Wireless Reach™ from Qualcomm

Case Study
Education Technology
Digital Inclusion

"We are at the tipping point for mobile learning. Just as television was a fundamental part of children's lives when Sesame Street introduced millions of children and their families to its educational potential, mobile devices are part of the fabric of children's lives today. "[3]

Carly Shuler
Industry Fellow
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Project K-Nect, 24/7 Wireless Collaboration and Teaching Enhances Student Engagement and Math Development

Project K-Nect is a pilot program that began during the 2007-2008 school year to discover if 24/7 connected smartphones could play a role in enhancing student engagement and learning. The project addressed the need to improve math skills among at-risk students in North Carolina who scored poorly in math and did not have access to the Internet at home. Algebra I digital content aligned with current lesson plans was created and students were encouraged to learn from each other in and out of the classroom. Students did so by using social networking applications on the smartphone, as well as other Internet resources such as algebra.com.

Challenge

- With increased focus from the United States government and schools across the country to improve math skills, based on analysis released by the National Center for Education Statistics where math and science scores of 15-year-old US students were compared with students from other countries, US students were found to score below average in math and science.[1]
- The study also found that in math, US students scored in the bottom quarter of the 29 countries that participated.[1]
- According to the Congressional Research Service report on science, technology, engineering and mathematics (STEM) education, "there is growing concern that the United States is not preparing a sufficient number of students, teachers and practitioners in the areas of STEM. A large majority of secondary school students fail to reach proficiency in math and science, and many are taught by teachers lacking adequate subject matter knowledge."[2]
- Despite overwhelming agreement among parents, teachers and principals that the effective implementation of technology in schools is crucial to student success, students say they "step back in time" when they enter the school building each morning, according to Project Tomorrow's 2008 Speak Up survey by Julie Evans.

Solution

- 150 qualified students in 8th-12th grade have been given 3G-enabled smartphones to wirelessly connect to educational resources on the Internet and each other both on and off school campus.
- The phones provide access to supplemental math content aligned to their teachers' current lesson plans and also allow students to collaborate and contact after-school tutors who can assist them with mastering a targeted skill set.
- The program only allows authorized users to communicate electronically within the secure system and is monitored by teachers to ensure acceptable use policies are not violated.
- Teachers use software applications on their laptops to send messages to students on their phones, giving them homework assignments and viewing their collaborative work. Teachers can manage assignments and provide real-time support and training through remote control technology.
- Students use Qualcomm's 3G EV-DO Rev. A mobile technology, which allows them to access broadband wireless services with a maximum peak data rate of 3.1 Mbps, which is comparable to a digital service line.
- Phase II, which began in September 2008 and ended in December 2009, continued with algebra I and also expanded to include algebra II, geometry and biology.

Phase I Results (January – June 2008)

• The first phase of the project showed positive qualitative and quantitative results. Surveys found that students were excited about the project and integrating the smartphone into their daily learning experience.

• There was a positive correlation between students who actively participated in Project K-Nect and their final algebra I proficiency level on a standardized exam given by the State of North Carolina.

• Students at Southwest High School, one of the participating Project K-Nect schools, increased their proficiency rates by 30 percent on the State of North Carolina's End of Course exam, compared to classes not in Project K-Nect but taught by the same teacher.

• Throughout the course of the project, students discovered creative ways to use the phones and the 24/7 Internet connectivity to increase their understanding of algebra I, especially with social networking tools such as blogging and instant messaging.

• According to the students, one of the most helpful applications was the use of the video capability on the smartphones. Students would record each other working out problems on a white board then post the videos on blogs, so all students within the network could access them.

Phase II Results (January – June 2009)

• The second phase of the project continued to show positive qualitative and quantitative results. Data and survey results will be released in a third-party research report written by Project Tomorrow the summer of 2010.

• There continued to be a positive correlation between students who actively participated in Project K-Nect and their final algebra I, algebra II and biology proficiency levels on the State of North Carolina End of Course exam.

• Proficiency rates increased by 30 percent in Project K-Nect classes compared to classes not participating in the project but taught by the same teacher.

• Based on positive results from Project K-Nect, the Department of Defense Education Activity has granted a participating school district $2.5 million to expand the reach of mobile learning to all algebra I students in Onslow County, North Carolina.

The Team

• Digital Millennial Consulting (DMC) is responsible for project management including software development, IT support, implementation, professional development and training for the students, teachers and parents.

• North Carolina Department of Public Instruction (NCDPI) selected the schools that participate in Project K-Nect. As the main supporter of the project in the education sector, NCDPI works closely with Wireless Reach and DMC to successfully implement the program in four of its public schools.

• Project Tomorrow is responsible for monitoring and evaluating the outcome of the project.

• Qualcomm through its Wireless Reach™ initiative is the primary funder for Project K-Nect.

Wireless Reach

Qualcomm believes access to advanced wireless voice and data services improves people's lives. Qualcomm's Wireless Reach initiative supports programs and solutions that bring the benefits of connectivity to underserved communities globally. By working with partners, Wireless Reach projects create new ways for people to communicate, learn, access health care, sustain the environment and reach global markets.

To date, there are 56 Wireless Reach projects in 28 countries in the areas of education, health care, public safety, entrepreneurship and the environment.

[1] Holland, Sally. "US students behind in math, science, analysis says." CNN. 25 Aug 2009. cnn.com/2009/US/08/25/students.science.math/index.html
[2] Kuenzi, Jeffrey J. "Science, Technology, Engineering, and Mathematics (STEM) Education Issues and Legislative Options." Congressional Research Service Report for Congress. 2007 July 23. http://sharp.sefora.org/wp-content/uploads/2007/12/rl33434.pdf
[3] Shuler, Carly. "Pockets of Potential: Using Mobile Technologies to Promote Children's Learning."Joan Ganz Cooney Center at Sesame Workshop. 2009 January. http://www.joanganzcooneycenter.org/pdf/pockets_of_ potential.pdf