620	21	2,680	13	1,940	98
4604	York 4	17	1,571	33	3,103	14	1,469	2	254	1	88	67

Appendix E: Acknowledgments

Project Team

The 2020–24 South Carolina Educational Technology Plan was developed under the guidance of the South Carolina Department of Education Deputy Superintendent Elizabeth Carpentier and Chief Information Officer (CIO) Brian Pratt. Engagement and work from these efforts allowed the team to reach out to stakeholders, while not namely for the “State Technology Plan,” but to learn about what is needed to improve how technology can and should be integrated into the education process.

Within the SCDE:

- Valarie Byrd served as the lead researcher for the 2020 Plan.
- Dottye Rivers served as the principal researcher in updating the 2020 Plan.
- Ellen Priest served as the principal writer for the 2020 Plan.
- Additional 2020 Plan technical assistance provided by Lydia Hutto, Kristie Bader, and Joshua Miller.

Stakeholders

The SCDE considers support from the following stakeholder groups, among others, as critical to optimal Technology Plan implementation.

Internal Engagement

November 5, 2019, Stephanie DiStasio, Director, Office of Personalized Learning, Statewide Learning Management System (LMS) & Personalize Learning

November 18, 2019, Bradley Mitchell, M.Ed., Director, Office of Virtual Education, Virtual Education – VirtualSC

November 19, 2019, Karla Hawkins, Deputy State Superintendent, Digital Make-up Days

November 20, 2019, Daniel Ralyea, Director, Office of Research and Data Analysis, Student Information System (SIS)

November 21, 2019, Angel Malone, Director-CTE (Career and Technology Education Career and Technology Education, Maria Swygert, and Shawn Larrymore

December 3, 2019, Dr. David Mathis, Deputy Superintendent, College and Career Readiness, Digital Literacy Standards

December 19, 2019, Karla Hawkins, Deputy State Superintendent, Yolanda Anderson, Michael King, Mary Hipp, and Lilla Toal-Mandsager, Digital Technology Needs

External Engagement

October 3, 2019, Jim Stritzinger, President and CEO, Revolution D.ai, Statewide Internet Connectivity

October 4, 2019, Brent Engelman, Director of Education Data & Information Systems at Council of Chief State School Officers, Reducing Cybersecurity Risk

November 5, 2019, Diane Driggers, Information Technology Officer, Berkeley County School District, Wi-Fi and Broadband Access in District

November 8, 2019, EDTech Conference in Greenville SC with district technology leaders.

December 12, 2019, Christina Clayton, Sales representative CANVAS, CANVAS and Mastery Connect Demo

December 13, 2019, Tom Cranmer; Chuck Holland, Richland School District Two School District, Digital Literacy Standards

December 15, 2019, District Technology Officers, Survey

December 19, 2019, Barbara Nesbitt, IT Director, Pickens School District, Digital Literacy Standards and Initiatives

January 23, 2020, K-12 Technology Initiative Meeting (discussion of broadband standards and consolidation efforts)

Multiple Dates, Kelly Calhoun Williams, Gartner Research and Advisory