

**ESSA,
EDTECH
AND THE
FUTURE OF
EDUCATION**

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INTRODUCTION >>>>

The Every Student Succeeds Act (ESSA) is now the law of the land.

Replacing No Child Left Behind (NCLB), the reauthorization of the Elementary and Secondary Education Act (ESEA) does more than realign the federal government's role in education. It also elevates technology's use in education in unprecedented ways. These changes require new thinking from leaders at the school, district and state level.

We're releasing this handbook as states prepare their initial plans for state accountability requirements and other provisions of the new law. At the time of this writing, many states appear to be gravitating toward familiar models, albeit with considerable improvements in data, targeted interventions and instructional strategies that reflect the law's emphasis on flexibility and local control. But there are opportunities for more dramatic transitions in what accountability means and how it is measured in schools, as well as in new models of teaching and learning. Technology plays a vital role in these areas, and ESSA provides new ways to help states and districts make these visions a reality.

Although a new administration brings new priorities and potential funding changes, ESSA was passed with bipartisan support, and its underlying provisions and priorities should remain in place. We will continue to monitor developments and provide updates as needed.

In the face of change and uncertainty, it's all the more important to step back and rethink our overall vision of public education. This is our opportunity to prioritize technology in ways that truly transform teaching and learning. But it is only that — an opportunity. ESSA gives state and district leaders the responsibility to think beyond mandates and create a broader vision for how technology is used in their schools, a vision we hope this handbook will help accomplish.



Dr. Kecia Ray

Dr. Kecia Ray, Ed.D.
Executive Director, Center for Digital Education



ESSA: THE OPPORTU

Several years ago, district leaders in Charlottesville, Va., had access to student data from the Virginia Department of Education. Teachers, however, did not. That changed when the 4,210-student system deployed its own data warehouse, a major investment for smaller districts. Now, with historical data and built-in assessment tools at their fingertips, Charlottesville teachers can create detailed student profiles and better understand each student's academic progress.

"We had to make some sacrifices to have this," says Rosa Atkins, superintendent of Charlottesville City Schools. "But over the years, we found that our students achieve at higher levels when we respond in real time to their performance and achievement."

Halfway across the country, Nebraska's largest school district is working toward blended and personalized learning initiatives. Lincoln Public Schools is also in the early planning stages for a new high school, and is considering options for a heavy technology focus. But for these plans to bear fruit, district leaders want to ensure all students, including a growing

immigrant and refugee population, have access to the internet outside of school.

"The 21st century is already 16 percent gone," says Stephen Joel, superintendent of the 40,000-student district. "How do we get 24/7 access to the 10 to 12 percent of our kids who don't have internet access so we can take away the inequity that exists there?"

These are examples of two very different districts with distinct technology priorities that, thanks to ESSA and the flexibility afforded under the new law, can soon prioritize digital learning tools in new ways. Along with the dramatic shift of oversight and accountability from the federal government to the states, the new law supports sweeping changes in how districts use — and potentially pay for — education technology.

ESSA gives states the right to define educational standards for their schools and flexibility to determine how students meet them. The law also authorizes new funding streams that can potentially help states and districts invest in technology to support everything from personalized learning and enhanced digital content to advanced assessment and data



“Technology can be very useful in the classroom, but our whole infrastructure is what really sets up the foundation for an effective learning experience.”

- Rosa Atkins, Superintendent,
Charlottesville City Schools

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analytics — as well as the staff development needed to put these tools to use.

Put simply, ESSA provides states and districts with an opportunity to transform teaching and learning in ways that better meet the specific needs of their own communities and children — and to ensure technology is part of the overall vision for education. Beyond flexibility, the law provides space and encouragement to innovate.

“ESSA components call out our schools’ innovative practices and identifies the essential role of library media programs to support digital literacy programming,” says Janice Mertes, assistant director of Instructional Media and Technology/Digital Learning for the Wisconsin Department of Public Instruction (DPI).

Taking advantage of these opportunities requires understanding the law’s components and recognizing which strategies and models receive special emphasis in the federal priorities, including personalized and blended learning, Universal Design for Learning (UDL) and high-quality professional development. It also requires involving technology leaders

— both at the state level and representatives from tech-forward districts — in broader strategic planning. This handbook offers states and districts direction on how to take advantage of these new opportunities and suggestions on how to integrate them with a broader strategic vision to guide teaching and learning.

It’s vital for state and district leaders to think of technology as something greater than the sum of a series of disconnected initiatives. This was the intent of ESSA’s framers, and it has borne out in practice among districts that have made thoughtful investments in technology.

As Charlottesville City Schools built its data warehouse and related applications, for example, district leaders worked to ensure that functions and tools weren’t fragmented. The district’s digital intelligence strategy zeros in on systems, including how they are used, how they communicate with each other, and, importantly, “how nimble those systems are in responding to day-to-day questions,” Atkins says. “Technology can be very useful in the classroom. But our whole infrastructure is what really sets up the foundation for an effective learning experience.”

ESSA: THE BASICS

ESSA represents a sea change in federal education policy, shifting oversight and responsibility to states and emphasizing flexibility.

As this report was published, state education agencies (SEAs) were developing formal plans detailing what their accountability systems will look like once the law goes into full effect for the 2017-18 school year; states must file their ESSA plans by April or September. In March 2017, Congress invoked the Congressional Review Act, which allowed them to overturn regulations made by the previous administration. This means the Department of Education must now come up with new regulations for guidance. The dates for submissions of plans have not changed, and states are still expected to turn in their accountability plans no later than September 2017. While accountability, data collection and reporting provisions are currently top of mind, ESSA has even more far-reaching implications regarding how states and districts support teaching and learning.



The Law:

1 Places broader emphasis on academic improvement for all students. With a broader definition of what achievement means, and an emphasis on schoolwide improvements and enrichment, it's easier to use federal funds to deliver a “high-quality” education to all students — so long as underserved subgroups are addressed and/or prioritized.

2 Eliminates prescriptive intervention models for low-performing schools and schools with underperforming subgroups, instead emphasizing locally designed interventions.

3 Improves support for all types of high-quality professional development for all employees (teachers, principals, support personnel and administrators).

Equally important, technology is no longer treated as a compartmentalized component of the new law, as it was in NCLB's Enhancing Education Through Technology (EETT) grant program, which was curtailed in 2011. Instead, technology is woven throughout the legislation, including in such critical areas as assessment, accountability and school improvement. For example, ESSA:

- ✓ **Emphasizes new models of learning and recognizes technology's role in making them a reality.** For the first time, definitions for concepts such as “digital learning” and “blended learning” are enshrined in legislation.
- ✓ **Elevates technology as a valid — and at times, vital — solution** for a range of educational needs.
- ✓ **Provides states and districts with flexibility** to include technology in a range of initiatives and student supports.
- ✓ **Explicitly supports professional development** and capacity building for technology and the use and safeguarding of data.

Digital Learning Defined

ESSA defines digital learning as “any instructional practice that effectively uses technology to strengthen a student's learning experience and encompasses a wide spectrum of tools and practices.” This can include:

- » Interactive resources, digital content, software or simulations
- » Access to online databases and primary-source documents
- » Use of data and information to personalize learning and provide targeted supplementary instruction
- » Online and computer-based assessments
- » Learning environments that promote collaboration and communication
- » Hybrid or blended learning models
- » Access to online courses for students in rural areas

- ✓ **Encourages the use of technology in comprehensive approaches** to teaching and learning rather than siloed, technology-centered initiatives.

ESSA is a signal to elevate technology in planning at all levels — and an opportunity for creativity and innovation. “There's a much larger focus not only on broadly giving authority for innovation, but also specifically calling out support for tools that will lead to innovation,” says Richard Culatta, a former U.S. Department of Education official who helped develop the technology provisions of ESSA.



SIMPLIFYING INFRASTRUCTURE TO SUPPORT EDTECH

How **Nimble Storage** helps schools leverage ESSA funds for storage modernization

School districts across the U.S. can take advantage of the flexibility ESSA provides to implement and expand technology initiatives and improve student achievement. But students won't reap the benefits if their district's IT infrastructure can't keep pace.

Infrastructure complexity is often the culprit behind technology disruptions that impede classroom learning.

Nimble Storage's InfoSight allows IT departments to continuously monitor their infrastructure and use analytics to prevent these issues. Schools can use All Flash, Adaptive (Hybrid) Flash or combine the two to consolidate and scale, while providing fast, reliable access to learning resources. With All Flash, schools can achieve unmatched performance, scalability and simplicity at 33% to 66% lower total cost of ownership than other All Flash arrays.

Nimble also offers SmartStack™ — a converged infrastructure solution with Cisco that saves organizations \$385,000 over a period of three years by reducing time and resources, including vendor selection activities, implementation labor, servers, storage, networking and maintenance.

Finally, Nimble simplifies schools' storage, creating a more predictable and flexible environment. Through all-inclusive licensing, flat support pricing and guaranteed satisfaction, Nimble takes the angst out of modernizing infrastructure.

INDUSTRY RECOGNITION:

- Nimble's Net Promoter Score (NPS) is top in the storage industry, highlighting a deep dedication to customer satisfaction.
- Nimble was recently recognized as a Leader in the 2016 Gartner Magic Quadrant for General-Purpose Disk Arrays.
- Nimble was awarded the 2016 CRN Tech Innovator accolade for the AF1000 All Flash array, which was recognized for being the most innovative storage product in the channel.





ESSA: A CLOSER LOOK

One of the hallmarks of ESSA is the multiple funding streams that states and districts can use to support technology.

However, it's important to recognize that while ESSA authorizes Congress to allocate funding for the multiple funding streams detailed in the legislation, it is lawmakers who will ultimately determine how much funding is actually provided as part of the annual budget allocation process.

Regardless of funding levels, these provisions have implications far beyond ESSA-related planning. The law's priorities can help states and districts develop broader strategic plans to leverage technology in ways that advance digital learning, data use and staff capacity to improve overall teaching and learning.

Title IV **STUDENT SUPPORT AND** **ACADEMIC ENRICHMENT** **GRANT PROGRAM (SSAEG)**

The first dedicated federal source of funding for education technology through the U.S. Department of Education since funding for NCLB's Title II Enhancing Education Through Technology (EETT) grant program ended in 2011, SSAEG is a Title IV block grant program funded through the repeal and consolidation of dozens of NCLB-era programs. Among the highlights:

- ✓ **ESSA authorizes up to \$1.65 billion for SSAEG grants in FY 2017, followed by up to \$1.6 billion annually in FY 2018-2020.** However, it's up to Congress to allocate funding each year, so it's unclear how much of the amount authorized under the law will be available in the form of grants.
- ✓ **Districts can use up to 60 percent of grant funding for innovative education technology strategies.** When districts receive grants exceeding \$30,000, the remaining 40 percent must be divided evenly between activities that help students become more well-rounded (20 percent) and those that contribute to student health and safety (20 percent), although technology can also play roles in both areas.
- ✓ **No more than 15 percent of grant funding can be dedicated to technology infrastructure.** In practice, this will likely encourage states and districts to think beyond providing devices and connectivity and instead develop richer, more instructionally focused technology plans, as well as more technology-focused professional learning opportunities.

Title II **FUNDING FOR PROFESSIONAL** **DEVELOPMENT**

Title II of ESSA authorizes Congress to potentially fund up to \$2.29 billion for professional development, 95 percent of which would be reserved for districts. Unlike NCLB, ESSA funding for professional development focuses on technology and the use of data. Technology provisions also ensure Title II funds can be used to:

- 1 Support training for teachers, principals and other school leaders** to integrate technology into curriculum and instruction, including building capacity to deliver strategies such as blended and personalized learning.
- 2 Provide new set-aside funding** at the state level for school and district leader professional development, including up to 3 percent of funds that would otherwise be allocated for districts — an opportunity to help these leaders improve technology use in schools on a greater scale.
- 3 Recognize growing concerns** about student data privacy by including training for teachers and administrators. Specifically, the law emphasizes training to help teachers and school leaders better understand how to use data and protect student privacy by understanding what constitutes allowable uses of data in and outside of the classroom.

With ESSA's emphasis on flexibility and multiple funding streams, it's important to note that professional development also can be funded through streams beyond Title II, including the SSAEG grants mentioned previously.

5 STEPS TO PREPARE FOR DIGITAL LEARNING

ESSA provides opportunities for school districts to more fully transition to digital learning, but school leaders must be proactive. Use the following steps as a guide to set your district up for success.

1. GET BUY IN

Work with administrators such as superintendents, directors of curriculum and chief information officers to ensure funds are readily available. Arrange open meetings to seek feedback and encourage discourse among principals, teachers, parents and students before making a transition to digital learning. Lastly, build partnerships with community organizations to support off-campus learning by providing internet connectivity and safe spaces for students to complete online schoolwork.

2. PROVIDE TRAINING

All stakeholders need to be trained on new technologies and teaching and learning processes.

- **Teachers:** Prepare teachers to shift from analog to digital learning through professional development opportunities. Leverage ESSA funds to provide ongoing training.
- **Students:** Educate students on responsible device use and school policies to ensure they are successful digital citizens.
- **Parents:** Prepare parents to support online learning at home. This may mean providing student devices and software, as well as using a student information system to monitor learning progress.

3. INVEST IN CONTENT

Utilize ESSA funds to adopt high-quality digital content and create lesson plans to increase engagement and improve student achievement. Digital content should be easy to access and navigate.

4. CREATE A COLLABORATIVE ENVIRONMENT

Flexible learning spaces can foster collaboration, communication and creativity by removing physical barriers to student engagement. Large classroom displays, common tables and rolling chairs help create a 21st-century work environment.

5. REDUCE NETWORK DOWNTIME

The network is the foundation for digital learning. If the network is down, instructional time is severely impacted. District networks need to be re-architected to increase availability. Leverage E-rate, ESSA and other funding sources to implement flexibility, redundancy and resiliency. Ensure your network can:

- **Support personalized learning:** Open, adaptable networks that are software-defined-ready aid in the transition to personalized learning.
- **Scale with demand:** Bandwidth demands will increase as students consume more media-rich content. Anticipate that students will have more than one device and download more than one stream of content at a time.
- **Protect student data:** Don't let student data privacy concerns derail your digital learning transition — comprehensive policies and security technologies can help. Use encryption, authentication, VPN tunnels and other available tools as reasonable security measures.

BROCADE AND RUCKUS CAN HELP PREPARE YOUR NETWORK FOR THE SHIFT TO DIGITAL LEARNING.

To learn more, visit: www.ruckuswireless.com/solutions/primary-education



BROCADE



Title I **FLEXIBILITY**

ESSA gives states and districts latitude to address instructional needs for all students, as well as targeted subgroups, under Title I. This means states and districts have leeway to select the practices and tools — including technology — that work best for their specific student populations, families and educators.

Overall flexibility will help lower-performing schools tap a broader range of resources, including before- and after-school programs, career education and internship opportunities, and targeted technology-based interventions. “All of that is now going to be part of the conversation,” says Lincoln Public Schools Superintendent Joel.

Title I also provides new requirements and opportunities that could encourage states and districts to focus more deeply on technology as part of broader initiatives. For example, ESSA’s new assessment audit set aside, which offers SEAs grants to monitor the number and quality of assessments in use statewide, includes a mandatory technology needs assessment and other provisions that promote better use of student data.

“ESSA also emphasizes the need to support schools in the areas of data privacy, security

and digital citizenship,” says Mertes of the Wisconsin DPI. “The state ESSA plan provides a unique opportunity for collaboration between DPI and local school districts around professional learning and district exemplars to ensure secure, innovative learning environments for students.”

A New Strategy for Technology Planning

Together, ESSA’s funding streams and the flexibility afforded by Title I and other areas of the law encourage districts to think strategically about ways to use technology to:

- ✓ Personalize learning
- ✓ Discover, adapt and share high-quality educational resources
- ✓ Use technology effectively in the classroom, including for assessment and blended learning
- ✓ Implement school- and district-wide approaches to use technology to inform instruction, support teacher collaboration and personalize learning
- ✓ Offer professional development on the effective use of technology
- ✓ Provide students in rural and underserved areas with resources to take advantage of digital learning, including online courses

Making "Leave No Child Offline" a Reality



**"It's opened up
the world of
education for our
students. If you're
not connected,
it's difficult to be
successful."**

Dr. Darryl Adams, Former
Superintendent, Coachella Valley
Unified School District

When Dr. Darryl Adams joined Coachella Valley Unified School District (CVUSD) as the superintendent in 2011, few of his students had access to computers or the internet at home and at school.

The district — which covers more than 1,200 square miles in California — serves a low-income population, with 100 percent of its students receiving free or reduced-priced lunches.

"Our kids face many socioeconomic challenges, but I wanted to make sure they could learn the way their more affluent counterparts in other districts were learning," says now former Superintendent Adams, who retired in 2016. "For that, they needed to have access to computing devices and the internet."

Adams coordinated an effort to place a general obligation technology bond on the ballot, which would ensure every student had a web-enabled device and access to the internet. Sixty-seven percent of the community voted in favor of the bond.

But even with mobile devices in hand, Coachella Valley's location made internet connectivity a challenge. To remedy this, Adams and his team initiated the Wi-Fi on Wheels program, which places routers on school buses and equips them with a ruggedized, secure mobile network from Cradlepoint so students can access the internet while traveling to and from school.

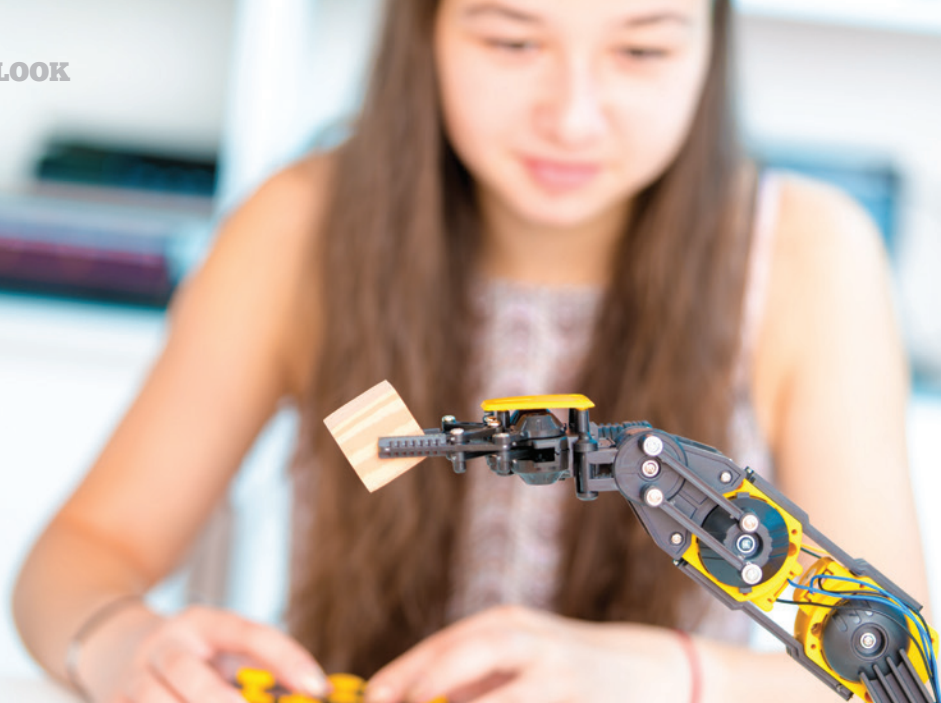
Since implementation, the district's graduation rate, which hovered around 70 percent when Adams joined CVUSD, now exceeds the national level at 84 percent.

"It's opened up the world of education for our students," says Adams. "If you're not connected, it's difficult to be successful."

Several other school districts, including Miami-Dade County Public Schools in Florida and Kanawha County Schools in West Virginia, have implemented bus-based mobile Wi-Fi from Cradlepoint. And with ESSA, mobile Wi-Fi is now within the grasp of more districts. Because up to 60 percent of ESSA grant funds can be used for innovative technology strategies, schools and districts can invest in providing students secure internet access while on the move, extending learning beyond the confines of classroom walls.



For more information, visit: www.cradlepoint.com/K-12



While ESSA emphasizes whole-school instruction and improvement, leaders still must prioritize the schools with the greatest needs, including high-poverty schools, those targeted for improvement and those deemed “persistently dangerous.” School leaders should look at technology through the lens of whether it will help:

- ✓ Provide all students with access to a well-rounded education
- ✓ Improve school conditions for learning
- ✓ Advance academic achievement, growth and digital literacy among all students

District leaders can take advantage of these broad parameters and use the law’s rules, requirements and funding opportunities to achieve broader strategic technology goals. Among a few examples:

1 Use requirements for data collection and reporting as an opportunity to bring data into the classroom and build teacher capacity. New accountability requirements for data collection and reporting are backed by funding streams to help build state and district capacity. Don’t miss the opportunity to use this money to integrate technology throughout districts,

extend data warehouses into the classroom and train teachers. The state assessment components of Title I, for example, can support the use of assessment and data in the classroom as well as for reporting purposes.

2 Use technology to provide targeted supports. ESSA allows states and districts to use technology as a tool for targeted programs, such as supports for migratory students.

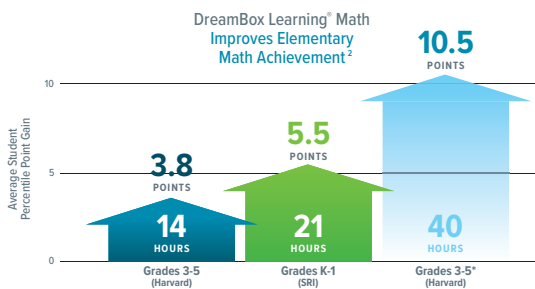
3 Consider the role of technology in school improvement plans. Instead of following prescribed turnaround models, ESSA allows states and districts to design targeted improvement plans to better reflect the specific needs of their students and schools. Digital tools can play a significant role in these plans.

4 Focus on technology priorities as a tool to improve instruction for all students. Support, improvement and enrichment programs can incorporate technology and specific components of ESSA. The National Education Technology Plan (NETP) and other resources can provide a roadmap on ways to incorporate new technology.

DreamBox Learning's Mission: Increase Math Learning Outcomes for All Students

ESSA is all about giving schools flexibility to improve student outcomes, and technology holds great potential for making that happen. But districts need to invest in technologies that are proven to make a difference.

A 2016 study conducted by the Center for Education Policy Research at Harvard University suggests students using DreamBox Learning® Math for 14 hours increased achievement on Northwest Evaluation Association MAP assessments by nearly 4 percentile points.¹



DreamBox Learning delivers student success and supports instructional practice. DreamBox adapts to students' actions to meet them at the right level, and responds to each learner — within lessons and between lessons — with personalized instruction that promotes student decision-making and strategy development. It also provides educators with unique insights to help them understand how learners are thinking, responding to and understanding the math so they can more effectively support students' learning progress while meeting goals and state standards.



To learn more, visit: dreambox.com/CDE

“The kids are motivated; we like the quick access to data; and we like that it helps us to ‘fill in gaps’ in conceptual understanding.”

Julie Jameson Benay, Principal, Malletts Bay School

The results speak for themselves:

- ✓ **Sioux Center High School | Sioux Center, Iowa**
In less than six months, more than half of the students enrolled in ELL Math made gains between two and three years' worth of math learning.³
- ✓ **Carlton Innovation School | Salem, Massachusetts**
Between the 2013 and 2014 Massachusetts Comprehensive Assessment System (MCAS) testing periods, Carlton Innovation School experienced a school-wide increase of 17 percent in math proficiency.⁴
- ✓ **S. L. Mason Elementary School | Valdosta City Schools, Georgia**
Third- and fifth-grade students experienced learning gains greater than 10 percentile points in one year, outpacing gains made at any other elementary school in the district.⁵

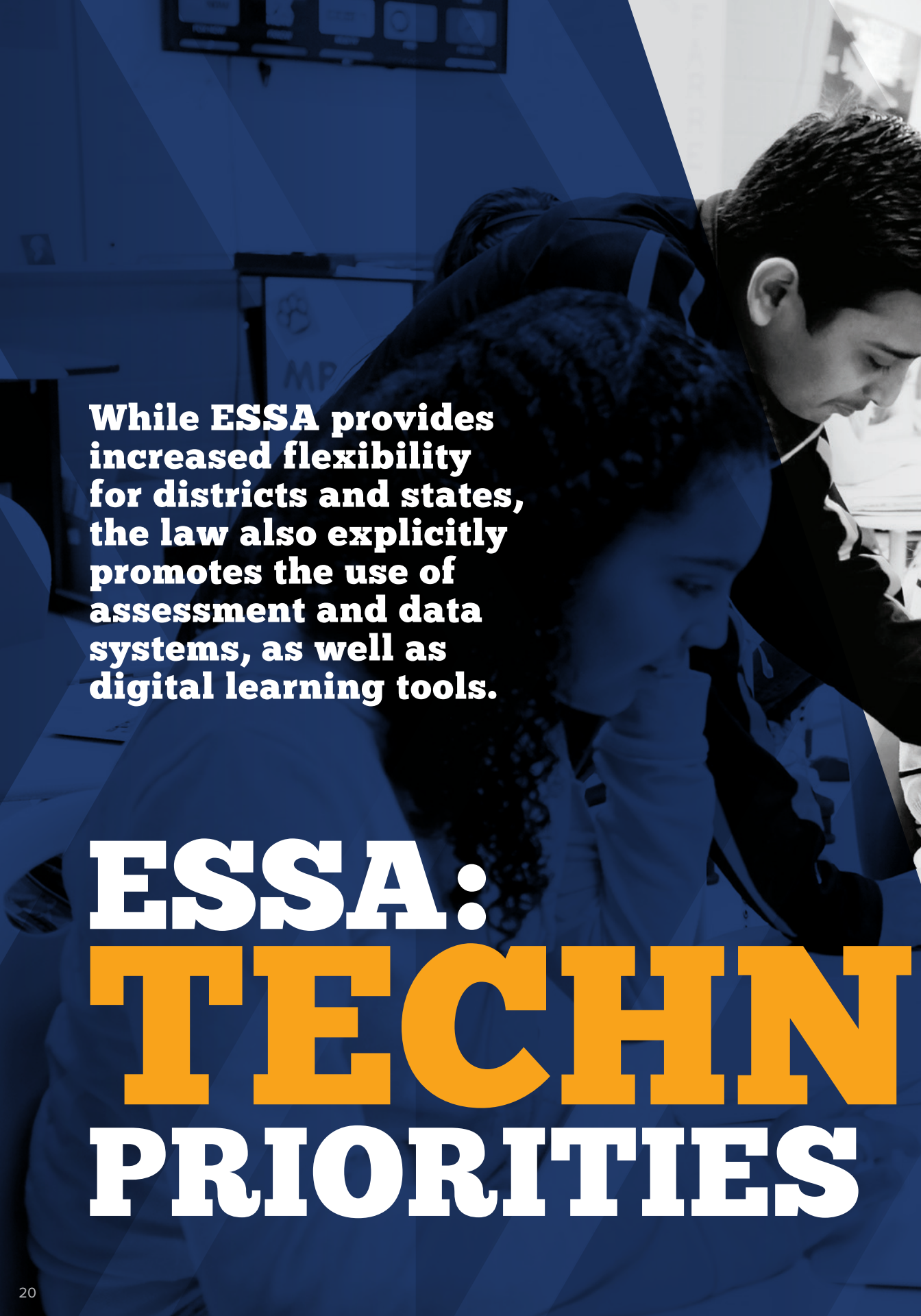
1. <http://www.dreambox.com/research>

2. Results for Grades 3-5 were reported by Harvard University's Personalized Learning Collaborative (PLC) at Center for Education Policy Research (CEPR), 2016. Results for Grades K-1 were reported from SRI, 2010. Improvement was measured using NWEA MAP assessments. Both reports are available at www.dreambox.com. "Harvard analyses suggest the observed average improvement of students using DreamBox is a linear relationship "and that achievement gains continue to rise at the same rate as DreamBox usage increases."

3. <http://www.dreambox.com/case-studies/ell-students-back-on-track-for-graduation>

4. <http://www.dreambox.com/case-studies/i7-increase-math-proficiency>

5. <http://www.dreambox.com/case-studies/making-an-impact-with-rti>



While ESSA provides increased flexibility for districts and states, the law also explicitly promotes the use of assessment and data systems, as well as digital learning tools.

ESSA: **TECHN** **PRIORITIES**



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Increased Use of Data for Reporting and Accountability

While ESSA largely shifts oversight and accountability from the federal government to the states, it actually increases federal compliance requirements around data and reporting. Data use is “the least flexible area of the law,” says Maureen Wentworth, director of education data and information systems at the Council of Chief State School Officers (CCSSO).

The law requires districts to collect and disseminate additional measures and data, including a variety of non-academic indicators (see “New ESSA Data Requirements” to the right). At the state level, this includes improving dashboards and other public reporting of information. ESSA also charges districts to ensure the quality of data and develop new expertise and capacity to capture, analyze and share student information. It calls for training teachers and leaders to review assessment results and make use of the data, as well as for the allocation of technology and personnel to administer assessments.

While states have, in most cases, developed effective longitudinal data systems capable of meeting the law’s new requirements, district capacity varies. Some districts have invested in data warehouses, while others have not. ESSA’s emphasis on the use of high-quality data will likely prompt more districts to use the law’s new funding opportunities for this purpose.

CoSN’s *Online Assessment: From Readiness to Opportunity and Online Planning Assessment Tool* (cosn.org/assessment) provide guidance to help districts and schools develop effective online assessment strategies and offer examples of best practices.

New ESSA Data Requirements

Subgroups »

ESSA requires reporting for new subgroups of vulnerable students, including foster children, homeless students and students from military families. It also eliminates “super subgroups,” which combine smaller groups of disadvantaged students for accountability reporting.

School-level data »

ESSA requires each school to report per-pupil expenditures.

Long-term English Language Learners »

States and districts must identify the number of ELL students who have attended school in the same district for five years without becoming proficient in English.

School climate factors »

In response to criticism that NCLB focused too much on test scores, ESSA adds new in- and out-of-classroom factors such as qualified teachers, attendance and discipline.

Postsecondary enrollment »

These statistics must be reported on school report cards for the first time.

Cross-tabulation »

Different types of academic data must be presented in ways in which they can be cross-referenced to identify trends.

Transparency »

ESSA requires schools to report more information on report cards.

Data literacy and privacy »

ESSA allows states and districts to use federal Title II funds to train educators on how to use and safeguard data.

“You can't personalize learning at scale without (implementing) a robust data system and equipping educators with dashboards to help them quickly understand where people are.”

- Reg Leichty, Advisor on ESSA to CoSN

As one of the law's framers, Culatta argues that states and districts need to prioritize a “focus on design” that helps teachers leverage existing investments in data and assessment systems to collect, analyze and use information about individual student progress at what the Gates Foundation and others have called “the speed of teaching.”

Personalized and Blended Learning

ESSA makes specific reference to blended learning. “Just calling it out is a big thing,” says Culatta. In the absence of clear definitions in NCLB, state and district leaders often questioned whether they could use federal funding to test or support blended or personalized learning initiatives. However, ESSA's overarching priorities make a strong case for implementing these approaches.

Personalized learning is a “student-centered approach to help all students develop the knowledge, skills and abilities that will prepare them for college, a career and life,” according to the Alliance for Excellent Education. The Alliance notes that personalized learning places specific emphasis on:

1 Developing trusted and caring relationships between teachers and students

2 Connecting learning to the real world

3 Linking curriculum to students' strengths, interests and aspirations

4 Providing students individually targeted instruction, practice and support in areas of need

5 Creating more flexible learning environments

“The intent is to have a school experience tailored to the individual needs of students,” Culatta says. Importantly, the focus on flexible learning environments and individually targeted instruction, practice and support strongly encourages states and districts to provide students with broader access to digital content and develop more effective ways of teaching with it. What's more, digital content can't be used to target a specific student's needs without information about that individual student's current academic progress — reinforcing the importance of extending data collection and systems into every classroom.

“You can't personalize learning at scale without a robust data system and equipping educators with dashboards to help them quickly understand where people are,” says Reg Leichty of Foresight Law & Policy, who has served as an advisor on ESSA to CoSN.

At the same time, educators are critical to personalized learning's success. They must build trust and caring relationships with students and use assessments to inform targeted instruction and interventions. Personalized

learning requires a range of investments in digital content, data and assessment, and professional learning to support educators' capacity to put these pieces to use in the classroom. ESSA's flexibility and opportunities to leverage multiple funding streams makes investments for personalized learning feasible. Examples include:

1 **Improving assessment systems and data capacity** to provide more detailed information about student progress and align with personalized learning strategies, such as incorporating performance elements or richer measures of student growth or progress.

2 **Implementing personalized learning strategies** as a support for schools targeted for improvement and interventions.

3 **Training educators and school leaders** to support personalized learning environments and safeguard student data. One of the largest challenges for schools and districts is the limited number of effective personalized learning initiatives currently in place. "As a field, we need to very quickly prop up examples of what personalized learning looks like," Culatta says.

Several resources can assist states and districts in this work, including:

- SETDA's *Broadband Imperative II: Equitable Access for Learning* (www.setda.org/priorities/equity-of-access/broadband-imperativeii-2016/)
- U.S. Department of Education's *Future Ready Schools: Building Technology Infrastructure for Learning Guide* (tech.ed.gov/futureready/infrastructure/)
- CoSN's Smart Education Networks by Design initiative (www.cosn.org/SEND)
- ISTE Standards (www.iste.org/standards)



Assessing Personalized and Blended Learning Readiness

Before investing in personalized and blended learning environments, states and districts should determine if they can support the adoption of digital content. Among the factors to consider:

Infrastructure »

District and school networks must be robust enough to provide digital content at scale, particularly as it becomes differentiated through personalization.

Teacher training »

Are teachers prepared to teach in blended learning environments and select or modify digital content to meet student needs?

Content »

Is digital content available in sufficient quality and quantity to meet personalized and blended learning goals?

Equity and access »

Is high-quality digital content available to all students? Do all students, including low-income and minority students, have out-of-school access to the internet and the devices required to support blended learning?

Security and privacy »

Are networks secure and staff trained to ensure student data is safe?



BOOSTING SECURITY IN TODAY'S IMMERSIVE DIGITAL ENVIRONMENTS

Big data, advanced analytics, the Internet of Things (IoT) and other technologies are enabling private sector organizations to be more competitive and transform their operations. Now, these same technologies are improving learning in K-12 by creating environments that customize the education process and better engage students.

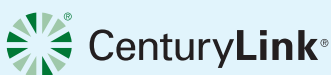
ESSA funding encourages districts to take advantage of these technologies. Schools and districts can use ESSA grant money to adopt innovative strategies that leverage personalized learning, data analytics and even IoT.

But the more schools use student data to personalize learning, the more vulnerable that data becomes. CenturyLink offers a portfolio of security, risk and compliance consulting – from assessment and design to full implementation – to help schools comply with rigorous requirements while securing sensitive information.

As schools move toward digital environments supported by ESSA funding, CenturyLink's team of security experts can help uncover areas of data vulnerability, identify security gaps, and prioritize security and compliance efforts. Our cybersecurity experts can complement or offload tasks from your in-house security team, so you can stay focused on your core business – education. With flexible, modular services that integrate easily into your security framework, you can also leverage existing investments and use your security tools more effectively.

In addition to our security offerings, CenturyLink can help K-12 schools and districts:

- Deliver engaging digital content and learning
- Use big data to harvest deeper insights into student progress
- Free internal IT resources to focus on innovation
- Control IT infrastructure and human resources costs



For more information about how CenturyLink can help K-12 schools and districts make education secure, accessible and affordable for students, faculty and administrators who learn and teach in immersive digital environments, visit: www.centurylink.com/k12

Blended learning is defined in ESSA Section 4102 as “a formal education program that leverages both technology-based and face-to-face instructional approaches” that:

- ✓ Include online or digital learning, combined with supervised and student-led learning, to provide an integrated learning experience
- ✓ Give students some control over time, path or space

Given the reliance on new forms of digital content, many of the challenges and opportunities associated with blended learning are similar to those for personalized learning.

One additional challenge is the “homework gap” — or the lack of access to digital devices and internet outside of the classroom, particularly for low-income and underserved students. ESSA commissioned a study on this issue, which is described in more detail later in this report.

SETDA's *From Print to Digital: Guide to Quality Instructional Materials* (qualitycontent.setda.org) is a helpful resource for states and districts seeking to develop systems to identify and evaluate digital content.

Standards for High-Quality Professional Development

ESSA redefines standards for “high-quality” professional development. The new law calls out, in negative terms, the one-day workshops that have historically been the staple of school-based professional development. ESSA replaces NCLB’s vague definition of professional development with language that emphasizes “activities that ... are sustained (not standalone, one-day, or short-term workshops), intensive, collaborative,

job-embedded and classroom focused.” ESSA also calls for “evidence-based” and “personalized” professional development.

These changes are intended to accelerate collaborative, ongoing professional learning opportunities, including increasingly popular professional learning communities (PLCs). They also highlight the importance of differentiated offerings based on individual teacher needs.

Universal Design for Learning

ESSA endorses UDL and defines it as “a scientifically valid framework for guiding educational practice” that:

- ✓ Provides flexibility in the ways information is presented, students respond to or demonstrate knowledge and skills, and the ways students are engaged
- ✓ Reduces barriers in instruction; provides appropriate accommodations, supports and challenges; and maintains high achievement expectations for all students, including those with disabilities or who have limited English proficiency

ESSA calls on states and districts to incorporate principles of UDL in assessment design and technology adoption.

For more on UDL and ESSA, see:

- **The Center on Technology and Disability and CoSN’s *Digital Accessibility Toolkit: What Education Leaders Need to Know*** (www.cosn.org/accessibility)
- **CAST resources on UDL and ESSA** (www.cast.org/whats-new/news/2016/udl-in-the-essa.html)



IMPROVING CONTROL AND COMPLIANCE THROUGH BETTER NETWORK VISIBILITY

ESSA provides schools with opportunities to implement technology and move toward digital, blended and personalized learning. As with most federal funding initiatives, like Title 1, schools are required to inventory, tag, track and safeguard technology assets purchased with that funding. But asset control and inventory management is challenging. How can schools track, monitor and protect what they can't see?

ForeScout helps schools comply with Title 1 inventory requirements by providing visibility into the devices on their network. With ForeScout, schools can:

- **Identify** computers, unmanaged personal devices, Internet of Things (IoT) devices and rogue endpoints in real time
- **Collect** hundreds of attributes about devices connected to networks, including hardware and OS configuration, software and currently logged-in users
- **Place** device data in a contextual database, giving schools an easy way to track information about their digital assets and how they are used

- **Validate** that antivirus and other host-based security applications are installed, running and updated to ensure the network is protected from cyberthreats

ForeScout also empowers schools to automate tasks, improving staff operational efficiency and effectiveness. For example, Tampa Bay-based Hillsborough Community College recently implemented ForeScout technology to better protect its networks. Doing so reduced the need for the college to reimage infected computers. IT staff now reimages only 1.5 systems per month compared to 20 to 25 each month before the college implemented ForeScout.

"It takes a support tech five to six hours to reimage the system and restore the user's documents, files and applications," says Ken Compres, Hillsborough's senior network security and integration engineer/chief security officer. "Moreover, the user is unproductive during that time, so you are literally wasting 12 hours per incident. That's a 240- to 300-hour productivity gain per month."

ESSA: **THE BIG PICTURE**

ESSA provides both a roadmap and a sense of priorities to guide states and districts as they develop plans for technology and seek funding to support it. However, it is also important to look at how ESSA aligns with other federal priorities and initiatives.

E-rate

The Title IV SSAEG grants' unrestricted support for technology professional development and limited support for district hardware, software and equipment purchases is complemented by two FCC broadband programs: the E-rate program, which supports school and library building connectivity and classroom Wi-Fi; and the Lifeline program, which will help address disparity in home internet access, particularly for low-income and minority students, commonly known as the homework gap. New leadership at the FCC will likely mean changes to



these programs, but the new chair appears to be focused on closing the digital divide through changes in existing programs or new initiatives.

ESSA also charged the U.S. Education Department's Institute of Education Sciences to study the educational impact of students' out-of-school access to digital learning resources. The study, which will identify barriers students face both inside and outside the classroom, could be released as early as summer 2017.

Despite the limitations of SSAEG grants for infrastructure spending, ESSA's provisions for training and digital content can help schools take advantage of connectivity and digital devices. Rural districts in particular can use funding to increase access to online courses taught by highly qualified teachers.

Beyond the specifics of E-rate and ESSA's grant programs, these provisions also serve as a reminder to states and districts of how important it is for all students to have access to digital learning tools and other online resources.

The National Education Technology Plan

The Office of Educational Technology (OET) was conceived with bipartisan support from Orrin Hatch [R-UT], Nancy Kassebaum [R-KS] and Ted Kennedy [D-MA], and established by amendment of the Department of Education Organization Act under (Sec. 233) of Goals 2000: Educate America Act (H.R. 1804). In 1993, OET was given the charge to "develop a national vision and strategy" to "provide leadership to the nation in the use of technology to promote achievement ... and to increase opportunities for all students. ..." The current National Education Technology Plan (NETP), available at <https://tech.ed.gov/netp>, outlines a vision

for the use of technology in education and provides details, use cases and real-world examples. While ESSA's technology components are aligned with the NETP, it may be more valuable as a reference for states and districts as they consider the role of technology in longer-term strategic planning.

Key principles of the 2016 NETP plan include:

- 1 Emphasizing the use of technology** to provide greater equity and accessibility to education for all students
- 2 Ensuring teachers have the knowledge and skills** to take full advantage of technology-rich learning environments
- 3 Calling on education leaders to create a vision** of how technology can meet the needs of all learners and develop plans to translate that vision into action
- 4 Using technology-enabled assessments**, including ones embedded within digital learning activities, to provide actionable insights to teachers, administrators and students
- 5 Enabling learning, teaching and assessment** with robust infrastructure, including connectivity, devices, digital learning content and professional development

The plan provides added detail and examples for many of the trends discussed in this guide — personalized and blended learning and UDL among them. "It's not a tailored playbook, but it's a good reference," Leichty says.

More importantly, NETP's call for education leaders to create a vision of how they plan to use technology to educate all students is a useful model for states and districts to consider as they develop plans for ESSA — and beyond.

Digital Curriculum to Help Schools Advance ESSA's Goals

ESSA aims to provide all students — from those struggling with grade-level content to accelerated learners — with equal opportunities to succeed through personalized learning. Apex Learning provides digital curriculum that supports all learning styles and empowers teachers to provide data-driven personalized instruction to help achieve ESSA's core goals. Apex Learning digital curriculum offers:

Proven results.

Apex Learning has a track record of enhancing student outcomes, increasing graduation rates, decreasing dropout rates, improving exam scores, and promoting college and career readiness.

Insight into student progress.

Effective digital curriculum developed specifically for standards, not just aligned to them, is critical to improve student learning. That's why Apex Learning's digital curriculum enables educators to check in on student progress and performance over time and supports the move from structured summative assessments to formative assessments.

Enhanced accountability.

Apex Learning's digital curriculum combines data-centric development with industry-leading reporting tools that enable students to be self-directed learners and empower educators to provide impactful individualized learning.

Supported with a strong implementation strategy, Apex Learning's effective digital curriculum adjusts lessons to a variety of different learner styles, knowledge levels, aptitudes and backgrounds. The result: more engaged and motivated students, and improved academic outcomes that bring districts closer to meeting the goals of ESSA.



To learn more, visit: www.apexlearning.com

ESSA: STRATEGIES FOR SUCCESS

States and districts must focus on developing consolidated plans that have the potential to leverage technology in broader ways and cut across specific programs.

For states and districts to take full advantage of the provisions and funding opportunities provided by ESSA, they must step back and look at the big picture. Even within ESSA, different provisions of the law connect and support each other. For example, the Title II professional development funding to help integrate technology into instruction supports the overall emphasis on digital learning resources, personalized learning and blended learning — as do SSAEG grants provided in Title IV and the call for more sophisticated assessments in Title I. A one-title-at-a-time approach won't work.

“You’ve got to look beyond the statutes,” says Leichty. “There’s an opportunity in a lot of places to be thoughtful about how you use technology.”

But there’s an even greater opportunity. As suggested in the NETP, the overarching goal for states and districts is to consider how technology aligns with its overall vision for education. This means shifting from an emphasis on access and devices to thinking broadly about how each state and district can better serve all students with increasingly personalized instruction and a range of resources — including technology.



The consolidated planning currently underway is an opportunity to articulate and improve this vision. To ensure technology is considered in a holistic fashion, SEAs should include technology leaders — both their own and their counterparts from tech-forward districts — in the planning phases to develop a broader roadmap that goes beyond the ESSA planning process. The same is true for districts as they develop their Title I and Title II plans.

“Data and technology permeate every aspect of K-12 education today,” says Kurt Kiefer, assistant state superintendent for the Division for Libraries and Technology at the Wisconsin DPI. “All titles within ESSA make that clear, and provide avenues for SEA support. DPI’s plan will ensure that support is clearly defined and accessible to Wisconsin’s school districts.”

The Ed Tech Rapid Cycle Evaluations (RCE) Coach builds upon the research and work in *Expanding Evidence (2013)*, which calls for rigorous, rapid approaches to gathering evidence of the impact of edtech solutions. The RCE Coach is a free and openly licensed web-based platform that helps schools and districts conduct evidence-based short cycle evaluations of educational technology.

As part of the Ed Tech Rapid Cycle Evaluations project, the OET and Mathematica Policy Research organized a technical working group of thought leaders, researchers and practitioners in the edtech field. The technical working group has advised the project team on the design and development of the RCE Coach since its inception. The working group continues to advise the project team on enhancing the Coach’s capabilities and expanding its reach.

Learn more at: <https://edtechrce.org/>.

Strategies for Aligning Technology with Education Goals

1 **Conduct an inventory of existing technology initiatives and systems** to see where they align with ESSA provisions. An inventory is only required for some SSAEG grants and other initiatives, but it is a good idea across the board.

2 **Focus on support for districts in state planning.** State set-aside funding for SSAEG grants is intended in part to help SEAs provide technical assistance to districts. Consider strengthening opportunities to help districts build capacity, particularly those with underserved populations.

3 **Don’t overlook the role of technology in accountability plans.** For example, new technology that increases communication with families could help make the improvements to school report cards that ESSA’s accountability provisions require.

4 **Build flexibility into state plans.** Just as ESSA shifts responsibility and many of the details of accountability and oversight to states, SEAs can set regulations and expectations but offer their districts flexibility in meeting them. “SEAs can be very clear on what the goals are and somewhat flexible in terms of the ways to get there,” Culatta says. This may involve changes to state rules and policies that limit the ways in which districts can implement online, distance and other non-traditional learning environments.

5 **Emphasize flexibility at the district level.** Districts, too, may be able to provide flexibility based on the different needs of their schools. “Be clear on what it is you’re expecting of schools, but encourage multiple approaches,” Culatta says.

I'm thinking we want help with multimetric accountability.

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Analytics *Interactive and dynamic evidence-based dashboards*

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6 **Include education technology in ESSA's required stakeholder engagement process.** Consider regular discussions with educators, district leaders, parents and others, and make sure that state and district technology specialists are part of those conversations. Doing so can help ensure the state's overall vision for education and technology's role aligns with what educators and students need — and can evolve as these needs change over time. At Lincoln Public Schools, for example, ESSA prompted district officials to accelerate strategic planning, collecting input from nearly 7,000 community members. "I want to marry what our community is saying with respect to the future of education with the new rules and flexibility," says Superintendent Joel.

7 **Ensure teachers are represented in the planning process.** States and districts could consider shadowing, observing and surveying teachers to understand how they use technology in the classroom — and where gaps in availability and capacity remain. "There are plenty of good intentions, but not enough understanding of teachers' day-to-day lives," Culatta says.

8 **Don't underestimate privacy concerns.** ESSA's emphasis on personalized and blended learning models — backed with funding to support systems and training — mean highly personalized student data is likely to proliferate. Given the explosive growth of state privacy laws in recent years, there's considerable skepticism among parents about how data is being used. Ensuring student data privacy is a core part of professional development is important for ethical reasons and to gain credibility among parents and the public.

9 **Study how other sectors address complex data and assessment issues.** Doing so can help surface more

sophisticated ways in which data can inform decision-making and identify challenges around privacy issues. "Nobody should be allowed to pull plans together without looking at what data has done in health care — the good and the bad," Culatta says.

10 **Encourage partnerships.** Districts can seek ESSA grants and other technology funding opportunities through consortia. SEAs can play an important role in encouraging and supporting these groups.

11 **Don't forget the role of technology in improving the lowest-performing schools and subgroups.** States and districts have greater flexibility for addressing low-performing schools and student subgroups under ESSA, including the option to focus on a broad range of strategies such as building instructional capacity or improving curriculum. Technology can play important roles in comprehensive and targeted supports and should become a central part of needs assessments for low-performing schools.

12 **Experiment and network.** The lack of scaled real-world examples of personalized and blended learning environments make information sharing vital. States can help highlight and share effective technology practices. The state also can play a role as a broader convener, as Rhode Island has done with its Innovation Cluster, which brings together state and local education leaders with technology providers, higher education and community organizations to encourage collaboration and experimentation in schools. "We've found that helps things spread much more quickly," Culatta says.

Schools Need an Always-On Environment for Success



The school day is no longer confined to traditional hours. Students expect to have access to learning resources anytime, anywhere. As schools continue to digitize content and curriculum, they need tools to keep pace with demand — downtime is unacceptable. Veeam® helps K-12 leaders create an Always-On™ data center to ensure students, parents, educators and administrators can have access 24.7.365 to important data, including grades, tutorials, homework assignments and more.

Also important — the Every Student Succeeds Act (ESSA) will link federal education funding to new data accountability plans approved by state education departments starting with the 2017-2018 school year. Not only do Veeam's solutions for improving data availability and recoverability pave the way for streamlined digital transformation, they provide the means to ensure the funding to support it.

Veeam delivers:

- **Quick recovery with no downtime.** Schools can recover files almost immediately, directly from an image-level backup. Application-item recovery is faster and easier because schools can zero in on exactly what they need to retrieve and restore individual items directly from their backups. "Before Veeam, I might be able to recover an individual file, but I couldn't recover a full virtual machine," says Pamela Gengler, purchasing manager of Antioch Unified School District in California. "Now, it's a snap. And the granularity of the file-level recovery is amazing. I can recover deleted files quickly and at any point in time."¹
- **Smart data usage resulting in reduced costs.** Using backup data and storage snapshots creates an exact copy of your school's education environment, allowing IT staff to test any changes in a production-like domain prior to actual deployment. 65% of Veeam users save \$1,000 or more with this feature. "Over the course of five years, Veeam saved us more than \$86,000," says Brent Braun, a network infrastructure security specialist with Appleton Area School District in Wisconsin. "That's a significant savings for any organization operating under a strict budget."³
- **Near-continuous data protection.** 83% of Veeam customers are more confident in their current backup compared to what they used previously. "I get an email every morning with the status of backups performed the previous night," says Leonard Brandt, IT manager at East London's Stirling High School. "Before, I had to physically find the drive and double-check the time stamps to make sure a backup had run. Now I just check each morning to see what servers were backed up."²
- **Peace of mind.** Veeam provides proactive monitoring that alerts schools of any possible problems before they can impact school operations. "Just as you have fire insurance for your home, you should have data insurance at work. . . . Veeam assures us our data will be available when we need it," says Bob Eadie, IT systems manager at Bedford School in Georgia.⁴

To learn more, visit www.veeam.com.



1. <https://www.veeam.com/success-stories/ss-antioch-usd-ams-backup-education.html>
 2. <https://www.veeam.com/success-stories/stirling-high-school-veeam-is-music-to-the-ears-of-it-manager.html>
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 4. <https://www.veeam.com/success-stories/veeam-bedford-school-success-story.html>



CONCLUSION

The potential of ESSA to transform teaching and learning cannot be understated — in large part because of its flexibility and the deliberate elevation of technology into virtually all areas of education.

States and districts can take advantage of ESSA to ensure technology plays an important role in their overall vision for providing a high-quality education to every student. Looking ahead, they also can take advantage of the law's flexibility to innovate. At the school, district and state level, leaders should bring together technologists and forward-thinking educators to brainstorm, ideate and create new models of teaching and learning to help more students reach their full potential.

The ultimate test of whether ESSA lives up to its lofty ambitions will be inside our schools and classrooms. When they look very different from the schools of today, and when every student is provided with a learning experience that meets his or her aspirations and needs, we will know we have succeeded as a nation.

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