

バーチャル教育の政策と実践の動向： 韓国的高等教育の場合

A Review of Policy and Practice in Virtual Education: In the Context of Higher Education in S. Korea

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Keywords

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Higher education policy, higher education reform, lifelong education, virtual education, virtual universities

ABSTRACT

生涯教育のニーズが高まるにつれて、従来とは異なった方法による教育へのアクセス方法を模索しながら、各国の政府は教育をより効率的にするための政策を進めている。生涯教育という文脈において高等教育へのアクセスを広げようとする韓国政府の取り組みは、高等教育機関に意識改革をもたらし、各大学は組織改革やサービス改善のためのテクノロジーの利用、さらには教育の一つの形態としてバーチャル教育を積極的に導入する方向に進んだ。本論文では、高等教育をより開放的にするため、高等教育改革を進め、より進んだテクノロジーやバーチャル教育を導入しつつある韓国の最近の政策と実践を吟味しながら、将来の政策や研究に対する提言を行う。生涯教育のニーズが高まるにつれて、従来とは異なった方法による教育へのアクセス方法を模索しながら、各国の政府は教育をより効率的にするための政策を進めている。生涯教育という文脈において高等教育へのアクセスを広げようとする韓国政府の取り組みは、高等教育機関に意識改革をもたらし、各大学は組織改革やサービス改善のためのテクノロジーの利用、さらには教育の一つの形態としてバーチャル教育を積極的に導入する方向に進んだ。本論文では、高等教育をより開放的にするため、高等教育改革を進め、より進んだテクノロジーやバーチャル教育を導入しつつある韓国の最近の政策と実践を吟味しながら、将来の政策や研究に対する提言を行う。

1 Introduction

As the demand for learning and relearning over a lifetime increases, most governments are seeking policies to make education more effective and efficient, while searching for alternative methods to increase access. The Korean government has been reconstructing the entire education system by expanding higher education and revising relevant laws and regulations such as the Lifelong Education Law and the Higher Education Law. These efforts introduce market principles and promote new forms of higher education institutions, formal and non-formal, to both compete and collaborate in offering need-based educational programs and increasing access to higher education. An increased portion of the budget is thus allocated to the development of a lifelong education system and the establishment of a technology infrastructure in colleges and universities.

The government's plans and action strategies have been developed according to the recommendation of the Presidential Commission on Education Reform. The Commission, which operated from 1994 to 1998, defined the goal of the Korean education system in the 21st century as an "Edutopia, an education welfare state—a society of open and lifelong education to allow each and every individual equal and easy access to education at any time and place." In 1997, the Commission recommended the establishment of a virtual university, a national credit bank system and the use of advanced technologies in education as a possible means of realizing an Edutopia (Presidential Commission on Education Reform, 1997).

The government's plans and strategies have enjoyed unanimous societal consensus; few have even raised issues about the plans' cost-effectiveness or efficiency. There is almost universal support for the elements of those plans,

which include: establishment of world best information infrastructure in schools and universities, development of a multimedia database, training in the use of advanced technologies and the use of information technologies to educate the next generation (Ministry of Education, 2002).

Since the early 1990s, introduction of information and communication technology (ICT) has been seen as a barometer of national competitiveness and quality of life. Thus, informatization—the process and outcome of introducing and implementing ICT in the society—is being pursued as a national development strategy for securing leadership in the world economy of the 21st century (Ministry of Information and Communication (MIC), 1998). Due to the national efforts for informatization, the personal computer penetration rate in 2002 rose to 53 percent of the population, with a total of 25.6 million PCs supplied (CIA The World Factbook, 2003). Moreover, the broadband, high speed Internet subscription rate in 2002 reached 17.2 percent, the top ranking in the world (MIC, 2003). Korea Network Information Center (<http://stat.nic.or.kr/english/iuser.html>) recently reported that more than 25.6 million Koreans used Internet services in 2002. 55 percent of these users were male and 45 percent female.

The efforts of the government to search for ways to expand access to higher education in the context of lifelong education have stimulated both formal and non-formal higher education institutions such as colleges, universities, training centers and other lifelong education centers to reorganize their structure and use the technology infrastructure to improve their services (Jung, 2001). Principles intended to guide reforms in higher education include:

Flexibility: all students should be able to continue their learning beyond the years of compulsory education, and all forms of non-formal

continuing and lifelong education must be integrated into the formal higher education system;

Excellence: higher education institutions should educate and retrain Koreans as prospective leaders for the 21st century;

Diversity: entrance examinations, educational programs, delivery methods and management systems of higher education institutions should be diversified and specialized to increase competitiveness and meet the specific needs of individuals and industries; and

Efficiency: the restructuring of all higher education institutions must be accomplished in a cost-effective and efficient way, and ICT must contribute to improving the efficiency and quality of the educational system.

This paper analyzes and discusses government policies and initiatives that promote the use of advanced technologies in higher education. Recommendations for future policy development and research areas are offered in the concluding section.

2 Recent government policies and practices in higher education

The Korean government has played a key role in promoting and implementing educational reform at all levels of education. In response to a growing need for lifelong education and open learning, the government has implemented educational policies which support higher education institutions to be more flexible, competitive and diverse. Government policies and practices in the area of higher education include:

Introducing principles of competition in distributing funds: Since the 1990s, the government has been concerned about the quality of higher education. As a result, it has implemented a policy requiring all colleges and universities to compete for government funds, which are then distributed according to school

evaluation results. The evaluation, conducted annually by a group of professionals from various occupations, has begun to lead to structural changes in the higher education institutions in Korea.

Promoting diversity and choice in higher education: Diversity and choice are two key points emphasized in the process of higher education evaluation. Higher education institutions are encouraged to represent themselves in a diversity of purposes, curricula and educational approaches. The government has implemented a policy that promotes the autonomy of colleges and universities to offer diversified and specialized programs and to adopt various approaches to delivering education, such as virtual education. Virtual education refers to “a form of distance education in which advanced ICT such as the Internet or a teleconferencing system is used as the main instructional and communicational tool” (Jung, 2000). Until recently, the Korean government regulated all universities, whether public or private, by fixing enrollment quotas, controlling academic affairs and curriculum, and budgeting. The increasing need for flexibility and diversity of education in a rapidly changing society has driven the Korean government to implement policies to promote the autonomy of universities.

The Special Budget Act, which was issued in late 1999, permits higher education institutions to solicit funds from various sources and to invest those funds in specific program areas. This Act has encouraged extensive competition among colleges and universities in raising funds from the private sector.

Encouraging the use of ICT in higher education and research: Since 1988, the use of ICT in education and research has been adopted as a national policy. However, the active implementation of that policy came with the establishment of the independent Bureau of Educational Information and Technology (BEIT) in 1996, and the Korea

Research and Information Center (KRIC) and the Korea Multimedia Education Center (KMEC) in 1997.

Using government funds, KRIC has established and/or linked many digital libraries and provided information services for professionals in higher education with its own server and network system to which all higher education institutions are now linked. Online journal articles, research papers, academic databases and other academic materials are provided to professors and researchers in Korea.

KMEC supports implementation of virtual education in primary and secondary schools and provides online teacher training. Using government funds, KMEC conducted various activities such as researching the current use of technology in schools, implementing technology initiatives, developing online learning materials for teachers, students and parents, supporting schools in creating their homepages, and providing a comprehensive educational Internet service called EduNet. In April 1999, KRIC and KMEC were united as the Korea Education and Research Information Service (KERIS).

In order to promote research and development in the use of advanced technologies in education, special research funds have been provided by the Bureau of Educational Information and Technology of MOE and the Research and Development Funds for the Information Society of MIC.

Promoting lifelong education: Until recently, the Korea National Open University was the only four-year degree-granting distance teaching university. However, a revised Lifelong Education Law, issued in 1999, allowed private institutions to establish degree-granting distance teaching universities using advanced technologies to deliver lifelong and adult education and training. In addition, the Higher Education Law is to be amended to specify criteria for establishing

distance teaching institutions within conventional universities.

Since 1997, individuals who have earned credits from accredited higher education institutions (including colleges and universities, public and private lifelong education institutions, and corporate training centers) can save such credits in an account and apply for the appropriate certificate or degree after they accumulate a certain number of credits. This National Credit Bank System is considered a revolutionary system for implementation of lifelong education since it accepts credits earned from private and business sectors. It also opens the doors of colleges and universities to the public and promotes the development of distance education programs in a range of formal and non-formal higher education institutions. Emphasizing the qualitative improvement in Korean education and training in the context of lifelong learning, OECD (1998) indicated the need to develop educational and training standards at the higher education level and in industrial training schemes so that those standards may be used to manage the quality of the credits earned through the Credit Bank System.

In addition, the government has allocated a larger portion of its budget for projects in the field of distance education. So far, more than 1.5 percent of the MOE's budget has been allocated to lifelong education; and is expected to grow.

Benchmarking with other external institutions: The Korean government has actively sought advice from external educational institutions and encouraged higher education institutions in Korea to collaborate with other institutions in the country as well as with foreign universities and training centers that use advanced technologies. Joint research with professionals from external institutions is encouraged and supported by the government. Specific collaborative measures such as program and faculty exchanges, and credit transfers have been settled rather easily in most

cases with support of the government's open market policy.

3 Higher education's response

The government's policies for higher education reform are only the latest in a series intended to improve the Korean university system, but seem to be unique in at least two respects.

First, Korea, like many other countries, is at a transition in its development. A comprehensive reform of the education system is necessary to educate citizens in creativity and leadership. Second, as the global economy propels toward open markets and deregulation, the technology revolution challenges the education sector to provide learning opportunities for people of all ages. Higher education institutions must play a major role in meeting these economic and technological challenges.

There have been tremendous changes in higher education to respond to government policies on flexible and lifelong learning and to address social and economic challenges. Major changes include the following.

Dramatic expansion: Since the mid 1970s, the number of institutions of formal higher education

in Korea have increased, as has the student population, academic staff and educational facilities. University student enrollment increased from 2,280,069 in 1995 to 2,886,629 in 2002. Numbers of universities and colleges increased from 327 in 1995 to 352 in 2001. Korea ranks very high globally with regard to the proportion of the age group enrolled in higher education. In 2002, 70.5 percent of high school graduates attended higher education institutions, excluding the distance teaching universities (MOE, 2003).

Despite the increased number of institutions, the rapid growth of the student population has resulted in overcrowded classrooms and a shortage of academic staff and educational facilities (see Table 1). The use of educational technology and distance education programs is expected to solve some of these problems.

Increased autonomy: In 1997, the comprehensive entrance examination administered by individual universities was abolished. Instead, various selection data such as high school achievement, scholastic achievement test scores and interview results have been used. This change has broadened the autonomy of colleges and

Table 1
Number of Students per Instructor in Higher Education (1998 and 2001)

Type of institution	No. of Students* per instructor (1998)	No. of Students* per instructor (2001)
Four year universities	36.3	39.9
Four year teacher's colleges	30.3	30.2
Four year polytechnics	72.6	73.3
Two year junior colleges	73.4	80.1

*Excluding students of the Korea National Open University and seventeen virtual universities
Source: Ministry of Education 2003a

universities in selecting students.

In addition, since 1994 universities and colleges have been granted autonomy in a range of decisions such as the use of the semester system, the number of credits required for graduation and student quotas. In 1996, the government even granted autonomous management rights to seven universities which were ranked as the most superior higher education institutions. In late 1999, colleges and universities raised private funds more freely and made decisions regarding the allocation of those funds (Jung, 2000).

Permitting higher education institutions to determine their own school policies and investment areas has several profound implications. First, the government's policymaking and operations shifts from a centralized system to a decentralized one. Second, colleges and universities may compete with each other for students, and governmental and private funds. Third, colleges and universities become more concerned with providing flexible and specialized programs of high quality to meet students' needs. Finally, introduction of technologies and network-based distance education is considered a cost-effective method of providing a flexible education.

Increased focus on quality: With more autonomy in competitive situations, colleges and universities in Korea have begun to institutionalize quality management systems and the government's use of evaluation results in distributing a portion of educational funds has accelerated quality concerns. With an increased budget for improving quality, the government has evaluated all higher education institutions based on criteria measuring the quality of educational services provided, with the extent of the institutions' establishment and use of an information infrastructure being one criteria.

The government also focused on the improvement of research activities in higher education and expanded research subsidies from

US\$27 million in 1993 and US\$90 million in 1996 to US\$190 million in 2003. A post-doctorate training and research system also was introduced in 1996. Research activities and publication of study results have been encouraged and formally included in the performance evaluations of academic staff.

Increased use of computer network systems and other technologies: With financial support from government and donations from private companies, all Korean colleges and universities are now connected to an online education and research network and provide accounts for students and staff. Since 1998, when the hardware system of higher education institutions was upgraded, the focus has been on the use of technologies for education and research. In adopting ICT, universities and colleges tend to think that distance education and the use of IT in education have the potential to be cheaper than conventional classroom teaching because of their accessibility to larger student populations. However, high quality distance education and the effective use of ICT in education require careful planning and implementation strategies, systemic design and development of programs and more student support.

Focus on lifelong learning needs of adults: The number of lifelong education centers attached to four-year universities increased from 48 in 1993 to 116 in 1996. These centers create on-demand courses and use experts from various industries to provide practical courses to students enrolled in their programs.

Since the government initiated the Virtual University Trial Project in the early 1998, more than 40 percent of higher education institutions have offered virtual education courses using the Internet, CD-ROM, CATV and videoconferencing. About 25 percent of the institutions that offered virtual education courses in fall 1998 provided

lifelong courses to adults and professionals (Lim, Leem, & Jung, 2003).

These changes in the use of technology and distance education are responses to the increased social demand for access to higher and lifelong education which reflect: (i) the public's constant need for retraining; (ii) increased public expectation for equitable access to higher education; (iii) increased competition compelling higher education institutions to look for ways to attract students with affordable, flexible and quality programs; (iv) an increased demand for technology literacy from the workplace; (v) increased pressure from the government to use a national information superhighway system to provide higher education services; and (vi) increased competition for financial support from the government in the face of decreased fiscal resources. In the school evaluation, extra points are given to universities which adopt technological possibilities in providing their educational programs.

4 Virtual education development

Higher education has responded to the needs of adult learners by offering virtual education courses or even participating in new establishment of single-mode virtual universities. In this part of the paper, we will look at how independent virtual universities have been developed and how conventional universities have incorporated online education components in their courses.

4.1 Development of single-mode virtual universities

Virtual University Trial Project: In 1998, the Korean government established two-year Virtual University Trial Project (VUTP), which was designed to: 1) create a cost-effective virtual education system without diminishing quality; 2) develop and implement Web-based or other types

of distance education courses; 3) identify appropriate policies and standards for running a virtual university; and 4) share experiences during the trial period, ending February 2000 (Jung, 2000; MOE, 1998).

Sixty-five universities and five companies participated in the VUTP; eight conventional universities participated independently without forming a consortium, and 57 universities and five companies formed seven consortia. The government encouraged both partnerships among universities and the private sector and the sharing of existing resources in providing distance education to university students and adults (Jung & Rha, 2000a).

Three major implementation strategies were found to help reduce costs for institutions offering virtual education programs: maximizing the use of existing ICTs, sharing physical and human resources, and providing extensive faculty training (Jung & Rha, 2000a). Since the institutions participating in VUTP received no initial funding from the government, they all had to provide their own grants to establish the virtual programs. To minimize investment, these institutions used existing hardware and network systems, and most formed a consortium to share costs and resources. In line with the national technology implementation policy for higher education, most colleges and universities have also established a solid server system and are linked to the high-speed educational network or the national information superhighway. Some universities established videoconferencing systems and were using satellite channels to deliver courses. Collaborative development of virtual courses and team teaching among professors from member institutions was encouraged, although these types of collaboration had been limited so far because there was little or no systematic support for this type of collaboration or simply because professors preferred to work independently.

Production facilities and computer network systems were shared extensively, however.

In most conventional universities, one of the biggest challenges to the introduction of virtual courses was quality assurance. To help academics better design and develop virtual education programs, most of VUTP's participating institutions provided faculty training that emphasized effective design and management of virtual education programs. Some went a step further, providing faculty with on-demand technical assistance and continuous training.

Policy changes: All the institutions involved in the VUTP took on the task to expand distance education throughout the country using interactive technologies. The VUTP stimulated new experiments with various advanced technologies such as satellite broadcasting, videoconferencing, video-on-demand, the Internet and the intranet in delivering distance education. Issues of quality of distance education were raised and explored. VUTP helped integrate distance education more firmly into the formal higher education system and upgrade the status of distance education.

The Virtual University Trial Project increased collaboration among colleges, universities and

companies (Jung, 2000). Despite their lack of prior experience in such collaboration, many of these institutions developed highly successful virtual programs and entered into formal relationships with some foreign virtual universities. The Korean government encouraged such partnerships by instituting policies that provided incentives for private participation and investment in virtual education programs.

During its two-year trial period, the Ministry of Education revised the Lifelong Education Law to accept private virtual universities as part of the formal higher education system. After this period ended in the year 2000 and detailed criteria for establishing a virtual university were specified in the Law, nine "cyber-universities" approved by the Korean government started operating in March 2001. Main evaluation criteria for the establishment of a cyber university include: Hardware and Network Establishment, Course Development System, Interaction System, Student Support Services, Quality Assurance Mechanism and Administration. In 2003, a total of seventeen single-mode virtual universities are providing bachelor's degree programs to adult learners. Table 2 shows the list of those seventeen virtual

Table 2
Seventeen Virtual Universities in S.Korea(2003)

University Name & URL	Major areas of Study	Projected enrollment	Establishing Body
1. Korea Cyber University http://www.kcu.or.kr	Venture Management, Digital Multimedia Design, Entertainment	1,900	A consortium of 36 universities
2. Korea Digital University http://www.kdu.edu	Digital Education, Digital Information, Media Design, Practical Languages	2,500	A consortium of 7 universities
3. Kunghee Cyber University http://www.khcu.ac.kr	Media Literature, E-Business, Cyber NGO, Hotel and Tourism Management	2,400	A conventional university
4. Open Cyber University http://www.ocu.ac.kr	Internet Management, Computer Design, Digital Contents	1,900	A consortium of 14 universities
5. Sejong Cyber University http://www.cybersejong.ac.kr	Hotel and Tourism Management, E-Business, the Internet, Cartoon Animation	1,600	A conventional university
6. SeMin Digital College http://www.usm.ac.kr	English Translation, Hotel and Convention Management, Digital Media, Game & Animation	600	A 2-yr community college

7. Seoul Cyber University http://www.iscu.ac.kr	Schools of Social Science, Information Technology, and E-Commerce	2,300	A non-profit corporation
8. Seoul Digital University http://www.sdu.ac.kr	Law and Police Administration, E-Business, Multimedia, Animation and Game Design, China and Japan Studies	2,400	A consortium of 14 universities
9. World Cyber University http://www.world.ac.kr	Social Welfare, Hotel Foods, Health Foods, E-Business, Theology	1,800	A conventional theological school
10. Dongseo Cyber University http://dcu.dongseo.ac.kr	Internet Contents, Digital Multimedia Design	800	A conventional university
11. Asia Digital University http://www.adu.ac.kr	Lifelong Education Digital Move Production, Image Art	1,000	A non-profit corporation
12. Hanyang Cyber University http://www.hanyangcyber.ac.kr	E-Business, Management Information, Educational Contents, Digital Design	1,500	A conventional university
13. Wonkyung University http://www.wdu.ac.kr	Game Design, Game Software, Game Audio, Game Graphics	1,000	A conventional university
14. Daegu Cyber University http://www.dcu.ac.kr	Internet, IT Design, E-management, Integrated Education	1000	A conventional university
15. Youngjin Cyber College http://www.ycc.ac.kr	Computer Programming, Computer Media, E-Business	700	A community college
16. Gukje Digital University http://www.gdu.ac.kr	Business, Law, Digital Media, Leisure Sports	500	A non-profit corporation
17. Cyber University of Foreign Studies http://www.cufs.ac.kr/	English, Chinese, Japanese, e-business, Cultural Studies	1,000	A conventional university
Total		24,900	

Source: Ministry of Education 2003b

universities.

Table 2 shows that these institutions focus on lifelong learning and vocational education rather than replacing or competing with traditional colleges in the nation. The average enrollment rate in the first semester, 2001 was 83.9% of the admission quarters. It was shown that more students prefer certificate-related and computer-based curriculum to law, administration, and other social sciences. 64% of the students were male. 46.3% were in their 20's, 32.0% in their 30's and 13.5% in their 40's. 81.5% were high school graduates, 8.9% graduates from 2-yr colleges, and 5.0% were graduates from 4-yr universities. 75.5% of the students had jobs: 28.6% office workers, 7.6% in service fields, 6.6% in manufacturing, and 5.3% in public sectors (Ministry of Education, 2001). Around 70% of the students came from Seoul and Kyunggi area. 72% used ASDL, 23%

LAN and only 5% used modems to access online courses (Cho, 2001).

The information above indicates that the single-mode virtual universities in Korea have provided working adults with an opportunity for flexible and open access to practical training courses at the higher education level. While these descriptive statistics are useful in providing a general overview of the initial impacts of virtual universities on adult learning, in-depth studies need to be conducted to assess the effectiveness of virtual education in these institutions in providing quality higher education to adult learners.

4.2 Virtual education in conventional universities

Virtual education has emerged as an increasingly important component of conventional universities. Besides independent virtual universities in Korea, it

is reported that more than one hundred conventional higher education institutions have introduced internet-based virtual courses into their curriculum at the institutional level (Jung, 2003). For example, as a conventional university in Korea, Ewha Womans University has provided virtual education programs to its students, other universities' students, working adults including teachers, and foreign students. Such programs include: language courses, e-learning professional courses, drug prevention courses, in-service teacher training courses, and courses in Korean and women's studies.

In April 2001, the Korean University Alliance for Cyber Education (KUACE: <http://www.kuace.org>) was formed to share knowledge and experiences in developing and managing virtual education programs among those institutions which have or will have virtual education programs. Over eighty higher education institutions have joined in this Alliance. A survey report conducted by this Alliance in 2002 shows that around 40% of Korea's higher education institutions (151 institutions out of 374) are integrating Internet-based distance courses into their teaching and learning system.

At the graduate level, four conventional universities are now offering totally online graduate programs issuing masters degree. Among them, Ajou University's CyberMBA was first to be offered. Sookmyung Women's University offers graduate programs in educational technology, silver industry management, and cosmetics. Other two universities are offering programs in education, business administration and hotel management. More conventional universities are expected to open online graduate programs in coming years.

5 Conclusions: Recommendations for future policy development

The government policies have stimulated higher

education institutions in Korea to explore some major strategies in virtual education to bring reforms and thus provide flexible, excellent, diverse and efficient education, discussed above. The increased number of ICT options have brought more opportunities than before for virtual education. Online virtual education programs offer possibilities that would not otherwise be available because of costs, time or location constraints, especially to working adults (Jung & Rha, 2000b). In addition, traditional institutions that have never provided distance education are now able to use ICTs to increase the flexibility and openness of their programs. Even though most agree that virtual education has made higher education in Korea more flexible and open, more sophisticated means of improving quality and effectiveness of virtual education needs to be explored.

Several years of experiences in virtual education and past research results offer strategies for improving the quality of virtual education, reducing costs without diminishing quality and promoting virtual education. The following discusses key areas for future policy considerations and further research.

First, the Korean experience reveals the importance of setting up a support system that provides continuous professional development and technical assistance to academic staff in order to ensure the quality of virtual education. As found in the VUTP, successful implementation requires academic staff to be skilled in instructional design and learning, online facilitating, on- and off-line interaction and learner evaluation (Jung & Choi, 1999). These skills are often different from those required in conventional teaching. The reluctance of teachers and academic faculty members to adopt ICTs in their teaching has been reported as the major force undermining the development of virtual education (Farrell, 1999). Several studies (Romiszowski & de Hass, 1989; Salomon, 2002)

support this argument. In the studies, instructors' facilitating skills and positive attitudes toward online teaching and learning were the most important factors affecting online courses and learner satisfaction levels. Online instructors should be trained as mentors or facilitators, rather than transmitters of information. Teachers' support systems should include assistance for online course production and on-demand technical assistance.

Secondly, previous studies in distance education and educational technology show the importance of instructional design and pedagogical philosophy behind the design activities in creating technology-mediated instructional environments (Jung & Leem, 1999). The starting point must be the learners' learning problems, not technology (Clark, 1983; 1991; Moore & Kearsley, 1996; Wolff, 1999). Several empirical studies suggest that constructivistic strategies help learners in an online learning environment actively engage in constructing knowledge, form a virtual learning community, articulate what they are doing, and develop collectivity and team responsibility (Bruckmann, 1996; Shaw, 1996; Ward & Teissen, 1997).

In addition, a system for quality assurance needs to be established. As seen in the VUTP, those institutions with a regular system of monitoring and evaluation in their operations are able to identify the strengths and weaknesses of their virtual programs and to revise the programs and related policies based on the identified problems and students' feedback. As Rossi and Freeman (1993) indicated, evaluation activities must be carried out in three phases: "conception and design," "monitoring and implementation," and "assessment of effectiveness." Education institutions that desire high quality education programs must monitor and evaluate their operations systematically in different phases.

Distance teaching experience in Korea also

reveals that the successful completion of a virtual program requires that the learners possess self-directed learning skills. Research reveals that not all learners in higher education have those skills, and a few hours of orientation is insufficient. Based on research evidence, Capper & Fletcher (1996) found that adult students most likely to drop out of distance education courses are field-dependent—that is, more influenced by the surrounding environment—and have an external locus of control, lacking self-regulation in their learning. In other words, distance education is easier for those who have self-directed or self-regulated learning skills (Butler & Winne, 1995; Moore & Kearsley, 1996; Thompson, 1984). It is suggested that organized sessions or courses to facilitate self-directed learning are necessary to help learners develop and strengthen competencies in pursuing virtual learning.

Korea's experiences in virtual education highlights that partnerships reduce the burden to single providers by distributing cost across partners. By forming the appropriate partnerships with businesses, universities take less investment risks. To promote partnerships and incentives between public and private sectors, government needs to institute policies and incentives that encourage private participation and investment and at the same time prevent educational institutions from being commercialized.

Finally, providing the appropriate legal foundations at the national and institutional level is necessary for promoting the use of technologies in education. For example, Korea's Lifelong Education and Higher Education Laws, which promote virtual education for retraining and lifelong education in higher education institutions, have begun to bring tremendous increases in the use of network technology in higher and lifelong education. At the national level, the establishment of virtual education institutions or virtual campuses

within the conventional universities or training centers must be permitted. Those virtual institutions should be able to provide degree-granting programs and other certificate programs if they meet quality standards of graduate programs. At the same time, practical strategies to control the quality of the virtual education must be built into the national education quality assurance system.

At the institutional level, existing legal barriers to online teaching should be removed. Many conventional education institutions require classroom attendance for a certain period of time and demand fixed teaching or training schedules. Since in virtual education settings most of the teaching and learning activities occur outside of the classroom on a flexible schedule, these regulations must be reviewed and revised. Policies regarding credit transfers also must be examined. In many countries, transfer of course credits among educational institutions constitutes a major constraint for learners registered in courses at several institutions who wish to transfer into a specific program. To help students function as true virtual learners, a flexible transfer of course credits among a wide variety of educational institutions must be permitted.

Online virtual education programs offer possibilities that would not otherwise be available because of costs, time or location constraints. In addition, traditional higher institutions that have never provided distance education are now able to use ICT to increase the flexibility and openness of their programs. Even though most agree that advanced technologies have made higher education more flexible and open, many learners still are unable to access the necessary technologies. There is a fear that the gap between the “haves” and the “have-nots” has widened and continues to do so. We must develop policies and practical strategies to remove or lessen the disparity of access and improve the cost-effectiveness of virtual education.

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