LEAD COMMISSION

PAVING A PATH FORWARD

FOR DIGITAL LEARNING IN THE UNITED STATES

SEPTEMBER 2013

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A TRANSFORMATIVE OPPORTUNITY IN K-12 EDUCATION

From communication to transportation, technology is constantly transforming and improving our lives, yet it plays a minor role in the United States K-12 education system. Meanwhile, the international community is rapidly deploying education technology, much of which comes from U.S.-based companies.

Answering a challenge from the Federal Communications Commission (FCC) and the Department of Education, the Leading Education by Advancing Digital (LEAD) Commission was established to answer two key questions: "*Why is the adoption of technology in education happening so slowly in the U.S.?*" and more importantly, "*What can we as a country do about it?*"

To that end, over the past 18 months, LEAD has collaborated with more than 300 global thought leaders in the education technology field. We have found that while the challenges to adoption are substantial, they are imminently solvable. With the right combination of national will, coordination, and modernization of existing government programs, digital learning can become a transformative reality for all of our schools over the next several years. LEAD is calling on and providing a plan for government, private industry, non-profits, teachers, students and parents to prioritize the advancement of digital learning to ensure that current and future generations of Americans receive the best education possible and are equipped with the skills necessary to compete in the 21st century global economy.

With affordable education technology at our fingertips, the deployment of digital learning is imperative for our children and, in turn, our country.

The LEAD Commission released a five-point blueprint in June 2013 with the following specific recommendations to accelerate the expansion of digital learning in K-12 education in the United States:

1. Solve our infrastructure challenge by upgrading the wiring of schools with high-speed broadband;
2. Build a national initiative to put learning devices in the hands of all students by 2020;
3. Accelerate adoption of digital curriculum and encourage continued innovation;
4. Embrace and encourage model schools; and
5. Invest in human capital to train our teachers.

The LEAD Commission believes that America's goal must first and foremost be to educate our children to the highest standard. With affordable education technology at our fingertips, the deployment of digital learning is imperative for our children and, in turn, our country. We look forward to working with state and federal policymakers, educators and business leaders to implement these important education reforms.

LEAD Commission Co-Chairs

Lee Bollinger, President of Columbia University
James Coulter, Co-Founder of TPG Capital
Margaret Spellings, Former U.S. Secretary of Education
James Steyer, Founder and CEO of Common Sense Media

DIGITAL LEARNING:

THE PROBLEM AND THE OPPORTUNITY

In today's world, where we expect fast Wi-Fi access with our coffee, it is surprising that minimal technology exists in the present-day classroom. Nearly every American school has some Internet access, thanks in large part to the Congressionally-mandated E-Rate program, through which the FCC has provided federal funding for Internet and telephony in schools and libraries since 1996. However, the infrastructure currently in place is heavily outdated relative to the stunning improvements made in network connectivity and Internet speed. At first, technology was only in the principal's office; now it is on the teacher's desk and is moving into the hands of students. Bandwidth users in schools are expected to increase from five million teachers and administrators to 55 million students over the next several years. Of the schools that have some level of connectivity, more than 80 percent report that their Internet connections are not currently meeting bandwidth requirements, leaving schools unable to meet the demands of 21st century learning.[1]

Building adequate infrastructure in schools is the first step to solving the problem, but there is also a simultaneous need to develop and adopt high-quality digital educational content and ensure the right devices are deployed in classrooms so schools are ready to take advantage of infrastructure improvements. With hundreds of players in the market, there is little order or direction to help drive effective, collaborative development and change.

It is increasingly clear that technology allows students to take advantage of unique, blended learning opportunities that will facilitate success in the future. Online adaptive courseware, student data aggregators and standards-based digital content are uniquely capable of personalizing the learning process for each student and preparing that student to succeed in a highly competitive global workforce. When applied effectively, education technology can help tailor instruction to the specific needs of each child and arm teachers with the right tools to increase their impact. Additional benefits include a level playing field, particularly for rural communities and in schools without access to advanced or specialized classes, and new outlets for students to showcase their individual talents. The LEAD Commission believes that expanded digital learning has tremendous prospective implications for students, including improved classroom achievement, increased graduation rates and lowered dropout rates. With technology, teachers are making more data-driven decisions and parents are better connected to their children's classroom performance.

Encouraging examples of digital technology implementation are starting to emerge across the country, but it is early days. Most prominently, the Mooresville, North Carolina School District has demonstrated genuine success in improving education outcomes with the implementation of digital technology. Having five years ago transformed its instructional model to be technology-centric, Mooresville saw a 300 percent increase in scholarships, an increase in graduation rates from 62 percent to 90 percent, an

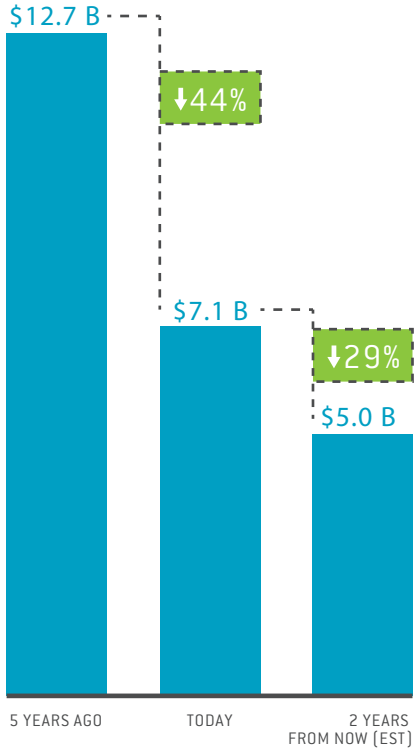
increase in academic proficiency from 64 percent to 89 percent and a decline in dropout rates from 5.6 percent to 1.8 percent.[2]

Moreover, education technology is more affordable than ever due to diminishing costs of both devices and connectivity. Five years ago, LEAD's blueprint for digital learning would have been prohibitively expensive with $1,000 work-stations, shrink-wrapped sub-par software, and torn-up walls to wire school buildings. Today, the plummeting costs of laptops, tablets, and other digital learning devices, as well as innovative cloud-based software and enterprise Wi-Fi technology, allow for this initiative to be affordable. According to the LEAD Commission's research, innovations in technology have lowered the cost of wiring each K-12 school by approximately 44 percent and reduced the cost of equipping each student with a device by approximately 75 percent compared to five years ago. In a sign of this newfound affordability, the Los Angeles Unified School District, America's second largest school district, recently announced a plan to provide its 650,000 students with tablet computers to better prepare them for a technology-based approach to Common Core State Standards curriculum set to launch in 2014.[3]

The United States is reaching a tipping point and we must collectively push for the advancement of digital learning in our schools. When compared to the rest of the world, the U.S. does not perform well on international tests, ranking 31st in math, 23rd in science and 17th in reading.[4] Countries around the world, including South Korea, Singapore, Turkey, Thailand, and Scotland have committed national support and resources to digital technology. LEAD believes that digital technology in every classroom is foreseeable and achievable – and if we do not act now, our children will fall further behind their international peers.

INFRASTRUCTURE COSTS FOR K-12 CLASSROOMS NATIONWIDE

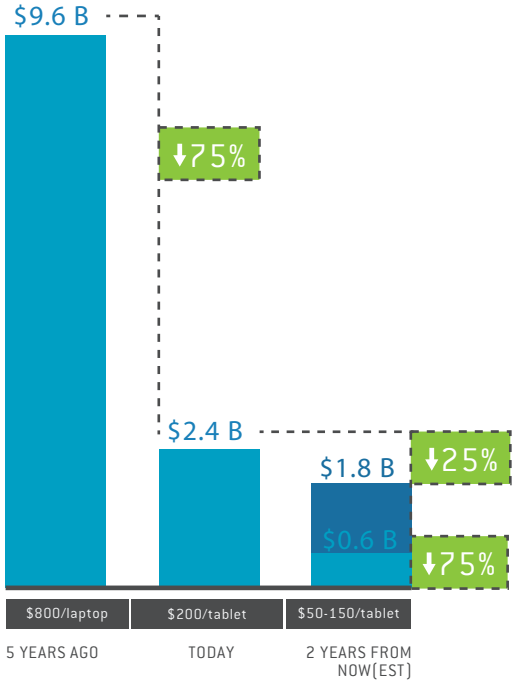
Note: Assumes 1.64 million classrooms nationally



Source: Education SuperHighway (mid-point); Bureau of Labor Statistics Consumer Price Index; Wall Street Research; LEAD analysis

DEVICE COSTS FOR 6TH – 8TH GRADE STUDENTS

Note: Assumes 12 million students in 6th-8th grade nationally



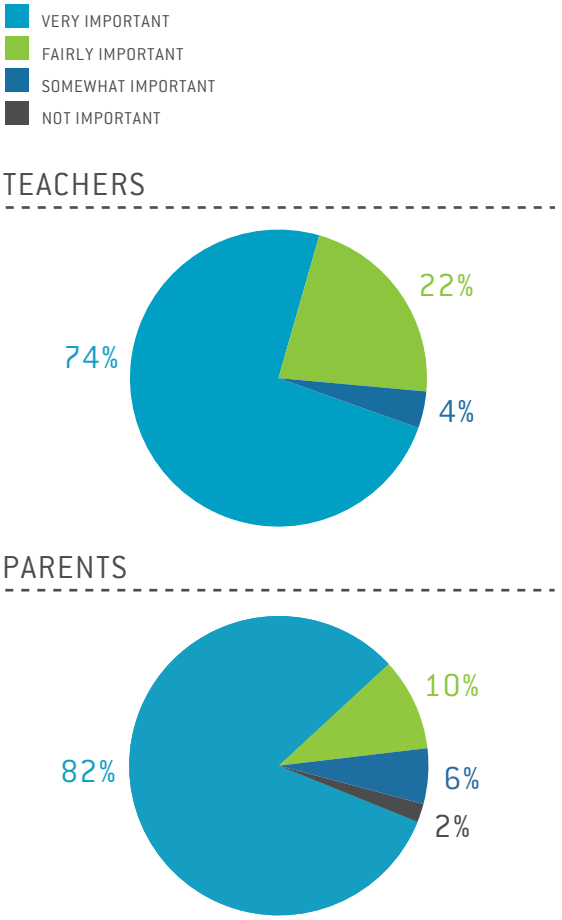
Source: Education SuperHighway (mid-point); Bureau of Labor Statistics Consumer Price Index; Wall Street Research; LEAD analysis

International Education Performance in Select Countries

Source: PISA 2009 Results: What Students Know and Can Do: Student Performance in Reading, Mathematics and Science (Volume I)

Luckily, there is growing interest from key stakeholders and strong bipartisan support to expand digital learning access – we must take advantage of this opportunity. The demand for education technology is real. A recent LEAD Commission poll of more than 1,600 parents and teachers of K-12 students found that 96 percent of teachers and 92 percent of parents believe that schools' integration of technology in teaching and learning is important to the education of American students today. The same poll found that 95 percent of teachers and 91 percent of parents strongly support additional investments in technology by local districts, states and the federal government.[5]

HOW IMPORTANT IS IT FOR SCHOOLS TO MAKE GOOD USE OF TECHNOLOGY IN THE EDUCATION OF STUDENTS TODAY?



Source: Hart Research Associates, "Parents' And Teachers' Attitudes And Opinions On Technology In Education" Key findings from quantitative research Conducted August 2012 for the LEAD Commission

Other highlights of the poll findings include:

61 percent of teachers and 63 percent of parents responded that the country is somewhat or **far behind the curve when it comes to American public schools' use of technology in education.**

54 percent of teachers and 64 percent of parents believe that the **role of technology in educating students will become much more important during the next 10 years.**

82 percent of teachers and 71 percent of parents believe greater use of **technology would be helpful in connecting learning inside and outside of the classroom.**

95 percent of teachers and 90 percent of parents believe that **home access to high-speed Internet gives students a big or moderate advantage** when it comes to classroom performance.

89 percent of teachers and 76 percent of parents would **choose to spend $200 per student for an Internet-connected device** over $200 per student for new science textbooks.

82 percent of **teachers believe that they are not receiving the necessary training** to use technology to its fullest potential in the classroom.

For all these reasons, now is the time to implement widespread connectivity, improve infrastructure, and deploy digital learning devices in every classroom.

LEAD COMMISSION ACTIVITY

Since its formation in March 2012, the LEAD Commission has spoken with a broad cross-section of teachers, parents, local government officials, school officials, students and education technology industry leaders about the challenges of implementing technology in the classroom, and the impact technology has on student achievement. Our work involved hundreds of interviews, product demonstrations, school visits, and travels in the United States and around the world.

During the summer of 2012, LEAD met with the Education Ministers of Singapore and South Korea. In both countries, the Ministers made it very clear that implementing digital learning is a top national priority. Singapore and South Korea, among other nations, understand that the earlier they put technology in the hands of students the better prepared those students will be to participate in the increasingly tech savvy workforce and global economy.

In September 2012, the LEAD Commission hosted a conference at Stanford University with over 100 education and technology experts. Using the conversations and interviews that took place in the months prior as a guide, the education experts collectively identified and advanced the key challenges and potential recommendations to move forward and implement digital technology in the classroom on a national scale.

In July 2013, LEAD Co-Chair James Coulter testified at the Senate Commerce Committee's Hearing on "E-Rate 2.0: Connecting Every Child to the Transformative Power of Technology." Coulter's testimony reflected the work of the LEAD Commission in studying the current state of technology in schools and the urgent need to gain support and national will to push the Commission's recommendations forward. LEAD Co-Chairs Margaret Spellings and James Steyer also made a presentation to the Federal Communications Commission about the need to modernize the E-Rate program and to wire schools with sufficient broadband capacity to permit digital education.

Following their presentation, the FCC voted to initiate a thorough review and modernization of the E-Rate program built around three goals: increased broadband capacity, cost-effective purchasing, and streamlined program administration.[6]

On September 10, 2013, in conjunction with The Annenberg Retreat at Sunnylands, Common Sense Media, and New Schools Venture Fund, LEAD is hosting a conference in Washington, D.C., titled "Connected Learning in the Digital Age: Improving American Education Through Technology." During this day-long meeting, educators, business executives and government officials will explore a series of possible solutions, including how to best streamline and modernize E-Rate, the most effective methods of assuring the availability of digital devices, evaluating course materials, and supporting teachers in the digital classroom.

LEAD COMMISSION FINDINGS: ADDITIONAL DETAIL

The LEAD Commission has drawn the following conclusions about the current digital learning landscape:

- Current infrastructure is inadequate and does not provide sufficient high-speed Internet access in the classroom;
- The marketplace is broken and a national collective purchase process is nonexistent;
- A lack of national action could hinder U.S. competitiveness;
- 1,000 Flowers Have Been Planted But No Shape to the Garden; and
- Necessary training and integration support for educators is minimal.

Current Infrastructure is Inadequate and Does Not Provide Sufficient High-Speed Internet Access in the Classroom

The most immediate and expensive barrier to implementing technology in education is inadequate infrastructure, including high-speed Internet connectivity and suitable Internet-enabled devices. Progress is challenged in part by the bandwidth and resource crunch that bottlenecks many schools. These limitations have a direct impact on classroom learning.

Nearly 20 years ago, Congress directed the FCC to establish the E-Rate program in order to bring the tools of modern communications into the classroom. Since then, the E-Rate program has been a hero for providing America's K-12 schools with access to the Internet; however, today, we face a critical issue of insufficient capacity, not access. While today's schools are wired, they generally do not have the bandwidth needed to meet the demands of 21st century learning. According to Education Superhighway and FCC data, 80 percent of K-12 schools report that they do not have sufficient broadband and 83 percent say that they have outdated Wi-Fi networks.[7]

To remedy these inadequacies, the State Education Technology Directors Association (SETDA) estimates that schools will require 100 Mbps of bandwidth for every 1,000 students/staff members by the 2014-2015 school year. Currently, only 10 percent of schools are equipped with bandwidth of 100 Mbps or higher. By 2017-2018, the required bandwidth increases to 1 Gbps.[8] It's clear that unless we address schools' internal barriers, little can be done to fully modernize our classrooms.

The Marketplace is Broken and a National Collective Purchase Process is Nonexistent

The LEAD Commission has found that the education technology market is extremely complicated and arguably broken due largely to significant market adoption issues. Education is by its nature an "enterprise market," where school systems are in need of holistic solutions rather than just point-solution, consumer-oriented products. State, district and school leaders currently want to buy digital courseware and education technology vendors want to sell it, but rarely have both parties been able to transact. Structural barriers limit the scaling potential for digital learning in schools, making educators more risk-averse and uncertain about which digital resources can best serve their needs.

In addition, the American education system is historically risk-averse – purchase decisions skew towards "safe" traditional products. Today, schools' use of technology is therefore limited, with too few high-quality, "approved" digital learning resources available. In addition, purchasers of education technology solutions do not have the data and tools required to make informed decisions due to a lack of existing metrics, including expert ratings, independent certification and quantitative measures of quality. Many great examples of technology implementation currently exist, however, they are isolated and

there is little communication between schools or school districts regarding best practices and lessons learned throughout the purchase process. Among the powers of technology generally is its ability to scale quickly for the benefits of its users, and the K-12 education market should be no different once purchase processes are improved and scale implementations are accomplished. In essence, the U.S. is dealing with a fundamental disconnect in the education technology transaction process.

Adoption and distribution are further hampered by the numerous decision makers in each state and district. The U.S. education system tends to function like 16,000 different uncoordinated countries. In many states, arcane approval policies coupled with provider-to-school transactions occurring largely independently result in multi-year sales cycles. School systems, therefore, always remain a step behind the most recent technological advances. Without intervention, this type of market will continue to develop noticeably slower than the progress most U.S. school districts are ready to make, creating a vivid disconnect with negative consequences on children across America. Today, our decentralized education system cannot drive technology integration at scale on a fast enough timeline without state reform and a more coherent, coordinated education technology market.

A Lack of National Action Could Hinder U.S. Competitiveness

Many other countries are advancing digital learning in schools through collective national efforts to clear the pathway for scalability. For example, South Korea has 100 percent of schools connected to the Internet, 100 percent of teachers trained in digital learning and 70 percent of curriculum involving e-learning as a result of four national "master plans" for digital learning. South Korea is also moving toward all digital textbooks by 2015.[9] In Thailand, about 850,000 tablets have already been distributed throughout urban and rural classrooms and, by the end of 2014, the government plans to distribute handheld computers to 13 million school children at a cost of about $100 each – a total of $1.3 billion – and then replace them every two years.[10]

Earlier this year, Turkey's Prime Minister toured the U.S. to identify a technology provider that will supply 10 million tablets to Turkish students by 2015[11]. These countries and others believe the earlier they put technology in the hands of students and make it an active part of their education the better prepared those students will be to participate in an increasingly tech savvy work force.

In the U.S., states continue to cut education budgets due to financial pressures. As a result of little national and coordinated action, educators continue to lack the proper guidance and support that is required to apply technology effectively to meet learning objectives. Without a clear national plan and concerted action, the U.S. will almost certainly remain behind other countries.

Project RED, an education advocacy and research group, identified nine elements for how a school can best use technology to transform its education model.[12] They found that only one percent of all public schools have succeeded across all nine elements. Budget constraints are a clear deterrent that complicate matters.

In February 2013, the Pew Internet & American Life Project, which explored middle and high school teacher usage of technology at home and in the classroom, found that the lowest income students were faced with the most challenges when trying to bring digital learning resources tools to the classroom.[13] There is demonstrated demand for the implementation of technology in U.S. classrooms; however, the current rate of adoption is unacceptably slow and uneven. Digital learning must be a national priority to ensure that every child, regardless of socio-economic status, has access to the same high-quality, 21st century resources. Without equitable technology implementation in the classroom we risk further exacerbating the digital divide.

Technology has the ability to be an incredible equalizer for traditionally under served communities. Unfortunately, uneven technology adoption in our nation's schools risks exacerbating existing socio-economic inequality. Today, effective use of technology has the unique ability to reverse this trend by improving learning and equipping students with 21st century skills needed to be competitive in today's global economy.

Moreover, increased U.S. demand for education technology will spur private-sector competition and innovation in educational devices and digital learning content. In turn, a robust domestic market in education technology can lead to export opportunities in the vast global education marketplace.

1,000 Flowers Have Been Planted But No Shape to the Garden

Terrific examples of digital learning implementation are sprouting around the country, including Mooresville, Los Angeles Unified School District, New York City's iZone, Maine,

Rocketship Academy, and KIPP Empower Academy, among others. The Rocketship Education digital learning model reduces the cost of a traditional school by 24 percent through selective implementation of technology, with the savings reallocated to school programming and teacher compensation.[14] Silicon Schools Fund provides funding for new blended learning schools that use innovative education models and technology to personalize learning. Silicon Schools Fund plans to open 25 schools during the next five years that will serve as labs of innovation and proof points for blended learning.[15] Each of these schools or school districts has identified a unique strategy to best implement digital learning in their specific target school or school district.

Through extensive research, LEAD found that although we have a growing number of examples of digital technology implementation around the country, the examples are from all different types of districts. From New York City to rural Arizona, individuals on the front lines of education are coming up with innovative ways to modernize their schools and bring them into the 21st century. However, the way that one district implements digital learning often differs from the district next door. In addition, schools, districts and states are at all different stages of digital learning adoption and therefore implementation plans will vary. Although LEAD has identified a diverse group of implementation plans, LEAD has also come to understand that there is no one fix that will work nationally. We must identify implementation strategies that are both a mile wide and a mile deep if we hope to implement digital learning across the U.S. There must be a plan for rural and urban schools, high tech and low tech schools and schools that are in all different socioeconomic environments.

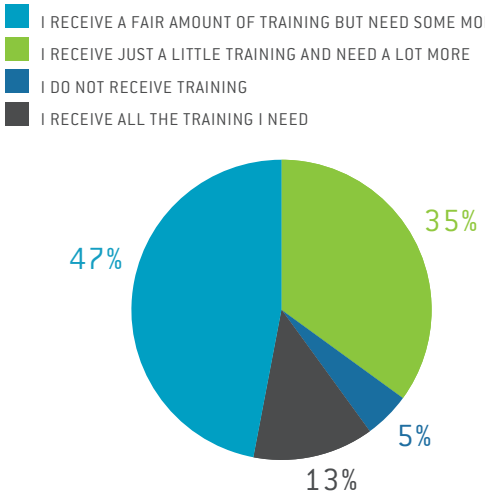
Necessary Training and Integration Support for Educators is Minimal

There are training requirements associated with integrating digital learning in the classroom, yet the majority of teachers lack access to such training. Often, teachers receive training on individual solutions but are not taught to use technology holistically. A recent poll found that 82 percent of teachers surveyed believe they do not receive the training necessary to use technology to its fullest potential in the classroom.[5]

Not only do teachers feel they are not well equipped to use technology in their classrooms, but the LEAD Commission found that more than 40 percent of principals hesitate to integrate technology in their schools due to inadequate levels of teacher training. Arizona's Dysart Unified School District is one example of a district that has found ways to combat the lack of training and support. The Dysart Unified School district believes collaboration is a large part of the digital learning culture and has implemented an "innovation ambassador" program in each school to provide teachers with resources and guidance on how to best use technology as learning tools. Since the program was implemented, innovation ambassadors have provided district teachers with the knowledge, training and tools to implement 21st century learning into the classroom.[16]

A comprehensive teacher training program that combines instruction about products and services, as well as the personnel to provide integration support is required to build and sustain the growth of the education technology in the classroom.

WHEN IT COMES TO RECEIVING TRAINING and professional development on technology, including the basics on how to use different devices and forms of technology as well as training on different teaching methods and approaches to integrating technology into what they do, teachers say:



Source: Hart Research Associates, "Parents' And Teachers' Attitudes And Opinions On Technology In Education" Key findings from quantitative research Conducted August 2012 for the LEAD Commission

THE LEAD COMMISSION'S NATIONAL EDUCATION TECHNOLOGY INITIATIVE – A FIVE-POINT PLAN

Despite the challenges at hand, the LEAD Commission believes that targeted government support, private investment and philanthropic initiatives can help the country break through existing and future barriers. The full benefits associated with low-cost technology implementation cannot be realized without scale and without a national commitment. LEAD believes President Obama's ConnectED Initiative represents a critical step towards bringing the resources that are needed to build the innovative education model our students deserve to compete in an increasingly digital world.[17] And, the FCC's recent bipartisan action to launch the first comprehensive update of its so-called E-Rate program, which has helped support schools' and libraries' access to modern communications networks since 1997, is promising.

Given the understanding of today's landscape and challenges, the LEAD Commission recommends a five-point plan that calls on federal, state, local, private and non-profit sectors to arm schools and students for the 21st century.

1. Solve the Infrastructure Challenge by Upgrading the Wiring of Our Schools

The U.S. government has traditionally assisted in bringing basic infrastructure to the entire country through programs such as the National Highway Act, the Rural Electrification Act, and the Universal Service Fund. In 1996, Congress and President Clinton wisely worked together to create the E-Rate Program, through which the FCC would assure that all the classrooms in the country would have access to modern communications technology.

The centerpiece of solving today's school infrastructure challenge is E-Rate modernization. When the bipartisan effort created the federal E-Rate program in 1996, our country embraced the belief that all students must have access to basic telephony and broadband connectivity in K-12 schools. Building on its previous success, it is time to upgrade connectivity to high-speed broadband in a timely, efficient manner so that our schools have not just access to the Internet, but also sufficient bandwidth and the capacity to support personalized learning for all students.

The E-Rate program has been a success in doing what it was originally designed to do—bring Internet connectivity to our nation's schools and libraries. From 1996, when E-Rate was first implemented, to 2004, the number of schools connected to the Internet increased from 14 percent to more than 95 percent.[18] The E-Rate program has provided tremendous benefits for rural and urban schools, public and private, and has helped bridge the digital divide across America.

By 2008, as a result of the E-Rate program, nearly 100 percent of schools and 94 percent of classrooms were connected to the Internet.[19] Yet back then, and continuing today, the challenge has been to ensure that the program is updated and helping to move the needle for our students. Although the E-Rate program has been successful in bringing affordable telephony and basic Internet connectivity to K-12 classrooms, in the era of tablets and digital educational content, the connectivity provided under the current E-Rate framework is no longer sufficient. We need an E-Rate program that supports learning that can happen anytime, anywhere, at any pace.

The E-Rate program should be updated to reflect the realities and needs of kids and schools today. Several key goals are important to this rulemaking process:

- The program should be aligned with today's technology, focusing on high-speed bandwidth.
- It should focus on supporting next generation models such as online and blended learning.
- The program should be simplified to make it easier for school districts to access E-Rate funds.
- It should be updated to align with current reform efforts in education.
- It should better connect to other technology efforts at the state and local level so that we leverage other efforts and build a cohesive system.
- The program should increase price transparency and provide incentives to purchase bandwidth more efficiently.

By reviewing how E-Rate funds are currently used and how they could be better used in the future, the FCC has an opportunity to make the current program more strategically targeted towards the needs of today's teachers and students. By updating the program, E-Rate can provide the funding necessary to migrate our schools from the current inadequate bandwidth to high-speed broadband in a timely, efficient manner. Working with states, localities and the private sector, the federal government is uniquely positioned to catalyze efforts to start building the necessary infrastructure in schools.

2. National Effort to Deploy Digital Learning Devices

LEAD is calling for a national initiative to put devices in the hands of all students by 2020. The suggested path forward is to: (i) initially prioritize devices for the country's 12 million middle schoolers, as a means to create a "wedge" into the system from which the program can spread; (ii) leverage public and private efforts to aggregate purchasing; (iii) call on device manufacturers to develop more aggressive programs to make devices affordable to schools and available to families on an equitable basis; and (iv) repurpose state and district funds currently spent on textbooks. To raise student achievement, the LEAD Commission believes that strong implementation plans are critical in ensuring that device programs are successful. Focusing initially on middle schoolers will help inspire student interest in science, technology, engineering and mathematics education, as well as encourage positive digital citizenship at a formative stage in a student's life.

Many State Departments of Education and school districts throughout the country have started implementing device programs. It's time to build on those successes by comprehensively delivering learning devices and courseware to a broader group of America's students. Device deployment will have derivative benefits to the content market—once iPhones were deployed, the applications market blossomed; likewise, once devices achieve large scale deployment, content development will dramatically accelerate. This, in turn, will create additional demand in the marketplace for digital products. An increase in demand will stimulate innovation and reduce costs, allowing for broader adoption in K-12 schools over time.

...the federal government is uniquely positioned to catalyze efforts to start building the necessary infrastructure in schools.

3. Accelerate the Adoption of Digital Curriculum

There are an ever-increasing number of innovative products in the education marketplace. Products such as online adaptive courseware, student data aggregators, and standards-based digital content are uniquely capable of personalizing the teaching and learning process for each student, while preparing our children to succeed in the 21st century work force. Additionally, 45 states have adopted the Common Core Standards and online assessments, which provide a natural entry point to integrate technology in the classroom. Broadband-enabled technology and content can help teachers access just-in-time professional development, training, assessments, and educational content to help students master Common Core.

Unfortunately, adoption of these products in the K-12 system has been slow. One reason for that is the natural risk aversion amongst administrators, educators and parents to trying new things unless and until they have been deemed "safe." Another is most products in the marketplace solve for specific needs, but few offer comprehensive curricular solutions. And a third reason is that our decentralized education system of district and school leaders rely on multiple decision makers, who have limited resources to help them navigate these complicated purchasing decisions.

We must develop safe, effective and efficient ways for teachers, school principals, school districts and states to evaluate and purchase comprehensive, high quality digital learning products. To foster that acceleration, the LEAD Commission recommends the following:

- **Evolve State and District Purchasing Cycles to the Digital Age**. Currently, many states and districts live with multi-year purchasing cycles dictated by the traditional textbook "edition" model. In a world of constantly changing digital delivery, states and districts need to adopt more flexible, timely procurement processes.
- **Create an Independent Certification Program**. An independent, non-governmental certification program that identifies approved, high-quality curriculum and content solutions is needed in the market. It would help support a safe purchasing process and incentivize school districts to accelerate the transition to digital learning.
- **Increase Innovation and Research Funds**. The marketplace would benefit from the availability of capital to fuel both new innovations and research to better understand and verify the effectiveness of new advances. Capital targeting entrepreneurs, businesses and researchers would not only help bring new, more effective products to market, but also foster greater competition. We have seen variations of this model work successfully with the National Institutes of Health, InQTel and DARPA why not in education?

The LEAD Commission strongly recommends establishing a program to empower 100 percent of teachers on use of information and communications technology over the next three years.

4. Embrace and Encourage Model Schools

As detailed in the Findings section of this report, terrific examples of digital learning implementation are happening all around the country. These examples provide powerful reinforcement and display the future of technology in education, but they are relatively few in number and do not yet have sufficient influence. On the other hand, international leaders in digital learning, such as Singapore and South Korea, have nationally funded pools of technology-enabled model schools as a means to demonstrating the future of education. We need our private, public and philanthropic sectors to commit to fund model schools to create petri dishes of innovation.

LEAD seeks to shine a bright light on the work being done by existing model schools, and to foster the development of new model schools. By working with The League of Innovative Schools, Silicon Schools Fund, and others, LEAD hopes to see over 200 model schools in diverse settings around the country by 2016. LEAD hopes these schools will provide blueprint implementation plans that will be relevant to every school and school district in the nation. It is critical for the model schools to broadly share and disseminate best practices and implementation strategies.

5. Invest in Human Capital

Digital learning is not about "one to one" learning between a student and a device; it is about "one to one to one" learning involving a teacher, a student and a device. A common perception is that teachers are anti-technology, but LEAD's polling shows that 96 percent of teachers believe that the integration of technology in teaching and learning is important to the education of America's students. Yet only 18 percent of teachers believe they are receiving the necessary training to use technology to its fullest potential in the classroom. For technology to be properly deployed, teachers need to be empowered to embrace and use it effectively in the classroom.

The LEAD Commission strongly recommends establishing a program to empower 100 percent of teachers on use of information and communications technology over the next three years. The creation of "master teachers" to help train other teachers in best practices could be crucial to scaling this program (a practice used successfully in other countries). Funding for teachers' professional development would utilize portions of existing federal dollars available for teacher training.

CONCLUDING THOUGHTS

This five-point proposal is both ambitious and achievable, offering the opportunity to create significant long-term gains for our schools, students, technologically savvy workforce and economy. The LEAD Commission's plan drives toward the following outcomes:

- Through universal connectivity and the delivery of devices to middle school students, the U.S. will begin to break through the existing market and infrastructure roadblocks.
- By closing the technology gap, we can prepare a technologically enabled generation of students to meet the needs of a competitive international workforce.
- As device innovation and curriculum development continues at a rapid pace, digital learning costs will continue to decrease and devices will become ubiquitous.
- School systems will have a series of safe, efficient and effective ways to procure content and tools and move forward with digital learning adoption.

Rethinking the approach to education technology transcends party lines, as evidenced by support for digital learning efforts from elected officials and public figures from both sides of the aisle. Building on the bipartisan approach of 1996, numerous private studies demonstrating the need for action, the unveiling of the Administration's ConnectED initiative, Congressional hearings, and the FCC's initiation of the E-Rate modernization proceeding, all have led to growing attention being paid toward this issue.

Now is the critical moment for the U.S. to prioritize the investment in digital learning. While technology is not a panacea, it transforms almost every industry it touches. A lack of technology in the classroom may create substantial long-term risks to our national competitiveness. Fortunately, the modernization of E-Rate and the LEAD recommendations give us an effective path to make sure schools and teachers have the digital learning tools they need to prepare our children and our country for the future.

As Americans, we pride ourselves on always being solution seekers, no matter how difficult the problem. Yes, our U.S. education system faces significant tests and tough international competition, but we as a nation can rise to the challenge. It is time for our country to collectively decide to make the modernization of our schools a national priority.

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FOOTNOTES

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