Digital Learning and Technology:
Federal Policy Recommendations to Seize the Opportunity— and Promising Practices That Inspire Them

Many industries in the United States already have seen positive results and increased productivity from the effective use of technology. With the challenges currently facing the nation's education system— including a persistent dropout rate of nearly 30 percent, slashed state and district budgets, and the economically and socially important goals of ensuring that more students graduate prepared for college and a career—the nation cannot afford to miss the opportunity that technology and digital learning offer. Education already utilizes technology in many new ways: approximately 1.5 million students took online courses in 2010 according to the International Association for K–12 Online Learning;[1] an increasing number of teachers currently participate in technology-driven professional development through portals or online courses; and there is movement toward the use of digital content and online assessments. Even so, America has only begun to scratch the surface of what is possible with technology and digital learning in the realm of education.

While education is administered at the local and state levels, the federal government's involvement can either encourage or discourage the implementation of positive educational practices. By highlighting successful practices in several states, districts, and schools that are already using technology and digital learning to improve student achievement, this brief seeks to identify appropriate policies for federal policymakers to consider. The local and state examples cited here should be considered during the development of federal policies that encourage the effective application of technology and digital learning.

Presidents George W. Bush and Barack Obama both have advocated for primary education

> ### The Online Learning Imperative
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> In its 2010 brief "The Online Learning Imperative," the Alliance cites three major challenges facing the United States that require urgent action by policymakers and educators:
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> 1. global skill demands versus educational attainment;
> 2. the funding cliff; and
> 3. a looming teacher shortage.
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> Not only do these challenges persist, they also continue to multiply, as other countries pass America's ranking in the PISA/OECD reports and state and district fiscal crises require budget cuts in education. The Alliance concludes that taking advantage of digital learning to expand opportunities and access for students, especially in rural and urban areas, is the only way to address these issues.

goals that closely align with the efforts of the Alliance for Excellent Education (Alliance) to reduce the dropout rate and ensure that the nation graduates more students prepared for college and a career. Most recently, the Obama administration specifically stated national goals to

- "raise the proportion of college graduates from where it now stands (around 41 percent) so that 60 percent of our population holds a two-year or four-year degree by 2020" and
- "close the achievement gap so that all students graduate from high school ready to succeed in college and careers."[2]

These aims, which are critical to the nation's prosperity and economy, will require significant shifts in the current education system and dramatic changes in teaching and learning. Innovative federal programs such as Race to the Top (RTTT) and Investing in Innovation (i3) represent positive steps toward addressing the four assurances highlighted by Congress and the Obama administration:

1. **demonstrating progress** toward college- and career-ready standards and high-quality, reliable assessment;
2. **providing equitable access** to teachers and improving teacher effectiveness;
3. **establishing data systems** from pre-K to college and careers; and
4. **providing support** to turn around low-performing schools.

While many of the grantees are utilizing technology and digital learning to help meet these and other RTTT and i3 goals, states and districts continue to require dedicated support and leadership to meet the needs of all students and to build the technological infrastructure, design policies, and use the tools and resources that can transform teaching and learning. The intense interest in the RTTT and i3 programs points to this growing demand. While forty-nine i3 grants were funded in 2010, many of the more than 1,600 applications that were not funded represent untapped opportunities for innovation.

In 2010, the Alliance published "The Online Learning Imperative," and the federal government released *Transforming American Education: Learning Powered by Technology* (commonly known as the National Education Technology Plan) and *Connecting America: The National Broadband Plan* (commonly known as the National Broadband Plan). All three proposals point to the importance of technology and digital learning in meeting national, state, and district education goals and set forth specific recommendations on how to transform the U.S. education system. The National Broadband Plan and the National Education Technology Plan specifically include tremendous stakeholder input during the development process, and these plans and the Alliance brief have received widespread interest and support. The federal government now has an opportunity to use the recommendations and models shared in these proposals to help districts and states maximize the potential of technology and digital learning in all areas of education.

Interestingly, one of the most important applications of digital learning with widespread benefits for learning across the nation is based not on federal action but on results from coordinated action by states. The National Governors Association Center for Best Practices and the Council of Chief State School Officers initiated and led the effort to develop common core state standards for all schools. Now adopted by forty-four states and Washington, DC, these standards demonstrate a commitment to higher expectations that will help to ensure that all students graduate from high school ready for college and a career.

However, states and districts will need to use technology and digital learning to meet the challenges of implementing new content, instructional strategies, and assessments. The Common Core State Standards Initiative opens doors for using technology and digital learning by providing a common set of standards in English language arts and mathematics for curriculum and assessment development and implementation. This is a significant shift for education developers, who have had to address fifty different sets of standards in the past. Professional development opportunities for teachers, which are central to the teaching of the common core state standards, can be delivered through online or blended opportunities, including peer-to-peer interaction through communities of practice. New assessments, such as those being developed through RTTT assessment grants to two consortia of states, will enable states and districts to take advantage of technology-based platforms to implement technology-based assessments and utilize the data. The initiative requires that new state-developed assessments be delivered online, and states and districts will need to ensure that the proper technological infrastructure is

in place and that students have the necessary skills to take online assessments. States and districts not only have to be able to teach what is in the new standards, they also need to have the technology infrastructure and expertise in place to implement the new assessments and teaching strategies that each state adopts.[3]

The challenges and opportunities facing the nation's states, schools, and districts demand an intense focus on how technology and digital learning can help transform the education system. Fully maximizing the potential of technology and digital learning, however, requires systemic and systematic consideration in policy and legislation development.

The Benefits of Technology and Digital Learning

While most policymakers are only beginning to understand how technology and digital learning are integral to the transformation of the education system, many districts and schools already have implemented programs that are changing student outcomes and the teaching and learning process. Technology and digital learning specifically provide the opportunity for

- increased equity and access;
- improved effectiveness and productivity of teachers and administrators; and
- improved student achievement and outcomes.

As educational technology has evolved, so have the definitions of its application. Digital learning has expanded significantly, from being an essentially virtual—and often solitary—experience to constituting a mainstay of school-based learning in a "blended" environment. Policymakers need to take this into consideration.

> **Blended Learning**
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> "Blended learning is any time a student learns, at least in part, at a supervised brick-and-mortar location away from home and, at least in part, through online delivery with some element of student control over time, place, path, and/or pace."[a]
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> Online learning is education in which instruction and content are delivered primarily over the Internet.[b]
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> [a.] Michael B. Horn and Heather Staker, "The Rise of K–12 Blended Learning: Profiles of Emerging Models" (Innosight Institute, 2011), p. 3.
> [b.] Adapted from Keeping Pace with K–12 Online Learning website, 2010.

Increased Equity and Access

As has already been proven in schools and districts across the United States, technology offers many opportunities for equity and access by helping to reduce the dropout rate, address the achievement gap, and ensure that students are prepared for college and a career. Research on why students drop out of school frequently points to a lack of interest and relevance, and technology accelerates opportunities to engage students through a wider variety of courses, instructional strategies and delivery, and curriculum and content that is relevant to their lives. The achievement gap is often tied to the different levels of preparation and support that students have outside of school, the obvious challenges of English language learners, and the fact that one-size-fits-all instructional strategies do not meet the needs of many students. For all students, but especially for those attending schools in rural areas, technology and digital learning can address the dropout rate and the achievement gap by dramatically increasing access to

- **a wider variety of course offerings**, including Advanced Placement (AP), higher-level math and science, foreign languages, and remediation classes taught in different ways;
- **a more personalized learning experience** that builds on learning styles, interests, and abilities and allows students to work at their own pace;

- **credit-recovery options** to assist struggling students and those who need an additional course to graduate;
- **experts** from around the world to increase knowledge and understanding of careers, access to simulations, and virtual field trips; and
- **digital content** to provide multiple options for content and curriculum, including simulations and interactive opportunities to increase understanding and knowledge of standards and real-world applications or what is learned in school.

Alabama ACCESS Program

The ACCESS (Alabama Connecting Classrooms, Educators, and Students Statewide) program provides blended learning opportunities for all high schools in Alabama through a twenty-first-century distance-learning lab with technology and high-speed broadband to make sure that students have access to the instruction and courses they need. ACCESS tailors interactive videoconferencing and online services to individual students' needs to ensure equity in opportunities for all students, including those in rural, suburban, and urban areas. Instruction and courses include remediation, enrichment, difficult-to-offer classes, virtual field trips, and AP curriculum. ACCESS currently offers 101 courses, eleven of which are AP. Alabama teachers provide instruction for the courses, and ACCESS provides regional support for teacher professional development, infrastructure, and coordination.

Achievement results and student outcomes have improved dramatically since the implementation of ACCESS. The number of AP test participants has almost doubled in Alabama public schools since 2004. ACCESS also has had a significant impact on African American students: the number of African American test takers has quadrupled, and the qualifying exam scores of African American students have more than doubled. Five times more low-income students are taking AP exams, and three times more are scoring 3 or higher on an AP exam.

Alabama has seen a rise in graduation rates, as well; in 2007, the average freshman graduation rate was 67 percent, up from 62 percent in 2002. In Fiscal Year 2009, ACCESS provided 26,197 enrollments in courses needed by students to meet graduation requirements and 6,059 additional enrollments in noncredit remediation modules for the Alabama High School Graduation Exam. ACCESS delivers foreign language instruction in five different languages (French, German, Latin, Spanish, and Mandarin) and has had more than 7,700 enrollments in these subjects. Additionally, ACCESS enrolled 1,241 students in AP classes, 9,450 in other advanced classes, 5,464 in other electives, and 10,042 in core classes to get students back on track for graduation in Fiscal Year 2009. Training online teachers is a high priority for ACCESS, with more than 560 teachers currently teaching for the program. This allows students to have highly qualified teachers regardless of location or school.

North Carolina New Schools Project

The North Carolina New Schools Project (NCNSP), with public and private funding support, works to transform high schools into institutions that are able to graduate all students ready for success in college, a career, and life. The NCNSP has implemented several innovative approaches across the state (many in rural areas), including early colleges and redesigned schools; networks of schools focused on life and sciences; science, technology, engineering, and math (STEM) programs; and one-to-one laptop programs. These approaches emphasize innovation and technology in transforming education experiences for students.

The NCNSP has created seventy-one early college high schools; six of these are described as "virtual" early colleges. Generally, early college high schools are located at two- and four-year community colleges and universities and blend secondary and postsecondary coursework. Students complete four years of high school and as much as the first two years of college, at no cost to families. Early college high schools seek to increase the economic base in a community and change life trajectories for individuals by providing opportunities for higher education to populations that have been previously underrepresented in the college-going population, including several mother-and-child teams. The program is now in its third year of implementation, and the NCNSP reports that there have been no dropouts. Attendance at the virtual early colleges is consistently above that of the state average, and fewer disciplinary actions are noted on state report cards. Students in these schools continually outperform their peers in virtual and face-to-face environments, whether at the high school or college level.

Newton-Conover Life Science High School is an NCNSP school that is committed to project-based learning as a core component of the curriculum to engage students, provide opportunities for real-world applications, and embed literacy skills throughout core content areas. During each year in high school, students lead their own project-based learning effort under an annual theme or an identified problem. They do research, create a hypothesis, develop a product, collaborate with peers and experts, and present the results or a final project. For example, students might explore the effects of alternative medicine, the rationale for a certain type of cancer treatment, or the reasons why gaming may be an important curriculum option. Teachers guide students through the process as needed; students extensively use technology and digital content and resources, and are graded by peers and teachers using a predesignated rubric. The application of literacy skills and the opportunity to communicate and write relevant information on a topic selected by and of interest to the students have helped students to stay in school and to apply and improve their reading, writing, and communication skills.

Improved Effectiveness and Productivity of Teachers and Administrators

The additional technological tools and resources can help to improve effectiveness and productivity by providing additional opportunities for teachers and administrators to

- **use data and assessment** more effectively to identify student and school needs and potential interventions to help students achieve, especially those at risk for dropping out of school;
- **participate in online and blended professional development**, including courses, professional learning communities, and digital resources and content;
- **utilize digital content** to personalize learning for students, to develop learning communities among students, to embed assessments within lessons, and to help students create and publish knowledge and content;
- **communicate more effectively with parents and students** by using online communication tools to post homework, tests, and projects, to address issues immediately and directly with parents, and to share opportunities for students to expand learning beyond the school day; and
- **collaborate with other districts and schools** to build on economies of scale for course offerings, professional development, and infrastructure.

Carpe Diem Collegiate High School and Middle School (Yuma, Arizona)

Carpe Diem serves 250 students in grades 7–12 and uses a blended learning model in which every student has a personalized learning plan that combines traditional teaching with digital content and online

courses. The school started as a traditional charter institution and then transformed into a blended learning model five years ago. Since the adoption of the blended model, Carpe Diem has made great improvements in student achievement.

Students' computers are loaded with a rigorous, multimedia, standards-based curriculum. All books, including works of literature, are provided digitally; traditional textbooks do not exist at Carpe Diem. Every fifty-five minutes students break away from their computers and participate in face-to-face instructional workshops—their version of a traditional class. The classes vary depending on the needs of the particular students. Teachers can tutor individual students or provide whole-group instruction. The workshops are designed to be hands on and data driven, with teachers interacting with the students and providing personalized help as needed. By decreasing whole-class instruction time, teachers are able to devote far more attention to students on an individualized basis than in a traditional model. Teachers roam the digital center, regularly helping students who need assistance. Students work on different subjects at the same time in the learning center, and they work at their own pace without having an artificial time constraint. The only schedule students are bound to is that they must meet their goals in each subject by the end of the week. The school week is four days long; Friday is reserved for students who are struggling or need extra time to catch up.

Student assessment occurs every day. Data is gathered daily, weekly, monthly, quarterly, and annually. The administrative and instructional staff members review the data as it is gathered. They can adjust their workshops, the computer-driven instructional modules, and individual attention per student as needed. Through the effective use of technology, the school not only monitors whether a student is understanding a subject but also how long they are spending on it.

Carpe Diem is being recognized across the country because of tangible positive results. In Arizona as a whole, 65 percent of students perform at proficiency or better; in Yuma County, 57 percent perform at that level. Students who attend Carpe Diem perform at 92 percent. The school also has a high graduation rate and few discipline problems. Students are able to dual-enroll in university courses to begin earning credits for college. The student population is reflective of the local sociodemographic numbers for income and race. The school is also spending less money per student than traditional schools while getting better results. The per-student spending average for the United States is $10,259, and $7,608 for Arizona; Carpe Diem spends just $5,303 per student. While it does not offer sports teams and music programs, the school does provide other extracurricular activity opportunities such as traditional school clubs.

Lordsburg Municipal Schools (New Mexico)

Lordsburg Municipal Schools has helped its four individual districts work together, using federal Elementary and Secondary Education Act (ESEA), commonly called No Child Left Behind (NCLB), Title II, Part D (Enhancing Education Through Technology) funding, to offer online and blended learning courses for all students. These rural districts would not have the capacity or expertise to provide online and blended learning opportunities for students without the collaborative approach of this project. Due to their rural nature and size, these schools typically do not provide their students access to fine arts, music, or physical education courses, and they have very limited options for foreign language and higher-level math and science. The collaborative approach at the Lordsburg schools, largely made possible by digital learning and technology, has dramatically improved opportunities and futures for students.

Improved Student Achievement and Outcomes

Technology and digital learning can increase the ability to meet the needs of individual students. Whether through the availability of timely data or the ability to connect students with the content and activities that meet their learning styles and needs, technology and digital learning provide opportunities for teachers to personalize learning for more students at any given time. The examples below illustrate how technology and digital learning have increased access and opportunities for students to improve achievement and outcomes. In these cases, students have more flexibility with timing and pacing, have the ability to take courses not offered at their school or that do not fit into their normal schedule, and are able to experience different instructional approaches in their learning. In most cases, these represent blended learning models in which some of the instruction occurs inside a school building and some of the instruction occurs online. While these examples represent a small sample, they paint a picture of how technology and digital learning are being used as an integral part of education transformation.

Independence High School, Charlotte-Mecklenburg Schools (North Carolina)

Charlotte-Mecklenburg Schools in North Carolina includes 178 schools and more than 133,000 students. Independence High School (IHS), an urban school with over 2,000 students, implemented online learning and blended learning opportunities to increase college and career readiness, access to courses, and on-time graduation. The blended learning experiences allow students to take online classes with a highly qualified, certified teacher in the classroom, enable students to earn college credits, increase access to classes for enrichment and remediation, and increase on-time graduation. IHS also implemented blended learning for summer school for remediation and credit recovery, especially in courses such as Algebra I and English I, since failure to complete these subjects indicates that a student is at high risk for dropping out of high school.

During the summer, many students took online courses. At IHS, sixty-three students took English I and fourteen took Algebra I, through the North Carolina Virtual Public School (NCVPS), with highly qualified subject-area teachers. In an impressive display, 100 percent of students passed the online course. All of the Algebra I students met the gateway standards, including portfolio, and 96 percent met the English I gateway standards. Because of the summer online experience, these students began the 2010–11 school year on track for graduation with their class. In 2010–11, IHS enrolled more than 200 students in online courses through the NCVPS.

Through blended learning, IHS emphasizes the important role that teachers play in helping to recognize the individual needs of students and to support students as they take online courses. IHS is also growing its dual-enrollment program through online opportunities that allow students to take courses for college credit while still in high school. The demand for high school and college courses continues to increase at IHS and the Charlotte-Mecklenburg Schools overall, with district enrollments quadrupling from 2009–10 to 2010–11.

Rawlins High School (Wyoming)

Rawlins High School is located in rural Wyoming, in a town from which the nearest Walmart is 120 miles away. Rawlins represents a very transient population, and in 2006 it was identified as a "dropout factory" by educational researchers at Johns Hopkins University. The high school principal, Shane Ogden, has worked to focus on engaging and meeting the individual needs of students through technology and digital learning. Specifically, the school began offering online courses for students, and

teachers integrated the use of technology, including interactive response units, mobile learning carts, and digital content, into classroom instruction. Recently, Rawlins provided a blended learning model for summer school, in which students both met at school and participated online from home. While the summer school costs were similar to previous years, students had the opportunity to take a much larger number and range of classes, to meet individual needs. Because of the blended learning opportunities, six students who otherwise would have dropped out or failed to graduate on time were able to graduate with their class. Rawlins also helped several students who were out of school for periods of time to stay on track for graduation. Rawlins High School continues to explore and implement new ways to engage students and increase the graduation rate.

Rio Rancho Cyber Academy (New Mexico)

Rio Rancho Cyber Academy (RRCA), established in 2006, provides blended learning for students in grades 6–12. It is an accredited, diploma-granting school offering an optional educational setting within the Rio Rancho Public School District. RRCA developed a rigorous program of studies that delivers an online curriculum with a flexible schedule, supporting student growth with individualized intervention practices, tutoring, and focused small-group direct instruction. Students engage in online learning from home and also attend lab days in person each week. While RRCA did not make the federal Adequate Yearly Progress (AYP) during its first two years, the school has grown 15 percent a year over the past four years and achieved AYP in the 2008–09 and 2009–10 school years. Math scores improved by 48 percent—the highest increase in the state of New Mexico for the 2008–09 school year—and reading scores improved by 20 percent. RRCA has expanded to provide programs in six other schools and includes credit-recovery opportunities.

Valley High School, Clark County School District (Nevada)

Valley High School in Las Vegas, Nevada, has many transient students, including more than 95 percent minority and nearly 50 percent high-poverty youth. About five years ago, school leaders and teachers recognized that many students entered high school significantly behind in the basic literacy skills needed to succeed and made literacy a central area of focus for turnaround efforts.

With attention on literacy and the realization through assessment data that nearly every student at Valley High was at risk for failing, the school selected a comprehensive intervention program focused on reading that includes teacher-led instruction, print, and technology. The technology includes adaptive software that analyzes, tracks, and provides data on student performance and provides consistent feedback to students. The software not only monitors incorrect responses but also specifically identifies the type of mistakes made. The adolescent literacy program

Valley High School, Clark County School District
English Language Arts (ELA) Trend Data

ELA	Target: Four yr % gains	77.9 2006	77.9 2007	82.3 2008	82.3 2009
School	13.96	77.9	87.75	90.25	91.86
White	11.65	83.2	93.02	95.63	94.85
Hisp/Latino	14.3	75	84.98	88.91	89.3
Black	22.45	71.3	82.65	81.82	93.75
FRL	20.89	67.8	80.77	87.77	88.69
LEP	16.61	70.6	83.73	85.26	87.21

Source: Ron Montoya (principal, Valley High School), chart prepared for "How Blended Learning Can Help Turnaround Struggling Schools," Alliance for Excellent Education briefing, May 24, 2011.

incorporates instruction in whole and small groups, as well as differentiated skill practice, individual practice, and independent reading. Students work at their own pace, and teachers work one on one with students as needed. The technology provides a means to analyze, track, and report on student accuracy while identifying specific types of errors and providing immediate feedback, thus providing an individualized approach to literacy needs.

Valley High began with a very challenging situation, as it had failed to meet NCLB's requirements for at least three years before it implemented the adolescent literacy program. After five years with an emphasis on literacy, Valley High's graduation rate has improved by 18 percentage points, from 42 percent four years ago to 60 percent in 2010. Average daily attendance is now 95 percent, and Valley High was named an NCLB "High Achieving Exemplary Turnaround School" in 2009. The school has now met reading performance benchmarks for two consecutive years, and more than 90 percent of students meet or exceed the standards. The school culture and student outcomes have changed dramatically because of the intense emphasis on literacy and the use of technology to increase individualized instruction for students.

Winterboro High School (Alabama)

Winterboro High School historically has struggled with a high free and reduced-price lunch rate (85 percent), large dropout rates, discipline issues, poor student achievement, low teacher attendance, and weak morale. Through the use of technology and digital learning, the school has addressed all of these issues and transformed the culture, infrastructure, and teaching and learning environment. Winterboro also created a student leadership team and developed the "Winterboro Trust Statement and Job Description." Teachers dedicated themselves to intensive, project-based learning and technology-based professional development, and the school developed an infrastructure that allows collaborative teaching assignments and a one-to-one student-to-computer ratio. Mentoring programs and community partnerships provide students with assistance on projects and engage the community in the school's transformation. The model includes blended learning environments. After just two years, Winterboro has experienced a 64 percent decrease in dropouts, a 78 percent decrease in alternative school referrals, and a 34 percent decrease in disciplinary infractions. There has also been a 40 percent decrease in teacher absences. Simultaneously, math test scores have improved dramatically, from 79 percent to 88 percent for eleventh graders and from 69 percent to 78 percent for eighth graders. Winterboro has observed positive changes in deeper learning skills such as collaboration, communication, and higher-level thinking. The school is sharing its redesign plan and experiences, including the successful application of technology, with other districts and schools across the country.

All of the examples above provide promising practices that demonstrate how technology and digital learning are making a difference for students through increased equity and access, improved effectiveness and productivity of teachers and administrators, and improved student achievement and outcomes.

The states, districts, and schools that are improving outcomes for students, like the successful practices demonstrated here, provide important insight into what federal policies can do to help increase opportunities like these for more students.

Federal Policy Recommendations

The valuable experiences and lessons described above, as well as many more in states, districts, and schools around the country, demonstrate important opportunities for policymakers to ensure that all students have access to an educational environment that maximizes the potential of technology and digital learning. The Alliance for Excellent Education recommends that the federal government encourage states and districts to consider the role of technology and digital learning in their planning and implementation of strategies to meet the national, state, and district goals for all students through the reauthorization of ESEA, commonly known as NCLB, and new and existing programs. Through the regulatory and administrative guidance process, the federal government can also support and help the implementation of effective digital learning by states, districts, and schools. The promising practices confirm the direction for the recommendations below.

1. **Infuse technology throughout education programs.**

   The federal government can encourage increased innovation stemming from careful analysis and implementation of effective technology as part of the legislation, regulation, and guidance from the U.S. Department of Education (ED) by including the following:

   - Specific language identifying digital learning and technology as an allowable use of funds throughout ESEA programs.

   - Involvement of educational technology leadership, such as the state educational technology director, district technology director, chief technology officer, and the private and nonprofit education sector, as part of planning and implementation of programs at the state, district, and school levels.

   - Examples of program collaboration in which technology and digital learning have been a major factor in raising student achievement outcomes and results of the federal government's supported research on promising practices in technology.

   - Explicit explanation of how there is flexibility within the current Title I program for allowable uses of digital learning and technology; future ESEA reauthorization should also consider means for greater ability of Title I funds to improve the learning outcomes for the low-income children targeted by this funding.

   - Requirements to report on how technology and digital learning are being utilized to meet and improve program and student achievement outcomes, and how technology and digital learning help states and districts reach national, state, and district student outcome goals, such as reducing the dropout rate and increasing college and career readiness.

2. **Provide a dedicated technology program to ensure leadership and innovation.**

   The elimination of federal funding for technology through the Enhancing Education Through Technology program has left a significant gap in states and districts to provide leadership in digital learning and technology. Offering a dedicated, stand-alone federal funding stream is vitally important to assist schools in developing new and innovative instruction methods such as digital learning.

Achievement Through Technology and Innovation Act of 2011 (S. 1178)

The Achievement Through Technology and Innovation (ATTAIN) Act allows state and district leaders to implement rigorous college- and career-ready standards, and assessments aligned to such standards, and to systemically transform teaching and learning through technology and digital learning. A dedicated program is essential to ensuring that districts and states provide technology and digital learning leadership to implement and sustain innovation and to systemically consider how technology and digital learning can improve student outcomes. As central to these efforts, this dedicated technology program should also address professional development for administrators and teachers, as the EETT program did in the past. The program would provide the opportunity for targeted leadership from ED and allow states and districts to specifically focus on how digital learning and technology can support national, state, and district efforts to improve student outcomes and achievement and provide more personalized student learning while looking for flexible and creative ways to reduce costs without lowering quality.

3. **Encourage states to implement the "10 Elements of High-Quality Digital Learning," developed by the Digital Learning Council (DLC), a bipartisan group of leaders, to open doors and limit barriers for digital learning for all students.**

In December 2010, a group of more than 100 education, technology, and business leaders convened under the bipartisan leadership of Governor Jeb Bush and Governor Bob Wise to develop a core list of elements needed to provide digital learning for all students. While the resulting ten elements[4] focus on state policies and programs, the federal government has the opportunity to encourage implementation of digital learning for all students by creating incentives and preliminary requirements for certain programs. Specifically, the federal government can encourage reducing limitations and changing policies around seat time or the Carnegie unit, credit students receive for the amount of time instruction is received; teacher certification requirements for online courses; and arbitrary caps on the number of online courses taken. The federal role can also provide opportunities for states to develop meaningful ways to hold schools accountable for quality instruction, including online instruction.[5] The Michigan Seat Time Waivers described below represents one example of a state policy that increases access and opportunities for students to participate in online learning.

Michigan Seat Time Waivers (STW)

Michigan implemented the Seat Time Waivers (STW) program in 2007 to spur innovation in Michigan's public schools. By removing a primary barrier, Michigan has provided a significant opportunity for students to take online courses to meet state and district requirements for graduation. Michigan's goal is to develop competency-based models for students to complete the Michigan Merit Curriculum and to ensure that students graduate prepared for college and a career. Michigan has enrolled approximately 2,500 students in the program, with the majority being students who already have dropped out, are at risk for dropping out, or are homeschooled. The "10 Elements" from Digital Learning Council and the International Association for K–12 Online Learning (iNACOL) often cite the Carnegie unit or seat time requirement as a primary hindrance to implementing online learning. While many states and districts are struggling with these policies, Michigan has opened the door for students to participate in online courses to meet their needs through this waiver process.

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4. **Build on the National Education Technology Plan and National Broadband Plan models and recommendations in new education legislation.**

The National Education Technology Plan and the National Broadband Plan provide worthwhile models that highlight personalized learning and meeting the needs of all students to ensure that they are prepared for the twenty-first-century global economy. These plans carefully articulate the importance of technology, digital learning, and high-speed broadband access for transforming the nation's education system and emphasize the potential to increase productivity and streamline service delivery with the thoughtful and strategic use of technology in education. They also highlight the need for more federal collection of data about online and blended learning. By incorporating recommendations from the National Education Technology Plan and the National Broadband Plan and providing strategically directed funding to educational programs and legislation, the federal government can help make these carefully researched plans and models a reality that ensures that all students are prepared for college and a career.

National Education Technology Plan
Transforming American Education: Learning Powered by Technology

The National Education Technology Plan has five primary recommendations focused on core educational areas, stipulating that technology is central to transforming education in the following ways:

1. **Learning: Engage and Empower.** An engaging and empowering learning experience for all requires a model focused on individual students and personalized learning using state-of-the art technology.

2. **Assessment: Measure What Matters.** For assessment to affect instruction in an ongoing and meaningful way, new methods of measuring student progress are needed to provide feedback and data that allow for changes in instruction.

3. **Teaching: Prepare and Connect.** Improving the teaching and learning model would be enhanced by "connected teaching" and "using technology to help build the capacity of educators ... with 24/7 access to data and analytic tools." Importantly, "educators have access to resources that help them act on the insights the data provide."

4. **Infrastructure: Access and Enable.** This model of learning requires a robust infrastructure to ensure that students and educators have the resources and technological tools available to them when and where they need them.

5. **Productivity: Redesign and Transform.** Transformation requires rethinking many long-held beliefs and expectations. Personalized learning changes the very nature of teaching and learning.

Source: U.S. Department of Education, Office of Educational Technology, *Transforming American Education: Powered by Technology* (Washington, DC: Author. 2010).

National Broadband Plan

The National Broadband Plan recommends the following for education:

1. **Support and promote online learning** and digital content to help transform the nation's education system. The plan shares policy and practical issues related to implementation, including interoperability, copyright, open-source software and content, and online learning platforms.

2. **Unlock the value of data and improve transparency** to inform administrative and instructional decisions. The plan encourages a common set of standards for data and a synthesized RFP process.

3. **Modernizing educational broadband infrastructure** to expand opportunities. The plan encourages more flexibility and opportunities with the E-rate plan and programs for wireless computing and best use of technology for educational purposes.

Additionally, technology and digital learning are directly related to many of ED's priorities for discretionary grants, and ED can encourage the integration of technology and digital learning into the planning and implementation of the grants in the following priority areas:

- improving early learning outcomes;
- improving the effectiveness and distribution of effective teachers or principals;
- turning around persistently lowest-achieving schools;
- improving school engagement, school environment, and school safety and improving family and community engagement;
- using technology;
- implementing core reforms;
- improving achievement and high school graduation rates;
- promoting STEM education;
- providing support for military families;
- enabling more data-based decisionmaking; and
- improving productivity.

The recommendations from the National Education Technology Plan and the National Broadband Plan and the integration of technology and digital learning into ED's priorities for discretionary grants provide another important opportunity to maximize the potential of technology and digital learning for all students.

5. **Invest in ongoing research and innovation.**

Research and innovation are critical to understanding what matters for teaching and learning and how to most effectively educate students in the United States. Education is core to the United States's economy and success as a nation, and the federal government can support programs and funding to ensure that research and innovation in technology and digital learning are not lost in the current economic climate. Efforts could include current ED research efforts, such as the Institute of Education Sciences, whose mission is "to provide rigorous and relevant evidence on which to ground education practice and policy and share this information broadly"[6]. Additionally, the administration proposed the creation of the Advanced Research Projects Agency for Education (ARPA-ED), which dedicates efforts in research in technology and digital learning for education. Modeled after the Defense Advanced Research Projects Agency (DARPA), the successful U.S. Department of Defense research entity, ARPA-ED can demonstrate both cost-effective efforts in education and the kinds of instructional and educational strategies and efforts that lead to the best outcomes for the nation's students and, thus, the country. Potential areas for needed research include how digital learning and technology affect or support credit recovery, dropout reduction, adolescent literacy, and rural education. The federal government should seek ways to disseminate research findings and promising practices more broadly to increase state and district access.

The Potential of Digital Learning and Technology

Technology and digital learning provide essential opportunities for education today, as states, districts, and schools face the immense challenge of ensuring that all students are prepared for college and a career despite tough budgetary times, increased global demands on student abilities, and a growing teacher shortage in critical areas. The promising practices shared in this brief point to several key areas in which technology and digital learning can make a difference for teachers and students. These examples illustrate how some states, districts, and schools are maximizing the potential of technology and digital learning to change student outcomes. While each example represents a different approach and model, they all demonstrate how states, districts, and schools are increasing equity and access, improving productivity and efficiency for teachers and administrators, and improving outcomes and achievement for students.

Federal policies can help states, districts, and schools as they determine how to utilize technology and digital learning to transform the education system. Specifically, the federal government has the opportunity to

- assist in infusing technology throughout education programs;
- provide a dedicated technology program to ensure leadership and innovation;
- encourage states to implement the DLC's "10 Elements";
- build on the recent National Broadband Plan and National Education Technology Plan models and recommendations; and
- invest in ongoing research and innovation.

The creation of policies that encourage and provide options for digital learning and technology and the continued sharing of lessons learned and promising practices are critical to taking the use of digital learning and technology to scale for more students in more states and districts.

This brief was written with support from Mary Ann Wolf, a digital learning and technology consultant for the Alliance for Excellent Education.

Endnotes

[1] J. Watson, A. Murin, L. Vashaw, D. Gemin, and C. Rapp, *Keeping Pace With K–12 Online Learning, An Annual Review of Policy and Practice* (Durango, CO: Evergreen Education Group, 2010).

[2] U.S. Department of Education, Office of Educational Technology, *Transforming American Education: Powered by Technology* (Washington, DC: Author, 2010).

[3] Alliance for Excellent Education, "What Are Common Standards?," http://www.all4ed.org/common-standards/what_are_common_standards (accessed July 15, 2011).

[4] Digital Learning Council, "Digital Learning Now!: 10 Elements of High-Quality Digital Learning," http://www.excelined.org/Docs/Digital%20Learning%20Now%20Report%20For%20Governors.pdf (accessed July 15, 2011).

[5] S. Patrick and C. Sturgis, *Cracking the Code: Synchronizing Policy and Practice for Performance-Based Learning* (Vienna, VA: International Association for K–12 Online Learning, July 2011), http://www.inacol.org/research/docs/iNACOL_CrackingCode_full_report.pdf (accessed July 27, 2011).

6 U.S. Department of Education, Institute of Education Sciences, "About Us," http://ies.ed.gov/aboutus/ (accessed July 15, 2011).