

South Korea Ministry of Education



Applying Network Computing to Education

Institution/Organization

South Korea Ministry of Education

Vertical Market

Primary & Secondary (K-12) Education

Key Challenges

- A lack of creativity in the curricula
- An increase in private spending on education
- Low quality of educational facilities
- A slow response to the digital revolution

Solution

- Upgrade network infrastructure
- Develop multimedia content
- Increase ICT training and education
- e-Administration in education
- Legal and policy measures

Business Results

- All 10,064 schools and 220,000 classrooms 100 percent connected to the Internet
- Every teacher has his or her own PC
- Now one PC for every five students
- 110 kinds of textbooks available in multimedia format
- 15 cyber universities established, offering 89 courses to an enrollment of 16,700 students
- 23 life-long education centers and 203 life-long study centers for all ages are now operating
- Centralized e-Administration system relieves teachers of their administrative burden by managing all student and classroom records

In the mid 1990s the South Korean educational system was criticized for being slow to adapt to the country's emerging knowledge-based society. In response, the Korean Ministry of Education (MOE) recognized information and communication technologies (ICT) as a strategic problem-solving tool, which it used to provide better quality education.

The MOE, with support from president Kim Dae Jung, established a comprehensive plan for information technology use in education. Out of the plan came a network that connected all K-12 schools under the national MOE and 16 local MOEs.

Sun hardware was an integral part of the infrastructure that now connects 100 percent of Korea's 10,064 schools and their 220,000 classrooms to the Internet at high speed.

Challenges

Despite credit for fueling high economic growth between 1966 and 1996, the Korean educational system faced a number of challenges in the mid 1990s, including:

- ♦ A lack of creativity in the curricula
- ♦ An increase in private spending on education
- ♦ Low quality of educational facilities
- ♦ A slow response to the digital revolution

Solution

Faced with these challenges, and recognizing ICT as a strategic problem-solving tool, the MOE identified the following five strategic areas and specified what actions or programs should be taken in each area:

- ♦ Hardware and network infrastructure.
- ♦ Multimedia content.
- ♦ ICT training and education.
- ♦ e-Administration in education.
- ♦ Legal and policy measures.

The right equipment was essential for the MOE to follow its strategy of incorporating ICT throughout the educational system.

Initially, the primary hardware concern was the database server for the MOE that oversees education in the cities of Seoul and Kyungki. After a thorough competitive bidding process, the MOE chose Sun to provide the server for this critical application.

In the initial stage of implementation, a Sun Fire™ 6800 was proposed for the MOE's database server. As the project progressed, it was clear that more computing power was needed, which prompted the software vendor to propose a Sun Fire 15K server, the world's largest UNIX® system. In competition with non-UNIX systems, the eventual selection went to two Sun Fire 15K servers with two system domains.

In addition to the Sun Fire 15Ks, other Sun equipment included a Sun Fire 4800 server, a Sun Fire 3800 for the database server, a Sun Fire V880 server, a Sun Fire 480 server and a Sun Fire 280.

Benefits of Sun

The MOE chose Sun because of features such as Dynamic System Domains, the first partitioning capabilities in a UNIX system; dynamic reconfiguration, whereby data center managers create or resize partitions on the fly - without rebooting; and the Solaris™ Operating Environment.

With the planned growth of the ICT project throughout the country, scalability was an important consideration. The Sun Fire 15Ks would enable the MOE to capitalize on the phenomenal growth of the Internet in the late 1990s and better manage their back-end database and online transaction processing systems. Sun's record for reliability, availability, and serviceability were additional factors that influenced the MOE's decision.

Results

Today, the two Sun Fire 15K servers are powering a database capable of storing the academic records of more than five million students a year.

All 10,064 schools and their 220,000 classrooms were 100 percent connected to the Internet at 20Mbps, with at least one computer lab installed at each school.

Every teacher has his or her own PC, and there is now one PC for every five students. This enables both teachers and students to have increased access to various information and services.

There are 110 kinds of textbooks (covering 10 basic subjects from 1st to 10th grades) that have been developed in multimedia format. These materials include 29,000 images, sounds, and texts. In addition, there are now 5,399 different kinds of educational software available in the schools.

Fifteen cyber universities have been established, offering 89 courses to an enrollment of 16,700 students. Additionally, 23 life-long education centers and 203 life-long study centers for all ages are now operating.

Finally, a centralized e-Administration system, the National Educational Information System (NEIS), greatly relieves teachers of their administrative burden by managing all student and classroom records. The NEIS also allows parents to view their children's progress over the Internet.

Sun Solution Components:

- Sun Fire™ 15K servers (36 CPUs)
- Sun Fire 4800 servers with cluster
- Sun Fire 3800 servers with cluster
- Sun Fire V880 servers
- Sun Fire V480 servers
- Sun Fire V280 servers
- Sun StorEdge™ 9960 Network Storage
- Sun StorEdge 9910 Network Storage
- Sun Storagetek LTO Tape Drives
- Solaris™ Operating Environment



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