

Bridging the Digital Divide in South Africa's Western Cape School System

Schools throughout the world are faced with new challenges as computer skills become increasingly important in the Digital Age. Finding ways to deliver affordable access to computing technology has become a priority for many school administrators. South Africa's Western Cape School System found that the NComputing solution is an effective way to give more students access to computing and thereby bridge the Digital Divide in their region.

The Challenge

The Western Cape region of South Africa has over one million children in its K-12 school system. This region is economically poor and most of the schools can not afford computing technology. Without access to computers and associated curricula, the Western Cape Education Department (WCED) was concerned that its students would not be ready to meet the promise of the 21st century digital economy.

The WCED launched the ambitious "Khanya" project to face this fundamental challenge by deploying PCs and other IT systems in the schools to help bridge the Digital Divide. Khanya's goal is to take the Digital Age into the schools and lives of nearly one million students in 1,570 schools throughout the Western Cape.

The first stage of the project is to provide each school with at least one functional computer laboratory consisting of 20 to 40 PCs and peripherals that are networked and linked to the Internet. At the beginning of the Khanya project, used PCs (donated) were deployed in the schools in an effort to save on deployment costs. However, the equipment broke down and was difficult to maintain due to a wide variety of PC types and old operating systems such as Windows 95 and Windows 98. In the Khanya Annual Report, the project director wrote:

"One of the early lessons learned is that refurbished (used) computers do not do justice to the project. Used computers have already reached a point where it is no longer cost-effective for an organization to maintain the equipment, and by giving such equipment to a poor school, where little technical expertise is available, one can expect break-downs, delays, and lack of funding to repair, all of which lead to disillusionment with the use of technology. The lesson that Khanya has learned is that one must give the best equipment possible to the poorest of the poor schools."



The Khanya Project is bringing computing to over a million students in schools throughout South Africa

So how can an ambitious project like Khanya install new computing gear on its relatively small budget and still meet its ambitious objective to bring computing to a million students? The Khanya Project turned to the NComputing X300 solution provided by Yellow Penguin, NComputing's distributor in South Africa, as one technology architecture for use within the project.

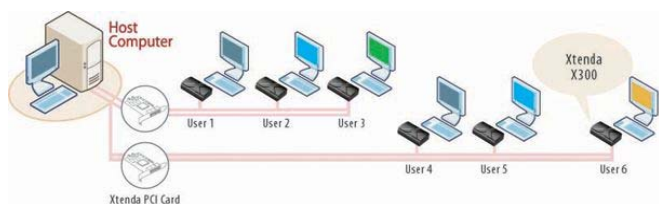
The Solution

The unique NComputing technology that powers the X300 system enables truly efficient utilization of a PC's resources. Normally, with only one user on a PC, the processor's average utilization is less than 5%. NComputing harnesses the unused power of a PC to share it among multiple users and it does so at one-tenth the cost of individual PCs. In addition to better use of processing power and lower acquisition cost, this highly efficient system requires less electricity and less space at a user's desktop (each user connects through a device that is smaller than a paperback book). Best of all, the NComputing solution is simple to install and maintain with far fewer PCs to manage and update. All of the components in the X300 system can be reused through multiple generations of PCs saving time for IT administrators and saving money for school systems.

"This technology can successfully be integrated into an existing Khanya laboratory providing an extension of the existing lab at a fraction of the cost."

How Does It Work?

The NComputing X300 solution enables a single PC to be shared by several students at the same time. A computing lab with just five PCs can support 35 users simultaneously through a much more affordable system. The X300 kit includes a PCI card that plugs into the PCI slot of a regular PC. The PCI card has three RJ45 ports that each link to an X300 access terminal for a total of four users per PC. Each terminal connects to standard peripherals like the keyboard, mouse, monitor and speakers on the student's desk (see diagram). Two X300 systems can be used with one PC to support up to seven students (one on the host PC, three on each of the two X300 PCI cards). Like all NComputing products, the X300 is compatible with existing PC applications and delivers full PC performance to each user.



Up to seven users can share a single PC with the X300 System

The X300 also works with the NComputing NControl software which allows teachers and administrators to remotely monitor what students are doing on their terminals from the teacher's PC. Teachers can also send warning messages and even take control of students' computing environments if they use improper applications. One teacher can monitor up to 128 students using NControl.



The NComputing X300 solution is also deployed at South Africa University

The Results

The Khanya Project concluded that the X300 solution is well suited to address the requirements of their computer laboratories and further stated:

"This technology can successfully be integrated into an existing Khanya laboratory providing an extension of the existing lab at a fraction of the cost. The X300 system delivers the same full functionality as the existing Khanya computers."

Khanya noted the following features and functionality of the NComputing solution in their summary report:

1. Runs on Windows XP
2. Each station can extend up to 13 meters from the host PC giving users more space
3. Cat 5 cable connects to the stations & includes power
4. Terminal boxes are small and can easily be secured
5. Installs easily via a PCI card into the host PC
6. Lowers maintenance cost (smaller number of PCs)
7. Reduces the risk of theft of PC components
8. Requires less network cabling and electrical infrastructure

The report also stated, the "X300 model can thus be seen as a more cost effective way of providing schools with computer laboratories, while the performance can be compared to that of a normal client network." Khanya used the X300 in a 4:1 configuration.

By deploying innovative and affordable solutions like those enabled by NComputing, Khanya has enriched the lives of students and educators throughout the Western Cape. In fact, Project Khanya has received numerous national and international awards including:

- Finalist in the prestigious Stockholm Challenge Award program in the Education Sector (the only finalist from Africa);
- Winner of the Standard Bank Public Sector Innovation Award;
- Recognized by the National Department of Science and Technology as one of the top 100 IT related organizations in South Africa.

NComputing and Yellow Penguin are pleased to have brought the simplicity, efficiency and affordability of its solution to the Khanya Project to help make it a model for bridging the Digital Divide in school systems throughout the world. To learn more about how NComputing can help your school system give more students access to the Digital Age please visit: www.ncomputing.com