UNITED STATES

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.

I can't go back to the way I taught before Project K-Nect.

— Project K-Nect Teacher

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. 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]

» Students report that the policies that prevent them from using their own mobile devices for learning are the biggest barriers they face to using technology in school, according to Learning in the 21st Century: Taking it Mobile! research report released by Project Tomorrow and Blackboard Inc. in October 2010.

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.

Impact

Phase I (2008)

» 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 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.

» 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 ona white board then post the videos on blogs, so all students within the network could access them.

Phase II (2009)

» According to an evaluation by Project Tomorrow, a national education nonprofit organization, teachers revealed that the mobile devices and the problem based learning approach encouraged by Project K-Nect has transformed the way they taught math.

» Teachers rely more on facilitating and less on direct instruction, encourage students to talk with and teach each other, and create relevance by creating assignments that help them see math in the world.

» 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.

Phase III (2010)

» The 2010 Evaluation Report prepared by Project Tomorrow found that 85 percent of students feel more successful in math and more than 50 percent are now thinking of a career in the math field as a result of participating in Project K-Nect.[3]

» Project K-Nect has expanded beyond North Carolina to Virginia and Ohio, with approximately 4,500 students.

» The Federal Communications Commission awarded Project K-Nect E-rate funding to provide 24/7 Internet access to more than 1,400 high school students in Onslow County as part of the FCC's 2011 Learning On-The-Go wireless pilot project.

Project Stakeholders

» 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 supporter of the project in the education sector, NCDPI worksclosely with Wireless Reach and DMC to successfully implement the program in four of its public schools.

» Qualcomm Wireless Reach is the funder for Project K-Nect.

[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/wpcontent/uploads/2007/12/rl33434.pdf

[3] Project K-Nect Evaluation Report July 2007. http://www.tomorrow.org/docs/Project _ k-Nect _ Evaluationreport _ Final _ Jul7.pdf