



UNITED STATES



Qualcomm® Wireless Reach™: Empowering Mobile Learning in the United States

Qualcomm Wireless Reach knows that always on, always connected mobile devices in the hands of students have the potential to dramatically improve educational outcomes. Working in the United States to leverage the benefits of advanced wireless technologies, we focus on K-20 education and look at how mobile is changing teacher practice, enhancing instruction, and personalizing learning. While our projects encompass a variety of school settings, student populations, teacher familiarity levels with mobile learning and device types, the bottom line impact of these projects is universal. Mobile devices and content have the potential to transform teaching and learning for all students.

A hallmark of the Wireless Reach initiative is the recognition that in order to have new and emerging mobile solutions impact more students and teachers, the K-20 educational sector needs best practices, proven solutions and exemplars that address commonly held challenges or concerns about mobile learning. Therefore, our U.S. projects have explored how mobile devices used in conjunction with mobile-enabled content and professional development mitigate the following specific challenges:

- » Today's schools need even more learning opportunities for students to develop the college and career readiness skills (including information literacy and math proficiency) they need to compete in the increasingly global economy and society.
- » Some districts are reluctant to use technology in their classroom or assign online homework out of concern for their students who lack Internet access outside of school.
- » There is a need to better equip teachers with how to effectively leverage the capabilities of mobile in the classroom to affect student outcomes and with how to identify what types of content are best suited for mobile learning.
- » Young students, in particular, are not as well versed in knowing how to use mobile devices and online resources safely and securely.
- » Mobile learning requires administrator buy-in and support and yet, many administrators are not familiar enough with mobile tools and resources to provide adequate teacher support.
- » Looking ahead, school principals want the next generation of teachers to learn how to integrate mobile devices into instruction while they are in their pre-service teacher preparation programs.

While each of the Wireless Reach projects within the U.S. are multi-faceted and address some, if not all of these challenges, the following highlights provide new insights into how schools around the globe can tap into advanced wireless technology to transform teaching and learning for their students.

2014 Statistics

- » **Life expectancy: 79.6 years**
- » **Population: 318.9 million (est.)**
- » **GDP per capita: US\$52,800 (est.)**
- » **Mobile penetration: 104.8%**

Sources: CIA World Factbook (<https://www.cia.gov/library/publications/the-world-factbook>); Mobile penetration data provided by Informa UK Limited and based on market intelligence.



Improving students' college and career readiness: Onslow County Schools' Mobile Learning Initiative (Jacksonville, NC)

- » Faced with a moral imperative to improve math proficiency within their student population, which included a high percentage of military dependents, this rural North Carolina school district embarked on a novel approach in 2007. The project put mobile devices into the hands of 9th graders to support Algebra classwork and instruction and create a more personalized learning environment for their at-risk students.
- » Beginning with smartphones and then migrating to tablets, the district also provided opportunities for the students to extend learning beyond the classroom by providing 24x7 3G/4G data access. There are more than 1,000 students impacted by this project, and for many of them, the mobile device is their only gateway to Internet access outside of school. The students use the devices to do math homework, self-remediate when they have problems, collaborate with peers on math-oriented projects, and also to connect with parents deployed overseas.
- » The results from this project, which is being extended this school year to 6th grade, include increased student proficiency in math, the development of college and career readiness skills, increased interest in math and STEM (science, technology, engineering and math) fields, and a sustainable change in teacher practice.



Addressing inequity in Internet access: High Tech High School FLEX Project (San Diego, CA)

- » With an international reputation for its innovative curriculum that emphasizes project-based learning, the use of digital tools and resources is often at the heart of High Tech High School's culture. However, reflecting San Diego's economic and cultural diversity, a percentage of the High Tech High student population did not have Internet access at home. This discrepancy among students also translated into teachers' reluctance to assign out-of-school tech projects and homework.
- » To address these issues, the FLEX project provided 94 students with a netbook device that included 3G Internet access. Besides enabling home access, many students used their device to do homework or additional reading while on public transportation to and from school, therefore increasing their time spent on academic work.
- » Additional results included enhanced student self-efficacy and confidence in learning due to having a comparable mobile device to their peers, improved school-to-home communications with the students' parents, and a change in how teachers used digital tools in their classrooms now that they had the confidence that all students had equitable access.



Developing mobile enabled content that supports teachers' instruction and new standards: EcoMobile and School in the Park Augmented Reality Projects (Boston, MA, Chappaqua, NY and San Diego, CA) and Active Explorer Science Quests (Washington, DC)

- » With the increased state and national emphasis on student outcomes and new curriculum standards, a close alignment between mobile devices and academic content is essential, as evidenced by the results of these projects that incorporated unique features of wireless technology capabilities.



- » The EcoMobile Project, advanced by a Harvard University research team, included the development of augmented reality environments that supported setting-enhanced learning in environmental science education. Using their smartphones, 120 elementary and middle school students interacted with both the physical environment of a pond ecosystem, as well as the virtually enhanced environment to test hypotheses and explore learning that went beyond the physical setting.
- » The School in Park Project included opportunities for 750 elementary students to use smartphones to explore augmented reality environments to learn about science, art and social studies within the physical settings of the San Diego Zoo, San Diego Museum of Art and San Diego History Museum.
- » In both of these augmented reality projects, the use of the mobile technologies, both devices and content, created dramatically different learning environments for students that increased student engagement, enhanced the relevancy of the content and extended learning beyond the classroom.
- » The Active Explorer Science Quests Project also utilized mobile technology with similar impacts. The Active Explorer platform, developed by the American Academy for the Advancement of Science, allows teachers and after school educators to develop their own online science quests, and then students use smartphones and tablets to collect, categorize and report on authentic science artifacts.



Ensuring student safety and digital citizenship: Making Learning Mobile Project (Chicago, IL)

- » With the increasing access that even our youngest learners have to the Internet, developing good digital citizenship skills is a necessity today.
- » In conjunction with Kajeet and Chicago Public Schools, 150 5th grade students from Falconer Elementary School were provided with their own tablet to support both in-school and out of school academic tasks. For a majority of the students, this device represented their families' first access to the Internet at home.
- » To ensure student safety and support students' information literacy skills, the project included a comprehensive digital citizenship course that all students completed prior to receiving their tablet. Additionally, Internet access on the tablets was disabled every night at 9 pm.
- » By mitigating the student safety concerns, the project could focus on using the devices to improve student learning and English proficiency, both in school and at home.
- » Over three-quarters of the 5th graders used their tablets to change their learning environment, both at home and at school, with 99 percent of the students saying that they used their tablet regularly to look up information on the Internet when they had a question about something.
- » Eight out of 10 students said that having the tablet made learning more fun and interesting and 72 percent said that they were more engaged in their lessons because of having a tablet.
- » 60 percent of the Falconer elementary students said that they did more reading and writing this school year because they had a tablet.



Empowering school principals to support mobile learning: Mobile Online PD Course (Boston, MA)

- » Increasingly, school districts are realizing that professional development around mobile learning



- for teachers as well as school principals is a critical factor in the success of their mobile initiatives.
- » This project, conceived and implemented by the Education Development Center in conjunction with Boston Public Schools, addressed this need by embedding the use of mobile devices within a principal leadership summer academy on social media usage. While familiar with using a smartphone or tablet to send a text message or look up a sports score, this was the first time many of the 15 principals in the course had used a mobile device to support their own professional learning or to collaborate with peers.
 - » This innovative and eye-opening experience resulted in greater awareness of what their teachers needed to be successful with mobile learning projects, and how, as school site administrators, they could support their teachers' efforts in the classroom.



Preparing the next generation of mobile using teachers: San Diego State University mGAGE Project (San Diego, CA) and NCTAF TLINC® Project (nationwide)

- » While few teacher preparation programs are providing specific instruction on mobile device usage, these two projects, (which collectively involved 6 university-based teacher preparation programs and 230 pre-service teachers), pioneered a new approach to help their teacher candidates acquire the skills needed to integrate mobile devices into daily classroom instruction.
- » The mGAGE Project provided their students with smartphones and specific in-class training on how to use and develop educational apps that these aspiring teachers could then use in their future K-12 classrooms.
- » The NCTAF (National Commission on Teaching and America's Future) TLINC® (Teachers Learning in Networked Communities) Project provided their teacher candidates with 3G/4G mobile devices to access an online professional learning community of peers and university faculty.
- » In both projects, the access to the devices and the wireless technology resulted in an increased awareness by the pre-service teachers of the value of these devices to support both future student learning and self-directed professional development.



Learn more about these projects and Qualcomm's commitment to education at www.wirelessreach.com

Qualcomm® Wireless Reach™

Qualcomm believes access to advanced wireless technologies can improve people's lives. Qualcomm Wireless Reach is a strategic initiative that brings wireless technology to underserved communities globally. Wireless Reach invests in projects that foster entrepreneurship, aid in public safety, enhance the delivery of health care, enrich teaching and learning and improve environmental sustainability. For more information, please visit www.qualcomm.com/wirelessreach.