Research Shows 1:1 eLearning Enriches Education in Malaysia

**KEY OUTCOMES**

- Distributing 93,000 Intel classmate PCs to students ages 10-14 successfully bridged the digital divide for low-income families
- Expanding Wi-Fi access to rural areas is important to success. The Malaysian government is working on Wi-Fi expansion
- Distributing PCs through schools instead of directly to students improves classroom integration

**OVERVIEW**

Malaysia’s government, like many governments, recognized the importance of a knowledge-based economy to its long-term success. The central government instituted a national imperative to increase digital access and skills among all students, by providing computer labs in all schools.

Terengganu province started Projek Buku Elektronik in 2009 to increase digital access and literacy among students and families. Specific goals included reducing the digital divide between urban and rural, and between high- and low-income, households.

To monitor the effectiveness and guide the program, the Malaysian government has worked with leading universities, SRI International, and Intel to conduct primary research. This document summarizes the research findings in order to share key learnings—what worked, what didn’t work, what could be improved—with other interested parties.

**CHALLENGES**

- National imperative to improve learning outcomes and help Malaysia move toward a more globalized society and 21st century economy
- Limited information and communication technology (ICT) infrastructure in schools
- Lack of ICT access for low-income and rural families

**SOLUTIONS**

- Launched the eBook Project to support technology integration in the classroom
- Provided Intel® classmate PCs to young students, and let them take the computers home for family use, giving low-income families equal access to technology
- Provided teachers with professional development and access to ICT
The Vision: State Project Connected to National Initiatives

Terengganu is a Malaysian state with just over 1 million citizens. In 2009, the state’s chief minister initiated a state-funded eLearning program to increase computer literacy among Terengganu citizens, particularly students and their families.

The project’s goal was to produce tech-savvy, innovative citizens, and reduce the digital divide between urban and rural, and high- and low-income households. This statewide project took place within the context of several national initiatives designed to help Malaysia become an ICT-rich global economy, including:

- The Smart Schools initiative, which aims to equip all 10,000-plus Malaysian primary and secondary schools with increased ICT capacity
- A partnership with Intel in which more than 50,000 Malaysian teachers participated in professional development through the Intel® Teach Program between 2000 and 2011

The Terengganu government also collaborated with Intel and a state-owned assembling company to open a factory that will assemble PCs and support software development. The factory will be able to supply 10,000 Intel classmate PCs per month, and is expected to provide local high-tech jobs and training, as well as economic revenue.

Planning: Focus on Young Students and Their Families

The project plan was to give computers to young students and allow each child to take the computer home for family use, so low-income families would have equal access to technology. The program began with delivery of Intel classmate PCs to students in grades 4, 5, and 6 (ages 10-14).

The program includes gradual establishment of schools, with classrooms fitted for ICT integration. These classrooms include an electronic whiteboard, access points, Internet connections, a teacher’s workstation, and sufficient electrical outlets for children to charge their computers in class.

The program is planned and managed by a state-led committee that includes membership from the state government and other participating organizations. Support services are provided through a partnership with a state-owned company, and locally recruited and trained Executive Information Officers (EIOs). The EIOs provide in-school support while gaining valuable high-tech job skills.

Technology access and related training for teachers was included in the plan at a later stage. The first teachers began receiving Intel classmate PCs a year after the rollout had begun for students. Through a partnership with Intel, two to three teachers per school received training in Intel Teach Essentials, with the expectation that they would train others at their school.

TERENGGANU EDUCATION SYSTEM

- Centralized education system, with curriculum, examinations, and syllabi defined by national Ministry of Education
- Three main standardized assessments in primary and secondary years, including exams that qualify students for subject specialization (science or art) and higher education
- National Ministry of Education provides all schools with basic ICT infrastructure, including Internet connectivity and a computer lab
The computers were delivered directly to students and their families through a “giving ceremony,” at which students and parents took formal responsibility for the computer and its use, according to guidelines. This supported the goal of providing computer access for each family, but left teachers and schools out of the communication loop—a factor that later proved problematic for classroom integration.

Implementation: Integrating ICT at School and Home
As of 2012, a total of 93,000 Intel classmate PCs have been distributed to students beginning in primary Year 4 (age 10) through secondary Form 2 (age 14). The computers are loaded with digitized versions of the standard textbooks, test preparation software, Intel education bundles, the Koran and other religious resources, and a dictionary.

The initiative has successfully bridged the digital divide, with low-income families now having access to computers. The government is working to expand Wi-Fi access points, particularly in rural areas, so students and families will be able to access the Internet within their communities.

One model school, Paya Bunga, offers a model of successful early implementation. The classroom experience at Paya Bunga—a historically low-performing school—has changed dramatically, with key features including:

• Regular use of Intel classmate PCs
• Electronic whiteboards that enable teachers to share student work, encourage group discussions, and provide visible feedback

Re-informing the Vision: Identifying Areas for Improvement
A state-level committee oversees and monitors the program. The committee meets quarterly to review progress and challenges.

Among the challenges identified by educators:

• Teachers did not receive computers along with their students
• Teacher training was limited to a few teachers per school, and these teachers did not always pass along training to other teachers
• More interactive teaching materials are needed
• Schools have infrastructure challenges such as a lack of sufficient outlets to charge computers and slow and/or unreliable Internet connections

Another challenge relates to students who received their Intel classmate PCs while in primary school and are now in early secondary school. Reports suggest some of these students are still using their computers at home for personal and school-related use. They would likely benefit from additional digital content, including digitized textbooks, to keep pace with their changing educational needs.

Based on these and other findings, several program improvements have been put in place. For example, computers have begun to be distributed to teachers, and attempts have been made to increase access to training and pedagogical models for instructional use of the Intel classmate PCs.

Conclusion
Now in its third year, Terengganu’s 1:1 eLearning project has successfully increased computer literacy among young students, and has bridged the digital divide by bringing computers into the homes of low-income and rural students. Other countries can develop successful 1:1 eLearning programs that build on the challenges and successes identified in the Terengganu project. By working with Intel and other public and private partners, countries can create sustainable, cost-effective eLearning programs that will provide social and economic opportunities for years to come.

KEY LEARNINGS
The 1:1 eLearning initiative in Terengganu provides several lessons and strategies for stakeholders who are considering 1:1 initiatives:

• A clear vision and goals for teaching and learning—not just for access and ICT skills—must be established early in the planning stage.
• Policy alignment at all levels, from national to local, is essential to create an environment in which innovation can flourish.
• Planners need to consider not only students but also teacher access to and readiness for ICT (e.g., professional development).
• Planning efforts should incorporate potential sources of support or difficulty, such as school-based infrastructure, curriculum, and human resources.
• Model schools can demonstrate proof of concept and provide a vision for success. To replicate the model, conditions that support this success (such as resources and staffing) must also be replicated.

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