Beyond Technology Readiness for Testing: Planning for Technology-based Teaching, Learning and Assessment

Overview

As school districts transition from traditional paper-and-pencil student assessments to next generation online assessments, education leaders charged with helping their schools becoming 'technology-ready' must consider the implications, trends and context of the full range of technology issues that schools are and will be addressing. SETDA strongly encourages education policymakers and leaders to undertake a proactive systems approach to addressing school technology needs for the long-term—explicitly considering the present and future technology needs to meet curricular, instructional, assessment, professional learning and school operations goals. While the guidance provided on this site is by no means comprehensive, it does provide a framework for addressing critical questions for different nested dependencies of readiness. One can think of concentric circles of dimensions of 'technology-readiness for assessment', starting at the core and working outward to broader issues and implications:

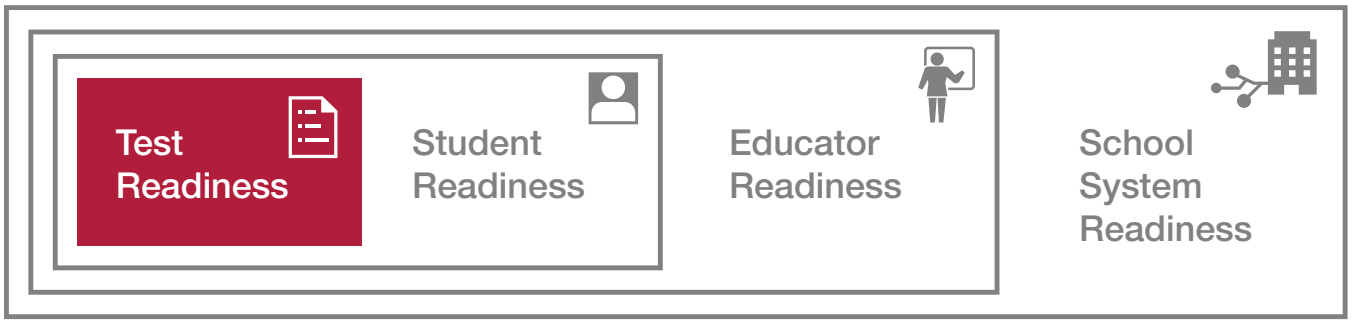
- **Test readiness:** Do schools and districts have the supported devices, required peripherals and infrastructure sufficient to administer the assessments within the designated testing windows, and is that technology deployed appropriately for an efficient and effective administration?

- **Student readiness:** Have students been provided ample opportunities to master tested knowledge, skills and abilities and with demonstrating their mastery of knowledge, skills and abilities via technologies similar to those that will be employed during testing? Are students comfortable with the technology they will be using to take the assessments?

- **Educator readiness:** Have educators received the instructional support and professional learning necessary to instruct students in ways appropriate for the standards and assessments, including in effectively and routinely employing technology in teaching of tested content? Do educators have access to sufficient technology in their classrooms, including responsive technology support, to ensure seamless use of technology for both instruction and assessment?

- **School system readiness:** Do districts provide adequate access to devices, software, broadband, technology support, and professional learning opportunities to address all aspects of the education enterprise? Does the district devote ongoing budget to technology and related needs, and is there a plan for sustainability? Are policies adequate to support digital teaching and learning?

All of these components to technology readiness are crucial and interdependent; while the short-term focus may be on readiness for testing, focusing on long-term school system readiness and capacity will help ensure that the needs of all students are met today and into the future.



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Assess your student population for device planning

Different portions of your student population will have different academic needs, and therefore different technology needs. Determine the size of student populations for each type of assessment and ensure you have computing devices and related accessories in proportion to the specific need. For example, if one-quarter of a school's student population consists of English learners who will be taking alternative assessments, at least 25 percent of computing devices used for assessments and instruction should match up with consortia technology requirements for those students.

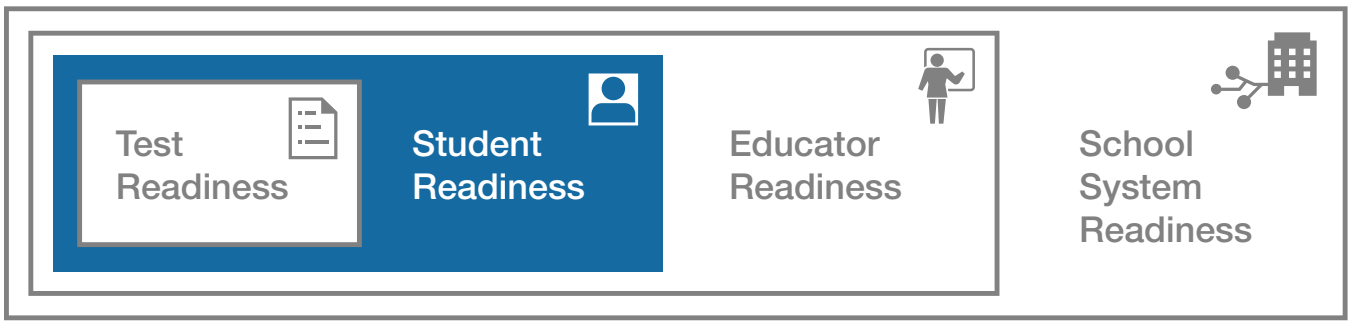
Conduct a physical site survey to establish sufficient wired and wireless networking coverage and density

Networking for the purpose of assessment encompasses both wired and wireless connectivity. The first is more straightforward than the second. If your schools are using wired connectivity to take the online assessments, make sure you have a sufficient number of network ports in the spaces where testing will take place. Ensuring adequate wireless connectivity is more complicated because there are so many variables at play: the type of wireless access hardware used and the IEEE standard it follows, the number of users going online in a given area of the school, the types of applications being accessed, the types of computing devices used, the forms of radio interference that may exist in the environment, the layout of rooms, and even the kind of building materials used in the school's construction. The IEEE 802.11n wireless standard, the one most typically used currently in schools, recommends one access point per 15-20 wireless devices or "clients." A class with 20-30 students would therefore require the use of two access points. While more modern access points may be able to sustain a greater number of users, not all computing devices are equal in terms of their affect on wireless access point capacity. Conduct a rigorous physical site survey in every location of the school where assessment will take place utilizing wireless networking. The survey will help uncover forms of interference, identify optimal locations for placement of the wireless access points, and indicate the number of clients that can be supported in a given location. But the ultimate test is to put the same number of users into a room where instruction and assessment will take place and have them work on their devices doing comparable activities (streaming video, getting to various websites, etc.) to see how well the network functions.

Ensure consistency in devices used for assessment and devices used for instruction

The devices used in the classroom should also be comparable to the same devices upon which the assessments will take place. If tablets pervade in the classroom, that's what students should be using for testing. If laptop computers are the standard, then the same kinds of computers should be in place for assessment as well. Technology not routinely used during the instructional day or during ordinary classroom testing is not appropriate during state-mandated testing. Consistency in devices is especially true for English Language Learners and students with disabilities, so headphones, assistive/adaptive devices and other technologies used during instruction should be the same as those used with assessments.

The ultimate goal is that there is sufficient bandwidth and devices so that full teaching and learning can continue in a school at the same time that assessment is taking place



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Prepare students

Students gravitate to new uses of technology in the classroom, and they tend to be willing to experiment. However, proficiency with technology needs to go beyond the ability to text friends to comfort with use for academic purposes. From an early age students must be prepared to handle the computing requirements for online assessments that call for the efficient use of a keyboard and mouse (or other pointing device) to demonstrate mastery of tested knowledge, skills, and abilities. Sitting down to take an online assessment should not be the first exposure students receive to the workings of the computing device they are now expected to test on.

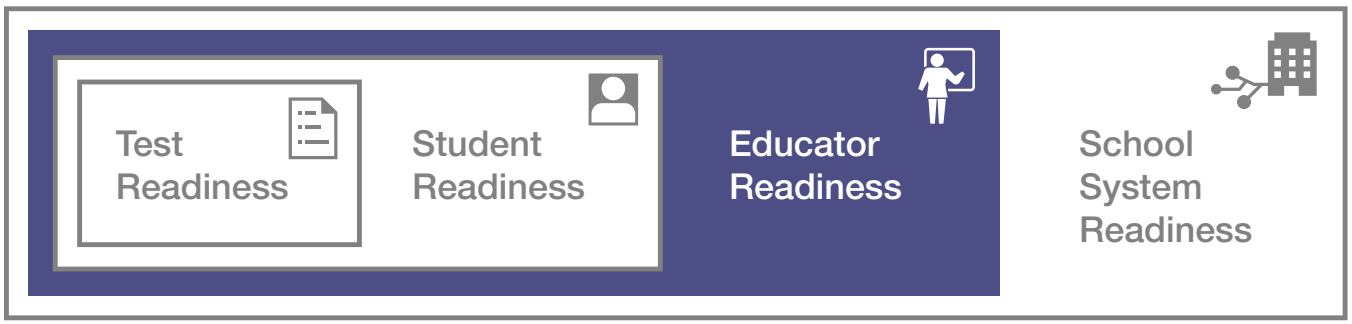
Students also should receive exposure to the online assessments before your state's summative testing window, including opportunities to practice on sample items and with the testing software. The two general assessment consortia—Smarter Balanced and PARCC—both provide sample assessment items that allow students to work through the various forms of test questions in order to have a basic understanding of what will be expected of them when they are sitting in front of the live assessments.

Give students ample time on and appropriate experiences with computing devices

The days are gone when students are marched in a line to the computer lab to spend classroom time performing "drill and practice" exercises. Instead, students need a robust instructional experience that integrates the appropriate use of technology throughout the school day, not just a few minutes in the lab learning how to do point and click. In addition, instruction needs to incorporate the use of computing in ways envisioned by college and career ready standards, such as the Common Core and other state education standards, including a focus on improving critical thinking and other higher-order skills. Committing to that calls for regular in-classroom access to devices and bandwidth and a teacher who is well grounded in expectations for student learning and prepared to facilitate the integration of technology into lessons.

Include all students

Certain types of students, such as those with disabilities and English language learners, and their teachers may face unique challenges finding technology to fit their specific needs and learning to integrate these technologies in the students' learning; however, these students need the same robust instructional experiences and time with technologies as a part of instruction as any other students. A number of external sources—state special education agencies, non-profits, and other entities—can help the IEP team and other educators working with special populations to plan their strategies for the use of appropriate technology in instruction and assessments. All the assessment consortia have good resources to learn more about testing with accommodations. One rule of thumb emerging across the board: accommodations for assessments should be consistent with the ones used during classroom instruction. Accommodations that are not routinely used during the instructional day or during ordinary classroom testing are not appropriate during state-mandated testing.



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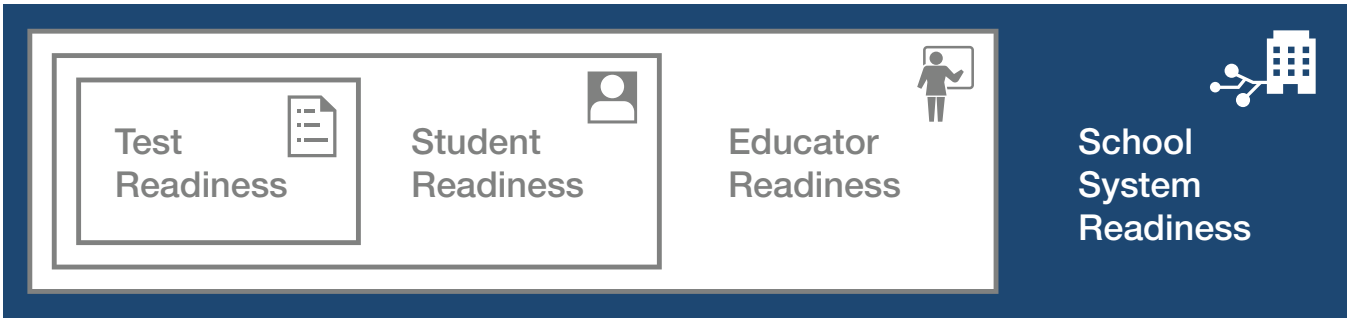
Provide educators with professional development opportunities and direct support

Preparing students for new learning standards and their accompanying assessments also requires educators to adapt their instructional approaches. Professional development is vital to helping teachers integrate new learning tools into their instructional practices and to helping administrators understand what will be required of their schools in making the transition to online assessment and how they can best support students and teachers. Even before online assessment is introduced to students, educators must have sufficient time and resources to prepare themselves for the transition. That includes not only training on the basic technical requirements of the online assessments, but also aligned instructional approaches utilizing technology.

Instructional technology facilitators or coaches have proven to be a powerful lever for providing just-in-time support to educators as they shift to new instructional practices and the use of online assessments. This direct one-on-one and small group instructional assistance can show teachers how to modify and deliver their lessons to take advantage of new technology resources. To be effective, districts should consider assigning at least one instructional technology expert to each school (depending upon size) in order to accelerate the adoption of new forms of instruction and assessment.

Prepare and involve IT staff

Supporting the shift to online assessment and learning that integrates computing devices tends to fall at least partially on the shoulders of the district's technology staff. As with every other stakeholder group, these individuals need to be at the table to learn about and contribute to changing priorities as well as trained to support the use of technology in the hands of more and more users. Also, IT staff size may need to be reconsidered in light of growing support needs. As technology becomes more tightly integrated into the assessment and learning processes, educators and students need to be able to count on equipment and connectivity that works when they want it; otherwise, they risk loss of productivity in the classroom.



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Plan for learning, not just assessment

While many schools and districts are working to determine if they have sufficient bandwidth and enough devices to implement online assessment smoothly, technology readiness for assessment is not a one-time event. It is instead a process that will need to be revisited periodically. Districts will find that they are able to make better choices over time as they move through the transition from paper-and-pencil testing to online assessment. SETDA recommends school and district leaders proactively assess needs for technology for the long-term in order to meet present and future needs - and not just for assessment, but also to meet curricular, instructional, assessment, professional development and school operations needs. Being proactive means regularly reviewing the status of progress toward technology integration to ensure lessons learned and best practices are addressed. On a regular basis bring together a corps of stakeholders—district and school leaders, teachers, IT professionals, parents, and students—to evaluate the outcomes of previous decisions related to the use of technology in assessments and instruction and to inform future decisions.

Ensure robust broadband connectivity to and throughout all schools

Districts need to consider a variety of aspects related to internet connectivity and capacity. Connectivity starts with the broadband coming into the district, moves through to connections between buildings, to classrooms within the building and to each student and educator. Each step in the chain needs to be sufficient not only for individual users, but for large numbers of concurrent users across schools and even districts (depending on network design). Districts will find that it is likely more cost-effective to plan for future needs in upgrading connectivity, as marginal improvements to meet short run demands will likely only serve temporary needs.

In order to accommodate the bandwidth needed for both instructional activities and online assessments, schools need to appraise the speed with which they are adopting new models of learning. For example, look to the extent to which you'll be transitioning from traditional print textbooks and supplementary materials to digital curriculum in your classrooms. Assess the types of educational material that are being used in the classroom today as well as in future years as instruction becomes more dependent on digital content. The typical website that will be streaming video to your students consumes far more bandwidth than the use of webpages for reading. Be sure to include these needs in your estimates of broadband connectivity needs over and above any needed for testing.

By tracking data and establishing metrics, education leaders can help determine how quickly your district may need to ramp up its bandwidth needs. SETDA recommends districts plan for an external Internet connection to the Internet service provider of 100 Kbps per student by the 2014-2015 school year, rising to 1 Mbps per student by the 2017-2018 school year. Internal connections between the district data center and schools and among and between schools themselves should be at least 1 Mbps per student by 2014-2015, rising to 10 Mbps per student by 2017-2018.

Develop a plan for managing infrastructure long-term

In the long-term, as the number and variety of computing devices grows on campus, managing them becomes more difficult and time-consuming. Without a solid plan and systems in place for supporting users and tending to devices and networks, students and teacher face the possibility of interruptions to teaching and learning resources they have come to rely upon. The plan should address multiple areas: computing device standards and security requirements, network access by role, automation of updates to operating systems and applications, the technical support response workflow, and similar aspects of IT management. The goal is to be proactive in delivering support, phasing out legacy devices while making new equipment purchases, and keeping ahead of new computing needs as they develop.

A guiding principle is that the older the inventory of computing devices, the more technical support needed to keep the equipment in working order and the greater the risk of disruption and lost productivity due to technology-related problems. The longer these devices are used, the greater the chance that serious problems will arise, resulting in lost student work and disrupted learning. Moreover, when a company or open source community no longer supports a given operating system, there's increased risk of security difficulties and software incompatibility. Some online assessments only support specific versions of web browsers, but modern browsers may not work on older equipment.

Budget appropriately

Schools and districts that have prioritized the use of technology for teaching and learning have discovered that costs can be paid for - at least in part - by re-purposing funding already in place. While there will likely be one-time costs associated with technology readiness for assessment in some schools and districts, it is vital that technology costs be included as an ongoing line item in annual school budgets. IT and other school leaders have found that schools spending less than three to five percent of their overall budgets on devices and infrastructure are hard pressed to meet existing and future needs.

Leading states and school districts have pursued a variety of strategies to repurpose existing funding streams and to plan for recurring technology costs, including:

- Pursuing joint purchasing agreements at a state or regional scale to secure the best pricing;
- Repurposing traditional textbook spending;
- Integrating the use of free open source software and open educational resources (OER) into the classroom to replace traditional textbooks;
- Considering the total cost of ownership for technology—for devices, software, technical support, and maintenance, and upgrades—in deciding how frequently to replace purchased devices;
- Evaluating whether leasing equipment is more advantageous than purchasing;
- Conducting advance planning to address the need to refresh devices on a regular cycle; and,
- Applying for grants to fund one-time technology infrastructure upgrades.

Prepare the school community

As schools make the transition to digital instruction and assessment, it is incumbent on district leaders to put together and implement a communications plan that informs and engages with each of the key school stakeholder groups crucial to sustained success—including the immediate school community, such as families, and the broader community, such as local businesses and government. Information needs to emphasize the overarching reasons for the use of technology in schools, including around concerns for children's future success: Standards in school and life are rising. Adoption of new forms of instruction and assessment are intended to address these higher expectations. School forums, webinars, videos, and related communication can help people understand the changes that are happening, why they're necessary, and how they will help students. Also, these communication channels provide constituents with a way to have their questions and concerns heard and addressed.

Resources

- **1:1 Handbook** http://www.corp.att.com/edu/docs/tablets_in_the_classroom.PDF
  A practical guide to planning and deploying large-scale tablet initiatives.
- **1:1 Learning Trends (Infographic)** http://www.corp.att.com/edu/docs/erepublic_survey.pdf
- **Technology Solutions for 1:1 Learning** http://www.corp.att.com/edu/docs/solution_brief.pdf
- **Bandwidth Solutions for 1:1 Learning**
  http://educationethernetsolutions.att.com/?GUID=59E6226C-04E0-4117-A602-52EA40F92ECC
  Learn how AT&T Ethernet Solutions can help to provide a foundation for 1:1 learning.
- **Cloud in Education** http://www.corp.att.com/edu/docs/tech_spotlight_cloud.pdf
  Whitepaper highlighting several use cases for cloud services in education.
- **Mobile Device Management** http://www.corp.att.com/edu/k12/safety_solutions/device_security.html
  Learn how AT&T can help districts secure and manage mobile devices.
- **Security Solutions for Education** http://www.corp.att.com/edu/k12/network_security_k-12_include.html
  Learn how AT&T can help to secure your network from a variety of threats.
- **Unified Communications Solutions for Education** http://www.corp.att.com/edu/docs/uc_k-12_brief.pdf
  Learn how AT&T Unified Communications solutions can enhance collaboration and extend learning opportunities.
- **BYOD Management Solution** https://www.wireless.att.com/businesscenter/en_US/pdf/ATT_Toggle_Solution_Brief_111513.pdf
  Partition off district-related content on personal devices in a BYOD.
- **Parental Attitudes Towards Mobile Learning (Infographic)** http://www.corp.att.com/edu/docs/grunwald_study.pdf
  Infographic with highlights from research on parental attitudes towards mobile learning.

Raising the BAR: Becoming Assessment Ready White Paper http://www.ena.com/raisingthebar/
This white paper highlights the purpose and value of online assessments and provides detailed information on the assessment consortia implementation plans as well as network infrastructure, device, support and instructional design and preparation considerations. It also analyzes what practical steps small, medium and large school districts are evaluating and taking as part of their preparation process.

Raising the BAR: PARCC and Smarter Balanced FAQs http://www.ena.com/raisingthebar/faqs/
School districts identified four major areas of concern about becoming assessment ready including: network infrastructure, devices, professional development and funding. Resulting from a national online survey with school districts to find out what key questions and concerns they had about each of these categories, we collated and posed their frequently asked questions to the PARCC and Smarter Balanced assessment consortia and captured the responses in this document.

Raising the BAR: School District Case Studies http://www.ena.com/raisingthebar/case-studies/
Three school districts, Metropolitan Nashville Public Schools (TN), Metropolitan School District of Warren Township (IN) and West Side School District #202 (ID), were visited and interviewed to capture their experiences, recommendations and best practices as they prepare for online assessments. The case studies from these visits provide insight into what practical steps small, medium and large school districts are taking to become assessment ready.

Raising the BAR: Readiness Recommendations and Checklists http://www.ena.com/raisingthebar/recommendations-checklist/
Best practices and expert guidance from school district peers comprise the key recommendations for becoming assessment ready ultimately helping inform districts about what they should be considering and doing. Recommendations are accompanied by a checklist to helps districts as they prepare for online assessments.

Raising the BAR: PARCC and Smarter Balanced Videos
These videos, featuring representatives from the PARCC and Smarter Balanced assessment consortia, provide detailed responses to school district questions and concerns, gathered in part by online surveys, regarding becoming assessment ready. Viewers are presented with recommendations of five main categories including network infrastructure, devices, professional development and funding.

Raising the BAR: School District Panel Videos http://www.ena.com/2014/04/cosn-2014-qa/
This video series, taped at the Raising the BAR: Becoming Assessment Ready workshop during the 2014 CoSN conference, highlights some of the key concerns districts face as discussed by a panel of education leaders from Metropolitan Nashville Public Schools and the Metropolitan School District of Warren Township.

Use Chromebooks for Student Assessments
https://support.google.com/chrome/a/answer/3273084?hl=en

Neverware Overview
http://www.setda.org/wp-content/uploads/2014/04/Neverware-Brochure.pdf

Implementing Online Assessments
http://assessmentstudies.setda.org

A series of case studies with narratives that describe a state's history with online assessments, the evolution of their infrastructure, their approach to training and communication with districts, and an in-depth look at what it took a district to implement the assessments.

Technology Readiness for College and Career Ready Teaching, Learning and Assessment
http://www.setda.org/wp-content/uploads/2013/09/SETDA_TechnologyReadinessCollege.pdf

This guidance is targeted to policymakers and K-12 school leaders interested in addressing school technology readiness needs for college and career ready teaching, learning and assessment. PARCC and Smarter Balanced released guidance regarding minimum technology requirements in December of 2012. However, education leaders must consider these minimum requirements in the context of the full range of technology issues schools are addressing today. The minimums are not sufficient for teaching and learning.

Out of Print: Reimagining the K-12 Textbook in a Digital Age
http://www.setda.org/priorities/digital-content/out-of-print/

This report highlights the sea change underway in the multi-billion dollar U.S. K-12 instructional materials market enabled by recent technology and intellectual property rights innovations.

The Broadband Imperative: Recommendations to Address K-12 Educational Infrastructure Needs
http://www.setda.org/priorities/equity-of-access/the-broadband-imperative/

The Broadband Imperative provides an up-to-date assessment of access to broadband by students and teachers (in and out of schools); current trends driving the need for more broadband in teaching, learning and school operations; and specific recommendations for broadband capacity needed to ensure all students have access.

Netcraft Analysis: Online Speed Testing Tools
http://www.setda.org/wp-content/uploads/2013/09/Netcraft-Analysis_-Online-Speed-Testing-Tools.pdf

This report is an analysis of online speed testing tools includes detailed information on tools provided by SpeedTest.net, Education SuperHighway's School Speed Test , and the Smarter Balanced Assessment Consortia's bandwidth check diagnostic tools. It presents a detailed description of each tool, including its strengths and weaknesses, followed by observations based on measured data. It concludes by offering recommendations on how best to use each of the tools to inform decision making by education leaders and policymakers.

State Education Policy Center
http://sepc.setda.org

State Education Policy Center (SEPC) is a database of state policies related to education and technology curated by the State Educational Technology Directors Association (SETDA). Find links to SEPC listings for each state within our membership listings here on SETDA.org, or visit SEPC to browse policy across the US.