WE Learn: Building the 21st Century Classroom with 3G Smartphones in Singapore

Qualcomm Wireless Reach and public/private stakeholders are putting the power of computers in the pockets of 3rd and 4th grade students at Nan Chiau Primary School in Singapore. The WE Learn mobile education project uses 3G-enabled smartphones to transform learning from a traditional, teacher-centric model to a student-centric, inquiry oriented, collaborative model. By enabling 24/7 access to resources in and out of the classroom, the project allows students to acquire and practice 21st century competencies and knowledge.

Challenge

» The Singapore Ministry of Education (MOE), in its third Masterplan for Information and Communications Technology (ICT) in Education, promotes a framework to enhance the development of 21st century competencies and further transform the learning environment for students.
» The plan focuses on two key skills — self-directed learning and collaborative learning. MOE's Masterplan 3 aims to better prepare the nation's students to thrive in a fast-changing and highly connected world.
» As an MOE-designated “Future School in Singapore,” Nan Chiau Primary School is leading the way in implementing the MOE's framework and serving as a model for primary schools throughout Singapore and Asia.

Solution

» Provide 650 3rd and 4th grade students and their teachers with 3G-enabled Nokia Lumia 710 smartphones powered by Qualcomm® Snapdragon™, a product of Qualcomm Technologies, Inc., mobile broadband connectivity and educational applications.
» Support self-directed and collaborative learning with 24/7 access to educational content, web-based resources and a broad range of learning tools.
» Use advanced mobile technologies to enable teachers to become mentors who provide personalized guidance and give students the means to take responsibility for their own learning.
» Create customized curriculum in English and science that leverages the benefits of mobile, Internet-connected learning devices.
» Construct MyDesk, a next-generation mobile learning platform (MLP) that leverages the capabilities of the Microsoft Windows Phone operating system.
» Use MyDesk and a broad range of educational applications to enable students to access their assignments, visit relevant websites, view podcasts and videos, and create multimedia projects.
» Backup and synchronize files created by students on their MyDesk-enabled smartphones to a cloud-based Learning Management System, thus providing an electronic portfolio for each student that teachers can access for grading and feedback purposes and that parents can examine to better understand how their child is performing in school.
» Provide professional development experiences for Nan Chiau teachers in the WE Learn pedagogy.
» Monitor and assess the impact of the WE Learn effort on Nan Chiau Primary School.

2014 Statistics

» Life expectancy: 84.4 years
» Population: 5.6 million (est.)
» GDP per capita: US$62,600 (2013 est.)
» Mobile penetration: 158%

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.

It’s more fun to go to school now with the phone… I use [it] to learn new words, read stories, take photos, and do math. When I didn’t have the phone, learning was quite boring. I wish that every student in Singapore would have a phone like this.

— Wayne Lim, Nan Chiau Primary School 3rd Grade Student
Technology

» 3G-enabled Windows Phone smartphones powered by Snapdragon processors.
» 3G mobile broadband connectivity via M1’s 3G wireless network.
» MyDesk, an MLP running on top of a Windows Phone and populated with a range of educational apps that are essential tools for 24/7 learning. The MLP also contains an always-visible, digital Classroom Message Board and a cloud-based Teaching Management System.

Impact

» During the project’s pilot phase, students using smartphones for learning were observed by teachers to have become more independent, inquisitive and self-directed.
» Test scores on self-directed and collaborative learning skills (defined by Singapore’s Ministry of Education as part of 21st century competencies) have improved significantly.
» Teachers have adapted their teaching methods to incorporate technology and reflect the positive results and responses from students.
» Parents have become more open to using and supporting technology for learning and new learning tools such as text, drawings and audio and visual recordings.
» The project offers an enhanced curriculum, including software upgrades and an improved MyDesk software-based learning environment.
» Following the success of the pilot, project stakeholders have committed to expand WE Learn in 2014 to include additional schools and students.

Project Stakeholders

» M1 is enabling mobile learning over their 3G wireless network.
» Microsoft is providing Windows Server infrastructure software and the Windows Phone operating system.
» Nan Chiau Primary School, a government-designated Future School in Singapore, is serving as a model for how to scale up and sustain the use of 3G mobile technologies to support 21st century learning.
» National Institute of Education Learning Sciences Lab is assisting teachers with professional and curriculum development as well as providing support for project monitoring.
» Nokia is providing discounted Nokia Lumia 710 smartphones for students and teachers.
» Qualcomm Wireless Reach is providing project funding and management support.
» University of Michigan undergraduate students are building the mobile learning platform, including MyDesk, educational applications, Teaching Management System and Classroom Message Board.