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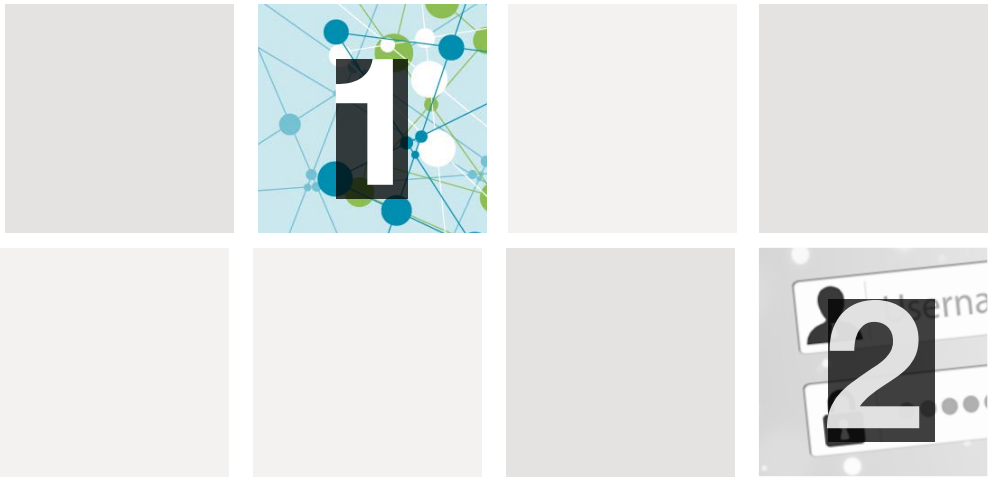

10 Issues in Educational Technology

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10 Issues in Educational Technology

The Southern Regional Education Board's Educational Technology Cooperative recommends that policymakers in SREB states address 10 education technology issues now. Without adequate progress on them, states may fall short of their educational improvement goals, and their key policy initiatives may fail.

The issues are critical to both public schools and higher education. States need coordinated leadership to allocate funds and focus improvements on students. The ETC will work with states on these issues through 2018, assess and update progress, and refine the list.

Data Systems

Link statewide data systems between education and other sectors, from early childhood through college and workforce, and adopt common data definitions across the K-20 state education data systems.

Data Privacy

Protect the sensitivity of student data held within education data systems, while enabling the use of this data to inform education policy and practice.

Predictive Analytics

Incorporate the use of data for decision-making and predictive modeling of student-centric outcomes to improve education systems, processes and policy.

Bandwidth

Expand reliable, affordable bandwidth to ensure that educators and their students gain maximum benefit from current and emerging technologies.

Emerging Technologies

Factor the relevance and appropriate use of emerging technologies in strategic decision-making and foster faculty professional development in these technologies to maximize their benefits to students.

New Learning Models

Provide for more use of technology to create personalized, competency-based learning environments and delivery methods which allow students to demonstrate mastery of content at their own pace.

Student Digital Literacy

Ensure students have the fundamental skill sets they need from the early grades through college to be fully engaged in technology-mediated learning opportunities to develop lifelong fluencies for success in a digital world.

Technology Security

Provide adequate resources to protect information and information systems from unauthorized access, use, disclosure, disruption, modification, or destruction while keeping them highly available for learning and conducting the business of education.

Digital Accessibility

Promote awareness, training, and best practices to make eLearning content and sites more accessible to students with disabilities, in compliance with the Americans with Disabilities Act and other regulatory requirements.

Policy

Maintain regular state-level review of technology-related legislation and policies on education standards, access and infrastructure to ensure these policies are adequate, aligned, necessary and integrated.

Data Systems

Link statewide data systems between education and other sectors, from early childhood through college and workforce, and adopt common data definitions across the K-20 state education data systems.

What is the issue and why is it important? What if SREB states do not make adequate progress on this issue?

Education data systems within state agencies collect, store and manage vast amounts of data about students, teachers and schools — data that can be used to improve educational outcomes. Sources for these data include vendor-owned as well as state-owned systems for assessment, learning management, student information, and enterprise resource planning. For greater return on investment, these education data systems need to be linked from prekindergarten to higher education, and also with external workforce systems.

Investments in education infrastructure, data systems and data analytics can no doubt improve student achievement, completion rates and teacher effectiveness. Data managers find, however, that linking or integrating the data from one state data system to another is not easy. Definitions of terms for many data elements do not match across agencies; time frames for collecting data do not correlate. If the data cannot be validated as comparable in multiple agencies and therefore cannot be analyzed across agencies, their value is diminished. For this reason, establishing standard data definitions across systems and states is a critical issue in improving data systems.

Investments in education infrastructure, data systems and data analytics can no doubt improve student achievement, completion rates and teacher effectiveness.

Good data definitions include not just the meaning of terms but also calculations of standard metrics. When multiple systems that need to be linked do not share common calculation for metrics such as "grade point average" or "average daily attendance," educators cannot interpret trends in related issues. Without consistent standards for data collection shared definition and interoperable systems, there is limited potential for improvement in the critical data-driven decision making that informs policy and practice.

According to the Education Commission of the States (ECS), 17 states and the District of Columbia, including nine SREB states, have broad-span data systems that encompass early learning, K-12, postsecondary and the workforce. ECS reports that 26 states have a centralized system, and 12 states have a federated system, connecting at least two of the four sectors. Yet better data systems and definitions would improve data analysis in all states, increasing the flow of meaningful information.

One example of what this means: the definition of the term *veteran* varies among education agencies. Without clarifying statements about which military services count — combat, for instance, or non-combat service — members of the military will respond differently to questions on surveys about veteran status. This discrepancy in responses makes the aggregate of responses meaningless. Just as important, data systems differ in what they collect. Often agencies miss critically important data points about current and former service members and military families because they have not yet defined terms precisely or are confused about what data to collect. Another example: most higher education data systems are programmed to accept credit hour data and cannot easily substitute competency-based data. The result is that most colleges have found it impossible to permit students to make course transfers in the middle of an academic term. Differences in the definition of a distance learning student vs. a traditional student, or an online course vs. a traditional course, vary greatly within states and across the country. Again, this renders data on distance learning either missing or ambiguous.

Some states have made good progress with data systems, but they can only realize the full benefits of evidence-based decision making by:

- Linking statewide data systems between early childhood, K-12, postsecondary and workforce
- Adopting common data definitions across K-20 education systems and state agencies
- Collecting common data elements for better consistency and comparison of data
- Validating data so that it is consistent across various sources

If they do not, they jeopardize the results of their predictive analytics and threaten the return on investment of the technology infrastructure that supports their data systems.

Data Privacy

Protect the sensitivity of student data held within education data systems, while enabling the use of this data to inform education policy and practice.

What is the issue and why is it important? What if SREB states do not make adequate progress on this issue?

Schools and colleges collect enormous amounts of data for educational improvement through their student information systems, enterprise resource systems, learning management systems, library systems and vendor-managed systems – much of it is information that should remain private. The data held within these diverse systems, the enormous number of devices accessing these systems, and all the interactive technology tools constantly emerging for classroom use present both security and privacy concerns. Data security and privacy, though related, are different issues. Data security is about protecting technology systems against unauthorized access and maintaining the integrity of the data within those systems. Data privacy is about the confidentiality rights of the individuals involved, the types of data collected, and how it is used and shared.

The 1974 federal Family Educational Rights and Privacy Act (FERPA) provides parental access to education records and the opportunity to have those records amended. It also offers parents and some students control over the disclosure of information in student records. The Pupil Privacy Rights Act applies to the programs and activities of a state educational agency, local educational agency or other recipient of funds under any program funded by the U.S. Department of Education and goes beyond FERPA to regulate specific types of information gathered through surveys, analysis, or evaluation. More recent federal regulations address student data privacy and security, such as the Higher Education Opportunity Act amendments and the Every Student Succeeds Act. In addition to federal legislation, individual states have introduced hundreds of bills regarding student data privacy in recent years. The National Association of State Boards of Education (http://www.nasbe.org/wp-content/uploads/NASBE-Policy-Update-2015-Legislative-Session-Data-Privacy-June-2015.pdf) and the Data Quality Campaign have highlighted the data legislation in various states (http://www.nasbe.org/wp-content/uploads/2015-State-Legislation-6-9.pdf).

State and local education data governance policies should address five broad areas: transparency, privacy, collection, use and sharing. One data governance goal should be to ensure that data made public about students involves large enough samples in aggregate form to ensure that no information about individual students can be surmised. Only individuals holding positions that permit them to view sensitive data should have access, and these individuals are responsible for keeping data secure and available only to others with a legitimate need to review it. There must be clear policies about what data are collected, who is responsible for securing it, and who is involved in carrying out procedures. Compliance audits should be an integral part of data governance practices, and agencies should be subject to public pass/fail ratings on their compliance with these practices.

Compliance, however, follows training. Policies should be clear that everyone responsible for data privacy and governance must be properly trained, and whenever policies change, those involved in implementing the changes should be thoroughly briefed. Data are often entered by employees with the least amount of training about data use and risks. Schools and colleges need adequate funding to train users, secure data systems, provide technical support, and purchase sufficient data monitoring and security tools. Moreover, compliance must account for third-party systems that interact with an agency's own, to prevent unintended access or use of data and to protect user identity.

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Balancing student data privacy with useful data analysis requires careful thinking. If legislation and policies are too restrictive, the data collected may not be useful in helping policymakers improve student outcomes. If they are too lax, students' privacy is put at risk. To prevent unintended consequences, policymakers should consult a diverse group (including teachers, instructional technology staff, data managers, principals/administrators, purchasing agents, and educational technology specialists) when reviewing proposed policies or legislation.

Predictive Analytics

Incorporate the use of data for decision-making and predictive modeling of student-centric outcomes to improve education systems, processes and policy.

What is the issue and why is it important? What if SREB states do not make adequate progress on this issue?

Education has only recently begun to adjust to the culture of big data. So, what is "big data?" It is data from a wide variety of sources including learning management systems, student information systems, enterprise resource planning systems, data warehouses, longitudinal data systems, vendor systems and countless devices and sensors. Education leaders and policy makers are steeped in so much data they often don't know how to make sense of it all. They spend resources on education and need accountability and return on investment to justify additional funding. Unless they can gather and interpret data from a variety of sources, they generally don't know what works, what has limited results and what would work better with modifications.

Systematic mining of data can help these leaders find what each student and teacher needs to grow toward better outcomes. For example, good data analysis can point teachers toward timely professional development to help them help their students. Because no two students are alike — each has unique gaps in knowledge or understanding — they, like their teachers, benefit from predictive modeling and artificial intelligence to guide their paths to a better education. Schools and districts not using these tools effectively squander both time and dollars in guessing what students need. Education leaders can also use predictive models based on descriptive data and diagnostics to choose educational technology systems that would better serve their goals for educational improvement. These models often show trends in data that would otherwise not be apparent and can help direct decisions toward educational improvement and efficiency.

It takes time for education to catch up to technology trends, but effective use of data can shorten the time lag. The use of quality, pertinent data to resolve educational problems, inform academic practices, and refine applicable policies should be of the utmost importance in efforts to reach national and state education goals. Studies show that although the United States is graduating more students from high school than anywhere else in the world, our students are not performing as highly on some education outcomes as students elsewhere. Data analytics can help us to determine why some schools fail while others thrive, then guide our recommendations and planning throughout the process of school improvement. Both educators and administrators need access to data dashboards to use current data and analytics for timely student intervention and improved outcomes.

Education stakeholders must be aware of predictive modeling processes and be informed on the analytics and algorithms — mathematical formulas used in data modeling — if they are to make informed decisions and policies.

As many states move toward performance-related funding models, they need to address multiple measures of progress on performance, from the student level to the teacher, school, district, system and state levels, through postsecondary performance, and into the workforce. At the individual student level, failing to identify patterns in data will lead to missed opportunities to create personalized learning programs, or to intervene with at-risk students to ensure they complete high school or college. On a larger scale, that failure will result in misguided policies that invest precious resources in ineffective programs. Transparent data policies and practices are critical to public acceptance and trust. Education stakeholders must be aware of predictive modeling processes and be informed on the analytics and algorithms — mathematical formulas used in data modeling — if they are to make informed decisions and policies. Slight changes in algorithms can lead to substantially different predicted outcomes and results.

Predictive analytics can enhance state economies and job opportunities for residents by accelerating educational attainment, improving student support systems, and gaining insight through predictive modeling that humans cannot see. Such analytics are a powerful tool for making full, efficient use of the data generated by the technology systems that support education. Resources to support these systems, along with transparent communication and effective training, can bring an improved return on investment.

Bandwidth

Expand reliable, affordable bandwidth to ensure that educators and their students gain maximum benefit from current and emerging technologies.

What is the issue and why is it important? What if SREB states do not make adequate progress on this issue?

As teachers, staff and students bring more of their electronic devices to school or college, demand for broadband to support them consumes more of the institution's bandwidth capacity. Many institutions are limited in what they have available and cannot provide sufficient bandwidth for teaching and learning. As digital learning and communication expands, access to affordable internet connectivity — or broadband — is a continuing struggle for K-12 schools and postsecondary education. The nonprofit EducationSuperHighway reported in January 2017 that 88 percent of school districts meet the FCC minimum internet access goal of 100 kbps per student. But as states adopt personalized or blended digital learning strategies, schools will need to meet the significantly higher 2018 FCC goal of 1 Mbps per student — a level only 15 percent of school districts met by mid-2017. Moreover, they will need to be prepared to keep up with the 50 percent year-over-year growth in demand for bandwidth. More than 11.6 million of the nation's students, in 19,000 schools, are without the minimum connectivity necessary for digital learning. Although broadband costs have gone down, to reach the affordability goal of $3 per Mbps, states will need to partner with broadband providers and education networks for mutually beneficial outcomes.

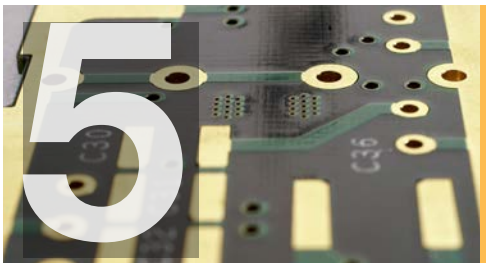
TestMyNet has compared the speeds for Internet uploads and downloads for universities and posted their results. (It has not compared speeds for community or technical colleges.) In June 2014, Valore Books partnered with TestMyNet to determine the 25 colleges with the highest broadband speeds. The most compelling finding was the vast difference between the fastest and slowest speeds, a result that is typical for K-12 schools — another difference between the "haves" and "have nots." Download speeds ranged from 5.7 Mbps to 98.96 Mbps and upload speeds from 3.2 Mbps to 49.1 Mbps. Many higher education institutions rely on a state or regional research and education network to provide affordable broadband, and some partner with providers like Google and Internet2 or form multi-institution cooperatives for volume pricing. Even though fiber optic networks provide the highest capacity, thousands of miles of "dark fiber" (unused fiber optics) are available for lease in the United States, and too few colleges and schools take advantage of this. Still, the United States lags behind many other countries in fiber optic capacity. According to Google, about 9 percent of connections in the United States are fiber, compared with 71 percent in Japan and 66 percent in Korea.

Without adequate high-speed fiber optic bandwidth access, SREB states will be stalled in implementing projects that are integral to meeting state goals and improving student learning. These initiatives include:

Although states have made good progress with data systems, they can realize the full benefits of evidence-based decision making only by completing the following actions.

- Developing online instruction and online assessment for use with state readiness standards and testing programs
- Building instructional collaboration between K-12 and higher education, especially in STEM areas, as well as collaboration with peers and experts around the globe
- Implementing internet-based tools that provide live, streaming video or audio of teachers in their classrooms to allow evaluators to observe teachers and assess their effectiveness
- Providing cloud-based services for securely storing and accessing high quantities of instructional, administrative or research data
- Supporting new or improved instructional models such as flipped classrooms, adaptive learning courses, digital content, gaming, simulations, virtual and personalized learning models
- Providing online postsecondary degree/certificate programs, with all the attendant advisement, registration, library, and student support services involved, including artificial intelligence for personalized learning and tutoring
- Providing university access to high-powered computers and databases for research
- Implementing internet-based applications to manage campus security, energy and telecommunications to achieve cost savings and greater safety and security
- Accommodating student-owned devices (Bring Your Own Device, or BYOD) so that students can integrate their technology into academic learning environments
- Increasing use of sensors and devices, known as the Internet of Things

Emerging Technologies



Factor the relevance and appropriate use of emerging technologies in strategic decision-making and foster faculty professional development in these technologies to maximize their benefits to students.

What is the issue and why is it important? What if SREB states do not make adequate progress on this issue?

The explosion in mobile technology and social networking has paralleled a rapid growth in educational technology applications and technology-mediated instruction. In 2017, the Gartner Hype Cycle for Education tracked over fifty emergent education-related technologies in various stages of development and implementation. These technologies represented various applications, promising practices and enhanced methods which attempt to meet evolving expectations for information and learning systems and for engaging students more deeply in their learning.

As educational technology continues to develop as an integral part of the overall ecosystem of education, education leaders are required — as an essential part of the comprehensive review of their institutions' improvement strategy — to assess the degree to which emerging technologies can help them meet institutional goals, and therefore which they should consider adopting. Emerging technologies can include stand-alone tools or applications (such as ones designed for specific classrooms), as well as technology systems (such as learning management systems, content repositories, or content management systems). Either type could support online or traditional classrooms, but emerging technologies take time to implement properly. They require training, support, and integration with existing technology systems and instructional practices. As educational institutions strive to provide the best learning environment for their students, they continually seek up-to-date and engaging modes of instruction. This requires staying abreast of the most promising emerging educational technologies, while remaining appropriately skeptical until they prove themselves.

As educational institutions strive to provide the best learning environment for their students, they continually seek up-to-date and engaging modes of instruction.

Too many become yesterday's fad after costing institutions money they could not afford to lose, while others turn out to be beyond their capacity to implement effectively.

Key factors in adopting emerging technologies include:

- total cost of ownership
- effectiveness in the classroom
- comparison with similar tools to determine the best
- integration into teaching processes
- privacy and security of devices and data generated by new tools
- scalability and comprehensive implementation plans for widespread adoption
- compatibility and interoperability of devices with existing systems
- support for the new apps, operating systems, and devices
- support of system upgrades and potential conflicts with browsers or other applications
- accessibility for students with disabilities
- alignment with student outcome goals
- training for teachers, administrators
- support staff for effective use and evaluation

Sometimes implementing emerging technologies means undertaking structural changes in instructional design or in the instructional environment, and educational leaders need to take extra precaution. At that point, leaders need to ensure that the technologies they decide to implement will likely add value and improve the instructional process over the long term and therefore will be worthy of an investment of time, staff resources and funding that goes beyond the costs of the technology. The initial and recurring costs of updating or adding technology implementations strains state and institutional resources. But the costs of redesigning instruction go beyond the costs of the technology. Communication and collaboration among teachers and administrators plus reliable processes for the evaluation of new technologies, will enable schools and institutions to realize the benefits of emerging technologies while accounting for costs.

New Learning Models

Provide for more use of technology to create personalized, competency-based learning environments and delivery methods that allow students to demonstrate mastery of content at their own pace.

What is the issue and why is it important? What if SREB states do not make adequate progress on this issue?

More schools and colleges are seeking new and innovative learning models to provide students with greater engagement, flexibility and control of their learning experience. Some have linked new technology applications to older learning models to create breakthrough innovations:

- In competency-based education, students move through a course at their own pace as they master pre-determined competencies. Course length is not defined by a calendar and is not measured by Carnegie units. Technology tools provide timely assessment to students on where they stand on competencies and what they need to complete.
- Adaptive learning is based on learning that is sequenced by technology tools. These tools recognize when students have or have not met competencies and present learning materials accordingly — stressing unlearned concepts as needed and moving ahead as appropriate. It incorporates mastery learning because the student does not move forward until s/he has mastered the concepts, leaving no gaps in knowledge.
- Personalized learning is a student-centric model that provides more student choice for evidence of learning, often incorporating adaptive, mastery, and competency-based learning.

While high school graduation rates have improved nationwide, national assessments of college readiness show that far too many graduates are not ready for college and careers. Education leaders have focused on new learning models for high schools that build competencies and skill sets for college and career readiness by focusing on deeper, more engaging learning. Teaching to a classroom of students and focusing on the elusive "average" student is no longer effective. With modern teaching tools — computer diagnostic exams, formative assessments, and adaptive content to meet individual students' needs — teachers can foster more individualized approaches to teaching that can result in deeper learning and better student engagement. Engaged students are more likely to persist in educational tasks until they reach their goal.

College faculty are serious about exploring new models. Examples include prior learning assessment, self-paced learning, module-based delivery, flipped classrooms, game-based learning, use of artificial intelligence for tutoring, virtual reality, augmented reality and mixed reality. Formats designed to allow students more control over pacing, learning style and how they express their learning could provide them with affordable options that honor their prior learning as well as adapt to their specific needs. These formats focus on outcomes rather than time spent in the classroom.

Barriers to implementation, such as policies, regulations, and accreditation guidelines, need to be matched to the promise of these innovations. As with all academic programs, these new learning models must prove themselves with evidence-based research and be developed with appropriate rigor and quality. They will likely undergo continuous cycles of improvement as they mature to meet the high educational demands of the future, as well as student and employer expectations. But waiting for significant studies to determine the effectiveness of new models should not hinder institutions from experimenting, so long as they monitor effectiveness and report results.

The goal for new learning models is to increase retention among traditional students and facilitate college completion for the non-traditional students who have some college but no degree. Without new learning models, a college degree will remain unattainable for the 29 million Americans qualified to enter college, but for whom family, work and socio-economic circumstances preclude completion of a traditional program. For K-12 education, these models can be the difference between a high school dropout and a student well-prepared for college or career.

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Student Digital Literacy

Ensure students have the fundamental skill sets they need from the early grades through college to be fully engaged in technology-mediated learning opportunities to develop lifelong fluencies for success in a digital world.

What is the issue and why is it important? What if SREB states do not make adequate progress on this issue?

Literacy means not only the ability to read and write, but also to be fluent in a world of digital information. Digitally literate citizens have the knowledge and skills to access, evaluate, manipulate, utilize, design and develop information — and ultimately to learn from the digital environment. While educators have known for some time that students needed these skills, it is only recently that state agencies have recognized their responsibility to ensure that students at all levels learn to comprehend and communicate digital information at varying levels throughout their education. This responsibility means laying the groundwork for digital literacy in the very early grades.

Digital literacy skills are critical for an informed and productive citizenry, as a gateway to social, political, educational and economic participation. Digital literacy belongs beside reading, writing and math as a fundamental skill in the modern world.

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Schools need to adopt a digital literacy curriculum beginning in the elementary grades to ensure that students develop the necessary skills in a stepwise, systematic way.

A 2016 Stanford University study of nearly 8,000 secondary school and college students in 12 states makes clear that these skills are unlikely to develop on their own. It shows that most students cannot distinguish between an advertisement and a news article or determine the source of the information. Eighty percent of middle graders thought an ad marked as "sponsored content" was a legitimate news article. High school students couldn't discern between fake news accounts and actual news sources on social media. College students were not able to evaluate the credibility of a website or wade through contradictory results of a Google search to find reliable and accurate information.

Yet, more and more, employers require digital literacy as an employment skill, and the Pew Research Center recognizes it as one of the foundational tools of life-long learning and success. Digital literacy is often correlated with career achievement and productivity. The future competitiveness of American companies in the knowledge-based global economy could well depend upon the digital fluency of our workforce. Research shows that a lack of digital literacy skills contributes to a "digital divide." People with lower incomes, the elderly, the less-educated, the unemployed, and people with disabilities have less access to digital communications — and therefore less opportunity to build skills related to the technology. Many of these people are already marginalized; their digital illiteracy only adds to their isolation because they are unable to access support networks, government services, political processes, or economic opportunities.

Digital literacy competencies must become an everyday part of the learning experience of school children; these skills should be integrated into instruction at all levels. Organizations such as P21.org and ISTE (International Society for Technology in Education) have undertaken significant work. The P21 framework for 21st century learning provides information and media on the topic and it has laid out technology literacy skills. ISTE has developed student standards that incorporate digital literacy to help students thrive in an ever-evolving technological world. Each of ISTE's seven standards (empowered learner, digital citizen, knowledge constructor, innovative designer, computational thinker, creative communicator, and global collaborator) include four indicators used in measuring achievement of the standards. P21 and ISTE have laid the groundwork for students' incremental digital literacy skills. States should adopt PK-20 digital literacy standards and incorporate the required skills into the curriculum so that students graduate with the digital skills they need to enter the workforce.

For postsecondary education, the Association for College and Research Libraries (ACRL, a division of the American Library Association) has developed a framework for information literacy in higher education. ACRL has also developed a free information literacy toolkit to help individuals and groups understand and implement the framework. Marshall University librarians have designed an original literacy assessment based on the ACRL rubric and Degree Qualifications Profile from the Lumina Pathways project, with specific skill sets for associate, bachelor's and graduate degrees.

Technology Security

Provide adequate resources to protect information and information systems from unauthorized access, use, disclosure, disruption, modification, or destruction while keeping them highly available for student learning and education administration.

What is the issue and why is it important? What if SREB states do not make adequate progress on this issue?

Technology security is a global issue for education, government, military, business and private individuals. Today all technology systems, from learning management systems to institutional networks, access points, wi-fi networks, enterprise resource planning, and student information systems, need technology security extending from the user level to the network, institution and beyond, including vendor partners. More schools and institutions now use third-party vendor networks, cloud-based services and online educational tools than ever before, which makes them vulnerable to external access. If they have multiple devices and sensors (known as the Internet of Things or IOT) connected to their network, they create additional risk of unauthorized network access. More than 72 percent of IOT devices are hackable and expose risks for unauthorized access to larger systems.

Security risks from breaches of network or individual systems, whether from hacking, malware, ransomware, third-party system vulnerabilities or mistakes by employees, have heightened public concern over the safety of their personal information. Malicious emails, generally disguised as trustworthy — known as Phishing attacks — have increased exponentially. Hackers use such attacks to obtain login credentials and access to technology systems, and hold systems and data for ransom for untraceable bitcoin.

State agencies, schools and colleges should create multiple layers of security to ensure that technology equipment, software, and security services are up-to-date and available at all times. They should provide user education to their constituents and update it regularly. If states fail to support strong policies on technology security, or to provide adequate training and sustainable funding, students and staff will eventually suffer the loss or corruption of private information and institutions will lose operational information and services, in addition to the related costs of identity theft protection and lawsuits.

One SREB state recommends the following practices to ensure technology security:

- Do the Basics – To reduce number of incidences and exposure, promote awareness of basic, but extremely important, security and privacy policies. Use strong passwords and change them often. Keep a password, PIN or passcode on all devices. Whenever staff depart, change security entry codes and locks for buildings or rooms containing sensitive information. Remove old or unused user accounts from all systems and keep up with employee training and communications.
- Keep Accurate and Updated Data Inventories – Inventory all records systems (e.g., electronic and paper storage media) to identify those containing personal information. This will help determine what level of protection is necessary for each system, and what priority it has. Classify information in each paper and electronic records system according to sensitivity and the organizational risk if that information was accidentally or intentionally accessed by anyone without a need to know. A rule of thumb to identify sensitivity and confidentiality in an organization would be to reflect on whether the data could be posted on a public website or viewed by anyone making an open records request.
- Have a Healthy Data Diet – Collect the minimum amount of personal information necessary to accomplish the educational purposes and retain it for the minimum time necessary.
- Intruder Detection – Use appropriate physical and technological safeguards, such as video surveillance or alarms, to protect personal information, particularly higher-risk information, in paper and electronic records.
- Vendor Management – Require service providers and partners who handle personal information on behalf of the organization to follow the institution's security policies and procedures as well as state and federal laws (such as COPPA, FERPA). Develop security protocols for inclusion in contracts.
- Encryption – For devices used to host or access high-risk information, use data encryption in combination with host protection and access control. Pay particular attention to protecting high-risk personal information on laptops and mobile storage devices (e.g., tablets, smartphones, CDs, thumb drives).
- Records Retention – Dispose of records and equipment containing protected information in a secure manner.
- Document Your Security – Document security plans and revise annually or whenever there is a material change in practices for data delivery, storage and access.

Digital Accessibility

Make digital content and sites accessible to students with disabilities, in compliance with the Americans with Disabilities Act and other regulatory requirements, through design, professional training and instructional practices.

What is the issue and why is it important? What if SREB states do not make adequate progress on this issue?

Accessibility of digital content and websites is now a critical issue in education technology because online and blended programs in secondary and postsecondary classrooms have proliferated, and digital content has grown substantially. Students with visual, auditory, motor, or cognitive impairments have the right to access this digital content and online instruction in an equally effective way as students without disabilities. Yet, schools and colleges often have not made digital content and online instruction as accessible to these students as is required by law.

According to the U.S. Department of Education, 13 percent of public school students and 11 percent of postsecondary students have disabilities. These students often need assistive technologies, such as screen readers, braille, speech-to-text or navigation devices to access digital content — all of which are readily available. Federal and state laws require equal opportunity and equal access for everyone, regardless of disability. Section 504 and 508 of the Rehabilitation Act of 1973 and Title II and Title III of the Americans with Disabilities Act of 1990 regulate institutions and schools. Some states have their own laws as well. Most recently, the Every Student Succeeds Act and amendments to the Higher Education Opportunity Act have addressed the need for accessible content. They also stress the benefits of building accessibility into the design of instructional materials so they are functional for everyone, using a principle known as "universal design for learning." In January 2017, the federal government adopted WCAG 2.0 Level AA as the official standard for Section 508 of the ADA, and federal agencies must comply with the standard by January 2018. This standard for accessibility was developed by the World Wide Web Consortium (W3C) and is accepted internationally.

Often faculty members create online course components without accounting for students with disabilities. When they are notified they have a student with a disability enrolled in a class, they have to make last-minute modifications to course content, and their students are often short-changed with less-than-standard accommodations. Federal policy and guidance directs educational leaders to address digital accessibility at every opportunity, but too many institutions do not make their digital content and websites accessible. When they deny students with disabilities equal access under the law, they risk law suits from the Department of Justice or the Department of Education, Office of Civil Rights. Students, disability organizations (such as the National Federation for the Blind), and individual citizens can file complaints and the responsible federal agencies are required to investigate.

While federal laws clearly indicate that educational entities are responsible for the accessibility of the materials they purchase, many publishers and other vendors have not produced fully supportive accessible materials. Faculty who are not alert often purchase inappropriate materials for use online, without regard to applicable accessibility laws. To overcome this shortcoming, SREB states need accessibility training, legal compliance awareness, improved communication, clarification on purchasing policy, and vendor and technology support.

Accessible content and universal design for learning benefit not just disabled students but all learners, especially English language learners and students with different learning styles or learning disabilities.

Educational agencies, schools and institutions need to have a comprehensive accessibility plan. These plans should include acceptable practices, a communication plan, training, and an evaluation process to ensure that policies are followed. Agencies should use purchasing contract language that requires a voluntary product accessibility statement (VPAT) and that addresses the consequences for the vendor if materials and services purchased are not accessible. Accessible content and universal design for learning benefit not just disabled students but all learners, especially English language learners and students with different learning styles or learning disabilities. Accessible content is both a legal and an ethical obligation.

Policy

Maintain regular state-level review of technology-related legislation and policies on education standards, access and infrastructure to ensure that these policies are adequate, necessary, aligned and integrated.

What is the issue and why is it important? What if SREB states do not make adequate progress on this issue?

Maintaining a sound policy framework for education technology means ensuring that it supports relevant standards, strong accountability systems, equitable access to education, and practices that allow students to make continuous educational progress. It is also critical to align these policies with state and federal laws and regulations, and with system-wide or district-wide policies. When local or state policies are not aligned with federal guidelines, schools and districts inevitably become confused, make mistakes, and repeat work unnecessarily — or leave work undone. These errors exacerbate the strain on schools and agencies that are already understaffed and underfunded.

Well-meaning but unnecessary policies can, and often do, present barriers to innovative learning models and emerging technology tools.

Educational technologies change quickly, and policies on technology infrastructure and data systems must be flexible enough to incorporate new tools and practices — yet secure enough to ensure the privacy of the data they contain. Well-meaning but unnecessary policies can, and often do, present barriers to innovative learning models and emerging technology tools.

For example, competency-based education, and personalized, adaptive, and self-paced learning models in general, are often inhibited by policies that award credit based on time spent in a course (referred to as "seat-time") rather than mastery of course content. They are also thwarted by financial aid models that count the number of academic terms by the calendar (and pay accordingly) rather than by the completion of modules. As technology systems and various digital tools provide other ways to account for academic progress, the related policies need to be flexible enough to support these innovations. Education reform and policy change must go hand in hand.

Schools and colleges generate more data than they can readily use, and they need policies that protect students' security and privacy. However, restrictive policies about what information to collect, how to collect and use and transmit it, and how long to keep it can inhibit policy analysis. Researchers need access to rich data sets to conduct longitudinal studies of success and of equitable access. These data need to be linked from K-12 to higher education so that researchers can study the long-term effectiveness of technology innovations and of new digital learning models in promoting deeper learning.

Policies are only as good as their implementation. Both the University of California System and the University of California at Berkeley had strong policies on how faculty and staff were to implement their online courses so that these courses would be fully accessible for students with disabilities. But having adequate, aligned policies on digital accessibility was not enough. The university did not have an enforcement mechanism, and few faculty followed the policy. Potential students who could not access the university's online courses filed lawsuits and engaged the university in drawn-out negotiations. State and local agencies need policies that are more than suggestions. They need to enforce them if they expect them to be effective.

Higher education institutions in SREB states that are engaged in distance learning have an opportunity to align themselves with a strong new regional and nationwide policy on distance education. A section of the 2010 revision to the Higher Education Opportunity Act focuses on the quality and integrity of distance learning programs. Several organizations, including SREB, worked toward informed, collaborative policies that would align with the Act. Currently, the four regional compacts — Southern Regional Education Board, New England Board of Higher Education, Midwestern Higher Education Commission, and Western Interstate Cooperative for Higher Education — work with a national council to oversee distance education authorization and nationwide quality standards. This collaboration provides strong policy to promote quality, reciprocity and alignment — with accountability to both students and institutions.

10 Issues in Educational Technology Related Briefs

Data Privacy and Security

Expanding Accessibility to Digital Spaces Through Improved Policy and Practice

Emerging Technologies and New Learning Models That Engage Students

Coming Soon

Student Digital Literacy and Bandwidth

Educational Data Systems and Predictive Analytics

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