Research Highlights Improved Teaching and Learning Through the 1:1 eLearning Initiative in Shanghai

**KEY OUTCOMES**

- The pilot project is successfully promoting more student-centered instruction, and helping students gain more control of their own learning.
- Distributing 2,500 mobile learning devices to primary- and middle-school students in the Hongkou district has led to eLearning usage in 30 percent of class hours, as well as after class.
- The government is using research on the pilot project to revise and improve the e-schoolbag plan, in part by better publicizing the program and communicating its goals and features.

**OVERVIEW**

In 2010, the Shanghai government launched the e-schoolbag project, a 1:1 eLearning program that connects students to mobile learning devices. The e-schoolbag project is the third and final stage of a process that began in 1997 to integrate technology in primary and secondary schools across Shanghai.

The purpose of the e-schoolbag project is to create an environment for “ubiquitous learning,” where all students have access to individualized digital content through mobile devices that enable anytime, anywhere learning. The project has three key components: creating and implementing a digital curriculum environment; fostering 1:1 eLearning, which is technology-based, self-directed learning for students; and establishing a public educational service platform.

**CHALLENGES**

- Help students develop the knowledge and skills necessary to live, work, and learn in the 21st century
- Lack of student-centric, independent learning opportunities
- Changing economics, leading to need for citizens who are more creative and innovative, and have highly developed critical thinking skills

**SOLUTIONS**

- Piloted the e-schoolbag project in the Hongkou district with 11 primary and middle schools
- Provided mobile learning devices and digital content for students, including e-textbooks, online courses, and other high-quality instructional materials
- Developed a public education service platform to provide access to eLearning tools and resources

This report is based on original data collection and analysis by researchers at universities in Shanghai, in collaboration with Intel. Intel conducts longitudinal research on eLearning deployments around the world, and compares results to other programs. Understanding of the successes, challenges, and policy implications of eLearning programs are used to improve existing and future initiatives.

For more information on the Intel Education Research initiative, contact educationresearch@intel.com
The Vision: e-schoolbag Project
Latest of Several Municipal Projects

The e-schoolbag project is the third phase of a series of broad educational policies created by the Shanghai Municipal People’s Government to transform teaching and learning by integrating technology in education.

The ultimate goal of these policies is to promote self-directed learning to help students develop 21st century skills such as critical thinking and communication. The policies also aim to ease the excessive academic burden faced by many students by shifting the emphasis from large quantities of assessment-driven schoolwork to creativity and innovative thinking.

The 15-year history of technology integration across Shanghai’s primary and secondary schools includes:

- **1997–2000:** The government prepared for subsequent technology integration by creating an educational network, creating key eLearning resources, and training educational technology leaders.
- **2000–2010:** The government brought educational technology to the schools. Specifically, through the "all schools connected" program, the government connected all kindergarten, primary, and secondary schools to the Internet, and the Intel® Teach Program trained 67,000 teachers across Shanghai.
- **2010–2013:** The e-schoolbag program aims to create a digital curriculum, provide access to individualized 1:1 eLearning, and create a public educational service platform.

Planning: Four-Year Plan Details

Project leaders developed a four-year schedule for the e-schoolbag program, from January 2010 through December 2013. The schedule includes project planning and preparation, implementation, and final program revisions.

As designed, the e-schoolbag program has three key components:

1) Implement a digital curriculum environment.
2) Give students the opportunity to engage in individualized 1:1 eLearning using student-owned mobile learning devices.
3) Establish a public educational service platform.

Through the e-schoolbag program, students from kindergarten through secondary school have received individual mobile learning devices. The public educational service platform is intended to provide both an interactive learning environment where students can access digital content to learn on their own, either inside or outside of school, and an interactive system to manage educational administration, content, and other functionality.

While the project components are well specified, the government did not clearly articulate the project goals at the start of the e-schoolbag project. As a result, many stakeholders—including government officials—are unable to clearly articulate a complete vision for the program. This lack of communication also led many citizens to question the feasibility and value of the e-schoolbag program.

The government has included research and evaluation in its initial e-schoolbag plans. The results from this research will inform a revised plan for the government to approve. The government also intends to use the results from the pilot research to better publicize the e-schoolbag program and communicate its goals and features.
Implementation: Integrating ICT at School and Home

The government is currently piloting the e-schoolbag project in the Hongkou district, located in the downtown commercial area of Shanghai. Eleven primary and middle schools in the district are participating, and students have thus far received 2,500 mobile learning devices. As of 2012, 1:1 eLearning is being used for approximately 30 percent of class hours, and has been extended to after-class hours. The pilot project is successfully promoting more student-centered instruction, and helping students gain more control of their own learning. For example, one school requires students to use their devices for inquiry learning; students then share findings and discuss important questions with the class.

In addition to the school-level implementation, government and education leaders have created a refined plan for the digital curriculum and designed a framework for the educational service platform.

Several key challenges have arisen during the implementation, the biggest of which relates to delays in creation of the digital curriculum. These delays have left teachers and students unable to access much-needed tools, resources, and content through the mobile learning devices. Instead, students are relying on printed textbooks and workbooks as well as the technology. One reason for the delays is that over the past decade, the Shanghai government focused more on creating resources for teaching rather than resources for student learning.

The pilot research, and especially an awareness of the challenges in implementing the e-schoolbag program, will be helpful to government officials and educators as they seek to revise program plans and improve broad-scale implementation of the program.

Re-informing the Vision: Identifying Areas for Improvement

As part of the educational reform, the government has also spearheaded research to investigate educational issues in Shanghai. The research team, which will present its findings to the government, consisted of government officials, university researchers, company representatives, and other experts and practitioners familiar with eLearning in China.

Research on the e-schoolbag program has already yielded valuable insights for revising the government education policies and e-schoolbag project plans, including:

• The public lacks a clear understanding of the project, and concerns about implementation are widespread.
• Educators do not have a consistent understanding of the factors that are most important for improving eLearning.
• Teachers have not had the necessary training to effectively adapt their instructional practices for an eLearning environment.

These findings suggest that government and education leaders need to do more to articulate and communicate a clear description of the project goals and activities, and adapt teacher training programs that emphasize technology integration.

Conclusion

Shanghai’s e-schoolbag project builds on a strong foundation of municipal policies that are transforming teaching and learning through technology integration in education. Now in its second year, the program is already creating a 1:1 eLearning experience through mobile technology that will help students become more creative and innovative.

Other countries can develop successful 1:1 eLearning programs that build on the challenges and successes identified in Shanghai’s e-schoolbag project. By working with Intel and other public and private partners, governments can create sustainable, cost-effective eLearning programs that will provide social and economic opportunities for years to come.

Key Learnings

Early experience in the pilot project in the Hongkou district provides several lessons and strategies for stakeholders considering 1:1 eLearning initiatives:

• To ensure strong program implementation, government and program leaders must communicate a clear description of program goals and activities to educators and the public.
• A phased approach which allows schools to choose to participate in the pilot increases engagement, adoption, and ownership.
• A robust technology infrastructure, including connectivity and hardware, is an important prerequisite for successful technology-based educational initiatives.
• Teachers need training on how to adapt their instruction for an eLearning environment—above and beyond training in technology skills.
• For an eLearning environment to become valuable for student learning, high-quality digital content must be readily available for teachers and students.
• Incorporating research and evaluation efforts at an early stage can provide valuable insights that can directly improve program efficacy.
Intel has helped to implement more than 200 education programs in over 70 countries, and has invested more than USD 1 billion in the last decade to improve teaching and learning environments.

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