EXECUTIVE SUMMARY

Introduction

1. As the global communities are now preparing for the knowledge-based society, growing consensus has been built to ensure prosperity for all. In relation to this trend, government sector is considering to reinforcing the roles of ministry of education and much thought has been paid to upgrade minister of education to prime minister responsible for human resources development. The Republic of Korea is in the process of implementing “Cyber Korea 21”, a masterplan for the informatization of Koreans.

Visions and Goals

2. The vision of the ICT Use in Education Project is to prepare students for the knowledge-based society by realizing lifelong learning via a cyber-education system. The vision is carried out in four categories (two levels and two areas). They are: (1) the elementary and secondary school level (hardware infrastructure, software/content, and curriculum); (2) the university level (cyber-university system and research information infrastructure); and (3) the educational management information system area.

Implementation

3. In Elementary and Secondary School Level, every school computer lab, classroom, and teacher are provided with PCs, and those PCs will be connected to the Internet by the end of 2000. The communication fees will be free during for at least five years for school use. Educational multimedia data will also be provided via EDUNET (http://www.edunet4u.net) and CD-ROM titles. From 1st
graders to teacher candidates and schoolteachers, all are provided with ICT education as compulsory course. Thus students and teachers will be ICT Literacy License holders and ultimately able to pursue quality education appropriate for the knowledge-based society.

4. In higher education level, educational network development, RISS and Cyber-University were launched for the purpose of enhancing the research competitiveness and establishing a cyber-education system, the Korea Education Network (KREN) is connected to higher education institutions, elementary and secondary schools, and educational administrative institutions, etc. In addition, RISS (Research Information Service System) links with major libraries and scholarly journal databases worldwide as well as Korean university libraries. The cyber-university is ready to open in Korea, enhancing lifelong learning.

5. For the pursuit of efficiency in educational administrative work, EIMS(Educational Information Management System) has been under development for Ministry of Education and Regional Offices of Education and schools since 1998 and will be completed by 2000. Along with system development, digitizing every student record and major administrative documents are in process. The EIMS project is expected to increase accountability as well as to expedite the administrative work process.

**Future Prospects and suggestions**

6. Reducing gaps among regions and schools on the level of ICT Use in Education Project progress is dependent on primarily financial scarcity and the decision of superintendents and principals. In order to reduce the gaps, in-service training and workshops for those decision-makers are counted as one of the solutions. Encouragement of local communities and private sectors to participate in the ICT Use in Education Project could be another promising solution. Although the current financial difficulties nationwide are pointed out as one of the main obstacles preventing them from doing so, fund raising and tax exemption for those participating bodies at the Project is under consideration.
7. International ICT University and an International Young ICT Voluntary Program may be launched to provide opportunity for leaders of APEC economies in effort to enhancing the use of ICT and to bridge knowledge gap across the Asia and the Pacific region. Through the International Young ICT Voluntary Program, many college students will be able to serve to facilitate informatization across the region voluntarily. I hope that these proposals can be helpful for APEC economies in preparing for the upcoming knowledge-based society with each other.
I. Introduction

1. The world is now in a paradigmatic transition from the industrial age to a globalized information age. In this new age, information and knowledge will create added value. Economics around the world are now focusing their efforts on preparing for a knowledge-based society to ensure survival and prosperity in the coming age.

2. Having suffered a century of hardship due to its late industrialization, Korea is now preparing for a knowledge-based economy. Information and education are at the core of this preparation. Aiming to be a leading nation in knowledge and information in the 21st century, the Korean government prepared a comprehensive informatization plan called "Cyber Korea 21" in 1999. At the New Year Address on January 2, 2000, President Kim Dae-jung proclaimed that the Minister of Education will be the Deputy Prime Minister of Korea and will coordinate all the affairs related to Human Resource Development (HRD) in Korea.

II. Visions

3. These two meaningful and recent events indicate that the Korean government believes that the informatization of education is one of most important matters in HRD for the 21st century. This is evident in the "Cyber Korea 21 Plan," which is a strategy to make Koreans the most proficient and knowledgeable computer users in the world. The plan has various programs designed to adequately meet the needs of each group of citizens, ensuring a society without "information have-nots."

4. For example, it is planned that ten million students and 900,000 civil servants will take computer courses, and 600,000 men in military service will also receive special education on computers. In addition to that, housewives and farmers, as well as other kinds of citizens, will have the opportunity to learn. At the same time, an environment in which everyone can use personal computers anywhere at any time will be created through encouraging the spread of computers.
III. Goals and Strategies

5. Although various ministries are in charge of computer education for the targeted group of people in the "Cyber 21 Korea Plan," the major institution responsible for computer education is the Ministry of Education. In Korea the informatization in education was initiated by the May 31 Education Reform in 1995. Realizing the importance of informatization in education, the Ministry of Education (MOE) in Korea established an Education Informatization Management Bureau in 1996 and implemented many programs for the informatization of education.

6. The ultimate goal of informatization in education is to encourage human creativity that will excel in the new knowledge-based society. People in the 21st century will need to have various cognitive abilities, such as creativity, problem solving, and inter-personal skills. This goal will be achieved through an open lifelong learning society in which people can learn anywhere at any time. Information and communication technology (ICT) will be the most important factor achieving such an open lifelong learning society.

7. In order to achieve these goals, the Korean MOE is planning and implementing many kinds of programs in three areas: informatization of elementary & secondary education, informatization of higher education, and informatization of educational administration. Of course, the major content of various programs in these areas are hardware and software dissemination and the training of humanware.

IV. Program Implementation

1. Informatization of Elementary and Secondary School

8. The objective of informatization of elementary and secondary school is twofold: the education of students on computer knowledge and the use of ICT in education. For this purpose, hardware and software must be provided, and students' access to computers must be guaranteed. At the same time, educators need to be trained in ICT skills in order to teach their students.
(a) Dissemination of Hardware Infrastructure

9. In order to ensure students' access to computers, the Korean MOE plans to provide one computer lab for every elementary and secondary school with fewer than 36 classes; while schools with 36 or more classes will be supported with a second lab. The plan envisions that by the end of 2000 there will be about 18 students to every PC in schools, on average. At the same time a portable computer or desktop computer will be provided to every schoolteacher. By 1999, 70.1% of all school teachers had been provided with a PC. Through these programs, teachers learn ICT skills that enable them to prepare teaching materials, run class activities, maintain student performance records, and perform other administrative work as well.

10. In order for teachers and students to have Internet access and multimedia data usage during class hours, every elementary and secondary school classroom will be equipped with a PC, projectors, etc. By the end of 1999, 53.4% of classrooms were installed with a multimedia PC. In terms of networking, every school will be connected to the Internet by 2000. The fees for Internet communication will be free for at least 5 years beginning with this year, 2000.

11. One notable thing about hardware installation in Korea is that the Korean government is concerned about the inequity of students' access to the ICT environment. Free ICT training will be provided to 500,000 economically disadvantaged students, and a computer as well as the fee for Internet use will be offered to 50,000 economically disadvantaged students with good academic records.

(b) Educational Software and Content Development

12. As computer software is inseparable from hardware, the Korean MOE is trying hard to provide relevant software along with the hardware. For this purpose, about 20% of a PC price upon the installation of a PC are provided to schools for purchasing licensed application software. Schools are also supported with average 1 million won (US $877) for purchasing courseware during a school
year since 1998.

13. In addition to the support software purchasing, educational multimedia software on national curriculum are developed in collaboration with the MOE, the provincial offices of education, and the Korea Education and Research Information Service (KERIS). Furthermore, in order to facilitate educational software development, a 'National Educational Software Contest' has been hosted since 1992. Local governments have been supported by 3 million won (US $2,631) to implement the contest annually.

14. Developing CD-ROM titles for vocational high schools is another educational concern in Korea. Sixteen simulation programs were developed through governmental support during 1997-99. Various multimedia data sets that could support vocational high schools, general high schools, as well as elementary and middle schools will be developed during 2000-2001.

15. Korea has a Networked Educational Information System, which is called EDUNET. EDUNET was opened on September 1996. The primary function of EDUNET is to provide diverse educational software and multimedia content for students, teachers and parents to assist school education and home study as well. EDUNET also provide Internet linkage for its ID holders. As of February 2000, about 1.7 million students and parents have EDUNET IDs and about 2,000 schools and educational institutions are linked to EDUNET.

(c) Curriculum Revision

16. In terms of curriculum for computer education, computer literacy education is provided as a part of the study of Technology for elementary and 1st grade middle school students. From 8th grade through high school, Information/Computer education is provided as electives. However, from the year 2001, Korean students are to take ICT education as a compulsory course.

17. Specifically, elementary school students are to study ICT for one period per week. In case of middle and high school students, they are to take ICT as a subject as a compulsory course. In addition, starting from the year 2000, all
textbook writers are recommended to develop content integrating ICT usage into
the subject matter at a minimum of 10%.

18. Korea is now implementing a Student Information Literacy Certificate
program. Upon students’ completion of an ICT course, the Student Information
Literacy Certificate is conferred to those middle and high school students. The
program has been implemented for high school students since 1999. As the ICT
subject is now a compulsory course during secondary school education, every
middle and high school student shall be certified on ICT literacy.

(d) Teacher in-service and pre-service training

19. As everyone knows, teachers are the most important factor in education,
and this applies to computer literacy education too. In Korea, teacher in-service
training for ICT literacy is mostly provided by teacher in-service training centers
for provincial offices of education, KERIS, higher education institutions, and
vocational high schools with their own curriculum. Every year, one-quarter of all
teachers in Korea will have the opportunity to train for ICT literacy. MOE also
plans to train one master teacher on ICT literacy in every school. As a method of
in-service training, Korea has developed a Cyber Teacher In-Service Training
System on EDUNET. Teachers can take in-service training at their own
convenience through the system.

20. Although ICT equipment was located in elementary and secondary
schools, teacher-training universities were behind in introducing ICT in
education. The Korean government initiated hardware infrastructure support for
teacher training universities from 1999 to 2001. With this support, two kinds of
labs will be facilitated in teacher training universities: demonstration rooms and
multimedia labs. The labs will be equipped with multimedia PCs, software,
multicasting software, camcorders, VOD servers, LAN, LCD projectors, etc.

21. When teachers are trained on ICT use in education during their pre-
service education, the demand for in-service training on ICT will decrease
markedly. Considering this fact, MOE initiated changes in curriculum of pre-
service teacher training institutions. In 1992, national teachers colleges, which
provide pre-service training for elementary school teachers, were recommended to offer 6 credit hours of computer education as core courses, and 21 credit hours of advanced computer education as core or elective courses for students majoring computer education.

22. The curriculum of colleges and universities for the pre-service education of secondary schoolteachers were changed as follows. Those who major in liberal arts are to take 4 or more credit hours, and those who major in home economics and science are to take 6 or more credit hours. Those who major in computer education are to take 21 or more credit hours on ICT in education. In addition to these curriculum changes, the screening of teacher candidates in terms of ICT literacy is under consideration.

2. Informatization of Higher Education

23. For the informatization of higher education, education network development, research information service systems, and cyber-universities are the major programs in Korea. For the purpose of enhancing the research competitiveness and to establish a cyber-education system, the Korea Education Network (KREN) has been developed since 1993. KREN is composed of overseas networks and Local Area Network (LAN). By 1999 1,422 institutions were connected to KREN. Those institutions include 197 higher education institutions, 972 elementary and secondary schools, 164 educational administrative institutions, etc.

24. Research Information Service System (RISS) is another program for the informatization of higher education in Korea. In order to provide quality research information to primarily Korean scholars, researchers, and students, RISS has been in operation since 1998. RISS has been linked to major libraries worldwide and 80% of university libraries in Korea. RISS ID holders are able to access overseas journal databases via RISS. As of February 2000, there are 100,000 RISS ID holders in Korea.

25. Since the term of cyber-university was named on the 5.31 Education Reform in 1995, experiments in cyber universities were attempted during 1998-
2000. The courses offered by a cyber-university tended to be an aid for traditional educational methods in Korea.

3. Informatization of Educational Administration

26. Korea has launched Educational Information Management System (EIMS) programs for the informatization of educational administration. For the pursuit of efficiency in school administration, EIMS has been under development since 1998 and will be completed by 2001. According to the program, digitizing student records and major administrative documents are in process. The EIMS project is expected to increase accountability as well as to simplify administrative work process. EIMS was implemented in 90% of secondary schools by 1999. The remaining 10% of secondary schools and every elementary school will be implemented with the system by the end of 2000.

27. MOE and regional offices of education are also partially utilizing EIMS for communication and exchange of information. EIMS will be fully run for those institutions by the year 2002. Staff training, digitizing documents, and cultivating positive minds in the use of EIMS are remaining tasks. Moreover, the standardization of codes over various data files in different formats also remains to be done.

V. Non-MOE Initiatives for the Information Society

28. Along with the informatization of education by the Ministry of Education, private commercial institutions are also making contributions for the dissemination of computer-related knowledge and Internet use in Korea. One such private institution is the commercial PC rooms, which have appeared very recently. Commercial PC rooms are equipped with very speedy Internet networks and are thus able to provide speedy Internet access for a very cheap price. Although commercial PC rooms are used for Internet games in many cases, they are also used for information searches and e-mail. As a result of these rooms, many people in Korea feel that the Internet is integral to their daily lives.
29. Another kind of private institution that is accelerating the dissemination of computer use is private commercial teaching institutions. There have been lots of private commercial teaching institutions providing computer-related courses. Millions of elementary and secondary students as well as college and university students are learning computer-related subjects from these private institutions. They learn computer-related subjects for various periods and for various purposes -- for job preparation, to keep up with the times, etc.

30. The Ministry of Information and Communication (MOIC) has launched Housewife Internet Class Programs through private commercial teaching institutions. MOIC designated 769 commercial teaching institutions as the institutions for Housewife Internet Class Programs. Those institutions are now receiving applications from housewives. Collecting small amounts ($25 per month) of tuition, the programs are highly popular and most designated commercial institutions are now accepting applications for the April or May Program.

31. In order to guarantee access to computers for people living in remote areas, MOIC established Satellite Internet Plazas at 127 post offices nationwide in 1999. High-speed Pentium level computers are installed at these Satellite Internet Plazas, where people can use the computers for e-mail, cyber-shopping, and satellite broadcasting, all free of charge.

VI. Future Prospects and Challenges

32. The use of ICT has now become an inseparable aspect in the daily life of Koreans. Korean youngsters are going to PC game rooms for amusement as well as for Internet use. The Internet is widely used for reading newspapers, searching for information, tele-banking, cyber shopping, e-mail, and bond-investment. It seems that all the Koreans, regardless of age and area of living, will be able to access and use computers in the very near future. These are the first steps toward the knowledge-based society.

33. However, there are many challenges that we must surmount in order to achieve our goal for the preparation of the coming knowledge-based 21st
century. The first challenge we will face is the continuous training of professionals in information and communication technology. To prepare for the upcoming knowledge-based society, the leaders of our countries should be equipped with relevant information and communication technologies. Another challenge we will face is the training of educators. The training of educators, especially old educators, although it is not an easy task, will be the first step for informatization in education.

VII. Suggestions

34. Another challenge we will face is the disparity among economies and groups of people. Disparities in knowledge and ICT in the 21st century will be the major factor in the disparity in earnings and prosperity. Continuing the effort to boost IT education for economically disadvantaged people, the Republic of Korea urges the necessity of educational cooperation among APEC countries. This is the reason for President Kim Dae-jung’s proposal to strengthen cooperation on e-education at the Seventh Informal APEC Economic Leaders Meeting held in September 1999, in Auckland, New Zealand.

35. As a consecutive action to President Kim Dae-jung’s proposal, and in relation to the conclusion of sub-theme main paper, I would like to suggest that APEC could make efforts strengthening of the outreach program of existing centres of excellence and institutions of higher education to be more responsible for administering exchange programs, training of educators and policy-makers on IT. These centres will be networked to be able to provide the opportunity to learn ICT in education for leaders of APEC economy, serve as a clearing house, and on-line repository of information and technology planning and evaluation. Through the International Youth IT Voluntary Program, many college students will be able to serve the informatization of foreign APEC economies voluntarily. I hope that these proposals can be helpful for APEC economies in preparing for the upcoming knowledge-based society with each other.
Bibliography

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