CC Docket No. 02-6

WC Docket No. 10-222

Summary of Interim Reports Submitted by EDU 2011 Pilot Program Schools and Libraries

"I cannot stress enough how beneficial the [EDU2011] program has been to me as a parent and to my grandson as a student…I would like to say that I feel this program should be extended to all grade levels."

<div align="right">

-Grandparent, San Diego Unified School District

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We live in an increasingly connected world[1] where the majority of Americans[2] utilize technology to enhance how we interact with a broad spectrum of society. This ever-evolving technology landscape is influencing our lives in ways we may have never imagined a few short years ago by transforming music, books, employment searches, along with *how* and *where* we are able to work. In a little more than a decade, technology has enabled workers to telecommute thanks to WiFi and 3G/4G technologies, increasingly efficient mobile devices, and the move to cloud-based computing.

Education leaders understand the opportunity that technology holds for students. In a connected world, students have the ability to access rich learning and teaching resources via the Internet. Original source materials are only a click away. The ability for students to collaborate on homework, no matter the distance, is now a reality. They are no longer tied to a school computer lab or a long wait at the local library. Mobile technology has enabled students to learn anywhere without having to carry a backpack full of books. One tablet computer can hold the equivalent of many years' worth of educational content. With broadband connectivity as well as cloud computing, students may access and interact with content whenever and wherever.

Further, government agencies and other dedicated organizations are in pursuit of ensuring that individuals and disadvantaged groups have access to information and communication technologies as well as the skills to use them. This concerted effort is collectively referred to as *digital inclusion* that means everyone, regardless of who they are or where they live, can participate in and take advantage of the economic, educational, health and civic opportunities

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[1] Data used from the Internet World Stats site. http://www.internetworldstats.com/stats.htm
[2] Data used from the 2009 U.S. Census Report on Internet Usage
http://www.census.gov/compendia/statab/2011/tables/11s1155.pdf

and resources afforded by broadband technologies. Digital inclusion is more than simply access to the Internet. It connotes that all potential users know how to use it to improve their lives through increased access to information and services.

Digital inclusion comes at a cost, including the costs of a device, the monthly charges that accompany broadband service--ranging from $30 to $80/month—often involves data usage caps (depending on one's geographic locale). For the majority of our students today, broadband connectivity at home is a commodity--something that is as available as cable television or a telephone. However, for many families, a $30.00 to $80.00 monthly cost could be a decision between an Internet connection and which bill to pay. This dilemma leaves many students at a learning disadvantage in relation to their peers who are able to afford mobile high-speed Internet access. The potential for low cost Internet or Internet access provided through school will have the effect of equalizing the playing field for those students who are less fortunate than their peers.

> *"Internet technology has transformed systems, increased efficiencies, and improved results across countless fields, including post-secondary education."*
> > *-California County Superintendents Educational Services Association (CCSESA) E-Learning Framework*

The Federal Communications Commission (FCC) emphasizes the potential for education in the National Broadband Plan:

> "*Broadband can enable improvements in public education through e-learning and online content, which can provide more personalized learning opportunities for students."*

> *"Today, millions of students are unprepared for college because they lack access to the best books, the best teachers and the best courses. Broadband-enabled online learning has the power to provide high-quality educational opportunities to these students—opportunities to which their peers at the best public and private schools have long had access."*

> *" ...broadband can improve the flow of educational information, allowing teachers, parents and organizations to make better decisions tied to each student's needs and abilities."*

Recognizing there is an opportunity to expand broadband usage in education, the FCC initiated the E-Rate Deployed Ubiquitously pilot program (EDU 2011) to determine the feasibility of expanding the E-Rate program to include off school premises Internet access for students. This document summarizes the interim reports submitted by 14 of the 20 organizations participating in the FCC's EDU2011 Pilot Program (see Addendum 1 for Participating Organizations and Addendum 2 for Project Descriptions). On February 24, 2012, in accordance with the *Schools and Libraries Sixth Report and Order*, the program's participating organizations were required to submit an interim progress report to the Commission discussing, at a minimum, the implementation of their respective projects in relation to:

- Project benefits

- Project costs
- Effectiveness of protective measures
- Lessons learned

The principal points expressed in the interim reports are segmented into the following sections:

I. Background
II. Project Benefits
III. Project Costs
IV. Lessons Learned
V. Conclusion

NOTE: The content of this summary represents an amalgamation of information as provided in the interim reports submitted to the FCC. It is not a scientific analysis of progress made by the EDU2011 Pilot Program participants.

The submitting organizations were provided with a two-week period to review the draft of this summary and submit amendments, revisions, corrections. This report reflects all and any comments submitted by the organizations.

I. Background

The E-Rate Program

Since its inception in 1997, the Schools and Libraries Program of the Universal Service Fund (commonly known as E-Rate) has been a federal mechanism supporting several services including wireless Internet access for schools and libraries. Administered by the Universal Service Administrative Company (USAC), it is under the direction of the FCC and provides discounts to assist most schools and libraries in the United States to obtain affordable telecommunications and Internet access.

E-Rate supports connectivity--the conduit or pipeline for communications using telecommunications services such as the Internet. More specifically, funding is provided for the following four services:

- Telecommunication services (e.g. lit or dark fiber)
- Internet access (email service, basic firewall protection, etc.)
- Internal connections (e.g. cabling, antennas, access points used in a Local Area Network [LAN] environment, etc.)
- Basic maintenance of internal connections

Support ranges from 20% to 90% depending on the level of poverty and the urban/rural status of the population served. Applicants are required to provide additional resources such as end-user devices as well as professional development, software, and any other components needed to use the connectivity funded by the E-Rate program. However, the E-Rate program, in its current form, does not support the use of wireless Internet access off school premises.

Many of the ways students and library patrons communicate today did not exist or were not in widespread use in 1997 (i.e., Web 2.0, WiFi, mobile smart devices). As such, the FCC took a measured approach to modernizing the E-Rate program while maintaining protections to ensure that E-Rate support is being used only for its intended purposes.

Pursuant to the public comments made in response to a *Notice of Proposed Rulemaking* as well as the National Broadband Plan submitted to Congress in 2010, the Commission issued order FCC 10-175 which set in motion the E-Rate Deployed Ubiquitously Pilot Program (EDU 2011). The goals of the program are threefold:

1. Enable schools and libraries to better serve students, teachers, librarians, and their communities by providing more flexibility to select and make available the most cost-effective broadband and other communication services
2. Simplify and streamline the E-Rate application process
3. Improve safeguards against waste, fraud, and abuse of the E-Rate program

EDU 2011 Grant (Learning-on-the-Go)

The *E-Rate Deployed Ubiquitously (EDU) 2011 Pilot Program* (announced on September 28, 2010) was set in motion to explore the merits and challenges of wireless off-premises connectivity services for mobile learning devices to help the Commission determine whether and how those services should ultimately be eligible for E-Rate support. Of the 94 applicants, 20 projects for schools and libraries across 14 states were funded with a little less than $10 million dollars to implement the pilot program that was most commonly referred to by the program participants as the *Learning-on-the-Go*, or LOGO, wireless pilot program.

Spanning from California to New York, the 20 selected projects support mobile access to the Internet in order to improve educational opportunities for students or help library patrons find and apply for jobs. The wide-ranging initiatives include off-campus access to e-textbooks for students; netbook connectivity for students living in remote, isolated areas, access to flexible, online education programs for homebound students unable to attend classes because of medical challenges, and a variety of other forward-thinking projects.

The selected projects represent diverse populations and organizations that are served in urban, rural, suburban, and nature-based education settings. The list below reflects the diverse populations, organizations, and program sizes served in urban, rural, suburban, and nature-based education settings:

- Programs serve Kindergarten through adult learners.
- Projects represent school districts, non-profit organizations, individual school sites, charter schools, intermediate agencies, and library systems.
- Pilot programs range in size from 30-3000+ individuals.
- Desktops, netbooks, Smartphones, iPods, tablets, and laptops are utilized by different projects.

II. Project Benefits

Selection for the *Learning-on-the-Go* grant was a highly-competitive process. Although each of the projects shares key elements that align with the overall project vision and goals, the FCC

invested in different types of projects. The projects share a common focus on anytime/anywhere access through the use of mobile wireless networks and devices intended to improve student achievement, community success, and provide a positive impact at the individual, local, or regional level. This section highlights specific benefits of the LOGO project reported by participating organizations.

Keeping Students in School Who Otherwise May Have Dropped Out

From the beginning of the 2010 school year through February 1, 2012, Aurora Public School Online students have completed 2,419 courses resulting in 604.75 credits being earned towards graduation. In the 2010 school year, 25 students graduated as a result of the program. To date, 16 students have graduated in the 2011 school year with another 30 on pace to graduate by the spring of 2012. As explained in the original application, the vast majority of these students would not be in school if not for the option for an alternative educational setting.

> *"They [the students] are embracing the concept of the desire to learn and explore; therefore embracing lifelong learning."*
>
> *-Teacher, Katy ISD*

True 24/7 Learning Opportunities

Katy ISD teachers are relying on the mobile learning device (MLD) because of the rich, engaging resources at the students' fingertips. Since the device is readily available for students no matter their location, the lessons have evolved to rely heavily on this mobile device. Uploading and posting lessons and resources not only for school work but for homework as well makes this learning environment unique because learning with technology continues with them no matter the location or time of day.

For students, learning with technology is no longer viewed as something done on certain days in the computer lab - with the MLD it has become an integral part of their day. Understanding new concepts and going much further and deeper on a topic than what is expected from a state goal is what has been experienced in MLD classrooms. One teacher states, "[Students are] learning so much more than what we are required to teach them," which really sums up the teacher perspective.

> *"If Dylan needs to finish a project or homework while we're out, he can bring his laptop and work on his school work and get things done."*
>
> *-Parent, San Diego*

Leaders from Orleans Parish report, "After the broadband access was made available, the observations show a marked increase in student-led learning as the teacher became comfortable assigning work to specific learners and/or learning communities within the class that can be pursued outside of class."

Increased Student Achievement

In Riverside (RUSD), participating LOGO students scored 4% higher in math and 5% higher in language arts than the similar age group tested last year at this time. Teachers and parents report a higher level of engagement both at school and at home.

In San Diego (SDUSD), after utilizing wireless broadband on student devices for over two years, Innovation Middle School has shown significant increases in student achievement including a gain of 43 Academic Performance Index (API) points from 2010 to 2011, the highest growth for any middle school in the district.

Increased Student Confidence in Math Abilities

In Onslow, by the end of the Fall 2010 semester, 89% of the Algebra I students reported they are more motivated to learn math compared to 76% at the beginning of the semester. The majority of students reported they are also more comfortable learning math (83%), felt more successful (72%) and better prepared to take the end-of course exam (72%). By the end of the semester, the number of students who thought "math is easy" doubled, indicating a greater confidence in their ability to be successful in math.

> *"Students are able to practice concepts I've taught in math using apps and games on their MLD. For example, after I taught Area and Perimeter, students were given Quick Response (QR) codes to scan that took them to games they could practice finding the area and perimeter of shapes. Typically, students would be given a worksheet to practice solving these problems and now they can use interactive games that reinforce concepts while they have fun."*
>
> *-Teacher, Katy ISD*

Improved Assessments

In Katy ISD, connectivity offers the ability to take formative assessments that gives the students and teachers the instant feedback that is needed during the learning process. Many students are gamers and they are faced with decision points every 1.5 seconds and a response to the decision every 7 seconds. Sometimes the response is one that is favorable to the decision point while some are not. The point is feedback. Learners need the constant feedback because teachers are constantly giving them many concepts to learn throughout the day.

In Sioux City, the EDU 2011 wireless laptops allow for a complete overhaul of the way the school district conducts assessments, obtains data, and uses the results. The EDU 2011 devices and access served as a catalyst for the District to standardize quarter and semester tests across buildings. Tests in high school are now administered through the wireless devices using the assessment module of the District's learning management system. Test results are instantaneously displayed to students and auto populated into the teachers' grade books. This process by itself proves valuable in eliminating non-value added time that teachers spend scoring and entering grades. Additionally, students and parents were extremely happy to be provided with instant results especially for very high stakes tests.

Increased Interest in College and Math Related Degrees and Careers

In Onslow, Algebra I students reported they are more interested in attending college (56%) or pursuing a degree or career that would use their math skills (3%). Students also reported an increased interest in joining the military (22%). The top career picks for Algebra I students included science-related fields (including health care), engineering/technology or math-related fields, entertainment and military, fire or law enforcement.

Increased Communication with Second Language Parents

In Riverside, central administration reports a 50% rise in digital communications from Spanish speaking parents who did not previously have Internet access. Parents and staff use Google Translate to be able to communicate regardless of primary language.

Increased Student Ownership of Learning

In Sioux City, the use of netbooks with wireless access helped teachers target multiple learning modalities, offering more students a chance to learn through a method with which they are comfortable. The richness and reach of the blended curriculum and anytime, anywhere access allows students to move at different paces through lessons without leaving anyone behind or bored in class.

One example includes English II and English III. These courses require research papers, often a long and painful exercise for many students. As a result, many struggling students simply choose not to do the paper. In some classes, the percentage of students not turning in the final paper was as high as 50%. With the wireless devices, teachers gave students a wider variety of ways to complete the paper making it more about the research project/process than just typing a paper. Students used a blog to self-reflect and added video and other elements that were not possible before. Students collaborated online and provided feedback on each other's work. The device also made possible a wide and more relevant field of topics with which students could work. In the end, teachers had every student participate and turn in the final project. While there are still wide variances in quality, the fact that at least everyone participated and did not "unplug" is a very positive step to help raise student achievement.

III. Project Costs

On average, organizations are spending approximately *$48/month* for Internet access related to their EDU 2011 funded programs.

Table 1. Services and Costs

Organization	Service type	ISP Cost per month	Provider	Notes
Aurora	WiFi	$43.00	Verizon	
MTA	WiFi	$36.00	Verizon	

Mohican	WiFi	$63.00	Sprint	Includes student end device
Haralson	3G	$38.00	Verizon	
Riverside	3G	$38.00	Verizon	Includes student end device Blended with free municipal WiFi
San Diego	3G	$35.00	Verizon/ATT	
ST Library	WiFi	$81.00	Verizon	Includes plans for 4 smartphones + 6 iPads
Sioux City	3G	$43.00	Verizon	
Onslow	3G	$42.00	Verizon/Sprint	Working with NC Technology Services as third party ISP intermediary
Katy	WiFi		Verizon	Does not include student end device
Orleans	WiFi	$50.00		
Summit	3G	$46.00	Verizon	
Westwood	3G	$42.00	Sprint	
BOCES		$34.00	Verizon	Does not include student end device

IV. Lessons Learned

In varying degrees, the reporting organizations provided a description of technical, operational, or administrative issues associated with implementing their projects as well as how the issues were or will be addressed. The following represents an analysis of the lessons learned to date:

- Some organizations reported damage to devices excessively taxing staff time as they strive to restore the machines. Aid from the students themselves to keep the devices in working order has been somewhat helpful. Before deploying any of the devices, the organization should have a plan in place for dealing with broken or lost devices, such as a ticketing Help Desk, or a policy regarding financial responsibility (Aurora, Haralson, Sioux City, Katy, Orleans Parish, BOCES).

- More digital literacy instruction and professional development is necessary for school staff with regard to using mobile and other Internet-enabled devices. Additionally, many students were found not to be as technologically adept as perceived. Digital natives are not as well informed as some are led to believe. Training for curriculum developers, administrators, and teachers represents one of the strongest undercurrents of the lessons learned by the organizations (Aurora, Mohican, Southern Tier Library, Sioux City, Katy, Orleans Parish, BOCES).

- Some organizations required infrastructural upgrades including the installation of new servers. Evaluating network capacity was, in some instances, under-prioritized. The organizations reported the need for testing periods prior to the implementation of such initiatives (MTA, Mohican, Haralson, Sioux City).

- Some organizations were surprised by the interoperability issues they faced (web filtering systems working with new servers, older access points, devices only working with 802.11 a/b frequencies, etc.) (Mohican, MTA, Haralson, Sioux City).

- The perception of some of the students and administrators was that 3G speeds are just a bit too slow--particularly when more and more video content is coming online (Sioux City, Haralson).

- Rural organizations face the challenge of wireless carrier choices. The lack of competing providers causes prices to increase and service options to decrease (Mohican, Painted Post, Roy).

- Some students incurred international roaming charges as they traveled with their families out of the country. These charges were negotiated with the carrier, but this scenario further supports the example of the "connected" world (RUSD).

Several of the program participants identified highly effective solutions to a number of challenges. Among these challenges were limited signal coverage and capacity on campuses and Children's Internet Protection Act (CIPA) filtering regardless of where the network the devices were connected. For example, dedicating a specific Service Set Identification (SSID) for students using program devices on campuses proved very helpful for Katy ISD.

Using access point controllers allows districts to tunnel traffic from internal controllers to the perimeter network (i.e. a logical sub-network sometimes known as the Demilitarized Zone [DMZ] that contains and exposes a district's external services to a larger untrusted network such as the Internet). Working with an Internet Service Provider (ISP) to pre-configure the student devices, a virtual private network (VPN) tunnel may be established which terminates in sub-networks; thereby, allowing all traffic to be routed over the VPN connection regardless of the students' location and through which network they were connecting. Further, placing a CIPA compliant filter in-line through the sub-network allows the district to monitor ALL traffic that run through the student used devices with scheme-specific reporting.

Effectiveness of Protective Measures

A majority of the projects provided CIPA compliant services through a combination of in-device (IP- and URL-level based) filters, firewalls, traffic shaping (instant messaging [IM] and point-to-point [P2P] monitoring), and digital citizenship education for parents, teachers, and students.

Although some of the organizations were not surprised by the number of devices lost or damaged, several were concerned by the amount of effort and coordination necessary to replace devices.

V. Conclusion

The *Learning-on-the-Go* program represents education and community leaders who understand the opportunity that technology holds for students and community members. The FCC's EDU 2011 Pilot Program provided these leaders an opportunity to implement initiatives and evaluate the impact and relative success.

In a short period, LOGO organizations have presented evidence of students' improving achievement, staying in school instead of dropping out, feeling more confident in mathematics, taking ownership for their learning, and showing an increased interest in college. Furthermore, schools and communities see greater communication with parents who speak a foreign language, and improved professional development opportunities for community members to improve their technology skills and seek employment.

The FCC's modest investment to enable 24/7 learning opportunities appears to be yielding impressive results across the country. These early indicators suggest that continuing these 20 initiatives and expanding the program will correlate to improved student achievement and opportunities across the United States.

This summary does not represent an *analysis* of the EDU 2011 Pilot Program. It is a concise summation of the reports as presented in the interim reports submitted to the FCC. For more information, please refer to the reports themselves. In the coming months, the remaining EDU 2011 Pilot Program organizations' reports will be submitted to the FCC. These subsequent reports will be summarized as well in a separate document.

The San Diego County Office of Education prepared this document.

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Addendum 1

Participating Organizations

1. Aurora Public Schools (Aurora, CO) (APS)
2. Boys' Latin of Philadelphia Charter (Philadelphia, PA)
3. City School District of New Rochelle (New Rochelle, NY)
4. Clay Hill Elementary School (Jacksonville, FL)
5. Foxfire Center for Student Success (Zanesville, OH)
6. Greater Southern Tier Board of Cooperative Educational Services (Watkins Glen, NY) (BOCES)
7. Haralson County Board of Education (Buchanan, GA)
8. Katy Independent School District (Katy, TX) (Katy ISD)
9. Michigan Technical Academy (Redford, MI) (MTA)
10. Mohican School in the Out-of-Doors, Inc. (Butler, OH)
11. Onslow County Schools (Jacksonville, NC)
12. Orleans Parish School Board (New Orleans, LA)
13. Piedmont City School District (Piedmont, AL)
14. Riverside Unified School District (Riverside, CA) (RUSD)
15. Roy Municipal Schools (Roy, NM)
16. San Diego Unified School District (San Diego, CA) (SDUSD)
17. Sioux City Community School District (Sioux City, IA)
18. Southern Tier Library System (Painted Post, NY)
19. Summit Academy Community School for Alternative Learners (Canton, OH)
20. Westwood Community Schools (Dearborn Heights, MI)

Addendum 2

Project Descriptions

On February 15, 2012, the FCC distributed Order DA 12-200 providing an extension of the time for pilot participants to meet certain E-Rate procedural deadlines to facilitate the ongoing administration and utilization of the funds committed to the pilot participants for Funding Year 2011. The Commission's rules were waived and the Universal Service Administrative Company (USAC) was directed to extend any of its relevant procedural deadlines for those pilot participants that had not begun their pilot projects before October 1, 2011.

As a result, the following program participants are not required to submit their interim report to the FCC until October 31, 2012 and their final report until April 30, 2013:

- Piedmont City School District
- Boys' Latin of Philadelphia
- Clay County School District
- Mohican School in the Out-of-Doors, Inc.
- Roy Municipal Schools
- New Rochelle School District
- Michigan Technical Academy

Thus, although 20 organizations are participating in the *Learning-on-the-Go* (LOGO) program, only the projects that were required to submit an interim report for the February, 2012 reporting period are described herein. For a description of all 20 projects, please visit http://logosummit.sdcoe.net. The following is a brief description of 14 of the 20 LOGO organizations' projects. Please note that Foxfire High School and Summit Academy Schools did not submit an interim report.

Aurora Public Schools Online (Aurora, CO) (APS)

Aurora Public Schools Online is a hybrid online school where the online learning experience is enhanced through focused classroom instruction. APS draws high school students with a variety of challenges (medical challenges, dropouts or the homeless), many of whom would not be in school if not for the flexibility of the instructional program offered through APS Online.

Prior to APS Online's inclusion in the LOGO program, the school had 148 students, one principal, and two instructors. Because of its success and the grant funding, APS Online has been able to increase the program to include 212 students, one principal, one secretary, and four instructors.

APS has 133 HP netbook computers for student use. All devices are configured with Verizon broadband cards that allow students to access their courses. Netbooks are furnished free of charge upon request by the student's family. Students are required to log a minimum of 20 hours/week of online work to remain full time students in good standing at APS Online High School.

From the beginning of the 2010 school year through February 1, 2012, APS Online students have completed 2,419 courses resulting in 604.75 credits being earned towards graduation. In the 2010 school year 25 students graduated as a result of the program. To date, 16 students have graduated in the 2011 school year with another 30 on pace to graduate by the spring of 2012.

Greater Southern Tier Boards of Cooperative Educational Services (Watkins Glen, NY) (BOCES)

GST BOCES is an Educational Service Agency that supports 21 component districts in five counties across the Southern Tier of New York State. Its Mobile Learning Device Project will provide middle and high school students with ubiquitous access to online learning devices (such as smartphones and netbooks) utilizing a virtual classroom software program.

Haralson County Board of Education (Buchanan, GA)

The blended learning program at Haralson County High School (HCHS) integrates face-to-face learning with online learning opportunities for high school students through the use of Internet-connected netbooks, with an emphasis on achievement in math and science.

The Haralson County School System provided netbook mobile learning devices to each student at the Haralson County High School for use during the academic year. Along with the devices, teachers received training from the Northwest Georgia Educational Technology Center (ETC, a state agency charged with helping integrate technology into teaching) to help them create blended learning opportunities for their students. Many of these opportunities focused on the use of their Learning Management System (Moodle). In order to facilitate the use of Moodle, the EDU 2011 grant was combined with the Blended Learning Grant to facilitate the access of these resources from home. During the course of the grant, 69% of the teaching staff at the high school created one or more Moodle courses. Fully, 98% of the teaching staff have accessed Moodle at some point during the course of the grant.

To assist in understanding program effectiveness, an observation instrument was developed to assess the use of technology in the classroom. The instrument is designed to measure a number of elements of effective technology integration in the classroom including collaborative learning opportunities, effective student questioning, and clear communication of expectations. From August 2011 to January 2012, forty-seven classroom observations were conducted. Observers recorded student activities and found students using the learning management system, accessing digital content resources, capturing lecture notes, and conducting research.

Katy Independent School District (Katy, TX) (Katy ISD)

This program is designed to provide smartphones to all 5th grade students and teachers within the district utilizing a classroom management system. The system allows teachers to create and upload assignments to a server where students then can log in and sync their device to receive the teacher's updates.

Katy ISD's Mobile Device Project was employed in order to increase engagement and promote success within the curriculum already in place. A stand-alone curriculum is not being used, but new methods and tools were implemented for acquiring data, analyzing information and presenting ideas.

The foundation application for the classroom teachers and students is Edmodo. Through this application, students can read posts from the teacher, comment, check for assignments, add deadlines and events to their calendar and turn in assignments. Teachers also use Edmodo to link students to other sites and applications they will be using throughout the day.

Onslow County Schools (Jacksonville, NC)

The Onslow County Schools *Learning-on-the-Go* program utilizes Internet-based instructional applications accessible via various mobile devices deployed to students with a goal of increasing their math achievement. The program includes all seven high schools in the district and the Onslow County Learning Center, an alternative learning setting. The math classes include Algebra 1 and 2, Geometry, Honors Geometry, Pre-Calculus, and Advanced Placement (AP) Calculus.

This program provides cell-enabled devices to high school students utilizing applications targeted for math courses. A total of 333 devices were provided during the Fall 2011 semester and approximately 507 devices are being provided for the Spring 2012 semester. These include a combination of Android Tablets (349) and cell-enabled netbooks (158).

Onslow is in the midst of a multi-year study to evaluate the effectiveness of their program. Reports from the 2010-11 school year indicate that students involved in the program reported feeling more motivated, more comfortable and more successful to learn math and found math to be easy.

Orleans Parish School Board/Mary Bethune Elementary School (New Orleans, LA)

Orleans Parish runs a laptop program with broadband access through wireless data cards for 3rd through 6th grade elementary students. The software suite enables teachers to determine a student's level of proficiency and engages a set of applications to empower students with a digital learning environment.

Prior to the implementation of the EDU 2011 program, the 3rd through 6th grade students were given devices to use throughout the day.   They were additionally allowed to take the devices home if parents agreed to support their appropriate use off-campus.   The implementation of the

EDU 2011 grant provided these same devices with broadband access off campus.   The overwhelming observation prior to the EDU 2011 program was that the devices were largely used as digital textbooks and notebooks. There was limited integration of the differentiated software to address the unique needs of learners and/or to maximize the implementation of student-led learning.

After the broadband access was made available, the observations showed a marked increase in student led learning as the teacher became comfortable assigning work to specific learners and/or learning communities within the class that could be pursued outside of class.

Riverside Unified School District (Riverside, CA) (RUSD)

Riverside Unified School District's (RUSD) participation in the *Learning-on-the-Go* pilot incorporated their city Wi-Fi infrastructure, Verizon's wireless network, and the parent community. The LOGO pilot has made it possible for typically under-served students to learn anywhere, anytime, not just at school.

Riverside USD deployed 2,500 netbooks with unlimited broadband access across five middle school campuses allowing students and parents anywhere, anytime access to digital curriculum, cloud based communication and collaboration tools, and a specially designed student data dashboard delivering real time data directly to students and parents.

Learning-on-the-Go is one of many projects that the Riverside Unified School District is implementing as part of its open access policy. The focus of open access is the learner and providing tools that facilitate the ownership of the learning. The use of an online learning and content management system allows all students the ability to learn at their own pace in a blended, hybrid or virtual environment using the same tools.

Riverside USD has collected data on each school as well as its many online systems relating to the LOGO pilot. Early indications have shown growth across the board in all categories. Each site has given one district benchmark exam in math and language arts. Participating LOGO students scored 4% higher in math and 5% higher in language arts than the similar age group tested last year at this time. Teachers and parents report a higher level of engagement both at school and at home.

San Diego Unified School District (San Diego, CA) (SDUSD)

San Diego Unified School District established a Mobile Learning Program to seamlessly integrate ubiquitous, one-to-one computing and other 21st Century technology into all teaching and learning throughout the curriculum. The program serves 6th grade in eight middle schools and school-wide in two middle schools.

The initiative creates an engaging, interconnected 21st Century learning environment that, coupled with ongoing teacher professional development, (a) provides opportunity for new learning practices that will support the teaching and learning of 21st Century skill outcomes; (b) allows all students to become expert learners in relevant, real world 21st Century contexts (e.g.,

through project based or other applied work); and (c) provides universal design in quality learning tools and technology resources.

Initial data from academic, citizenship, and benchmark grades from all school sites participating in the LOGO Program is promising thus far, although inconclusive due to the limited project time frame. For instance, three of the LOGO schools have shown an increase in the percentage of students receiving the highest citizenship grade by up to 32%. The number of A's earned by students at the grading quarter has also increased by double digits (14% and 17% respectively) at two LOGO schools.

Sioux City Community School District (Sioux City, IA)

The EDU 2011 supported wireless devices are part of ongoing Sioux City Community School District (SCCSD) efforts to raise student achievement through the following: (1) differentiating instruction for multiple learning types as well as differentiating time and location of learning; (2) conducting standardized and more frequent formative and summative tests; (3) developing 21st Century skills for students while helping improve communication.

Their program provides wireless connectivity for 10th through 12th grade students across three high schools through blended instruction facilitated through their learning management system. This allows the district to extend the time and place of the classroom to virtually anytime and anywhere when coupled with off-site wireless access.

Southern Tier Library System (Painted Post, NY)

The Southern Tier Library System program utilizes handheld mobile Internet devices such as tablets and smartphones as training platforms for the mobile JobLink "Free help applying for jobs!" project. This project provides online job searching, resume writing, job application skills, and digital literacy to unemployed and underemployed individuals in its 3,500 square mile rural service area. In addition to helping residents develop computer skills for work and for finding and applying for jobs, another JobLink goal is to expose residents to the benefits of broadband and to encourage more people to come online.

Project funds are used to fund connections for four smartphones with direct 3G Internet access, and six iPads with 3G Internet access. The smartphones and iPads allow JobLink staff to offer classes in digital literacy and job seeking including: *Test Drive an iPad; iPads and your e-Library; Smartphone vs. Smartphone; Find a Job…Using Your Smartphone!;* and *Downloading eBooks.*

Learning outcomes have been positive, and reflect learning about student computer skills. Ninety-eight percent (90) of participants in the "Test Drive an iPad" class said that as a result of their training they were able to do one or more of the following: "download," "open and use applications," "use iPad features," or "search for programs." Eighty-five percent (51) of participants in the "Downloading eBooks" class said that as a result of their training they were able to do one or more of the following: "browse for eBooks," "place a hold," or "download an

eBook." All (14) participants in the "Smartphone vs Smartphone" class said that as a result of their training they were able to do one or more of the following: "understand what a smartphone is," or "know what features are available."

Summit Academy Community School for Alternative Learners (Canton, OH)

Students enrolled at this school are on individualized learning plans and have Attention Deficit Disorder (ADD) or Asperger's Disorder, which makes learning a challenge in a traditional classroom environment. This program utilizes smartphones as a portal to the curriculum, study materials, and a collaboration environment that positions students to be more effective communicators and problem solvers.

Westwood Community Schools/Cyber High School (Dearborn Heights, MI)

This program will use mobile devices and/or desktop computers with wireless mobile cards along with a comprehensive online learning environment that offers a virtual educational experience for high school students who are unable to attend school for a variety of reasons.