

E-Learning in Korea: Its Present and Future Prospects

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Abstract

As information and communication technology becomes increasingly an integral part of society, and as Koreans grow more dependent on information, the demand is growing not only for high-quality education but also for more sustainable and accessible lifelong learning. In South Korea, the demand for e-learning is growing as a methodology to meet such a demand. Its technological infrastructure, ranked with the world's most advanced nations, along with strong government support for e-learning related policies, both provide the necessary conditions for the proliferation and success of e-learning in Korea. To guarantee success for the next generation of e-learning in Korea, however, issues regarding quality control, development and maintenance of human resources, improvement of laws and regulations for e-learning, and efforts to standardize e-learning technology need to be pushed forward in tandem—not as discrete issues, but as an integral whole.

Keywords: Korea's e-learning, e-learning, cyberspace, paradigm shift, lifelong learning, learner-regulated learning

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Introduction

As information society approaches a certain level of maturity, the demands for distributed learning, lifelong learning, and learner-regulated learning also increases. Cyberspace has all the elements to meet such demands. Cyberspace-based e-learning is an educational term that is linked closely to the concept of cyberspace (as opposed to the real space), which refers to the global, interconnected, and open space, created by the marriage of high-tech telecommunication technology and computer science (Jefferis 1999; Levy 1997)

E-Learning is a term that is applicable to all types of electronic medium-based learning. It refers not only to distributed learning through networking but also to an independent form of learning such as educational CDs (compact discs). Since, however, the current trend is one in which all electronic media are interconnected and distributed through networks, e-learning is considered to be a form of education that aims to create an accessible distributed learning space, as well as a form of rapidly expanding e-business.

In South Korea, several universities began to provide e-learning services in accordance with the online education pilot project led by the Ministry of Education and Human Resources Development (MOE) in 1998, which formed the first generation of e-learning in Korea. As of 2003, there are 16 online colleges and universities. Online graduate schools, in the meantime, have been established and authorized as special graduate schools under the Higher Education Act, and six colleges or universities now operate online graduate schools. With the web-based training project of 1999, the Ministry of Labor, through its institutional and financial support, has contributed in promoting the e-learning industry for corporate and vocational training and education (MOCIE 2003). With a total budget of eight billion won over the four years from 1999 to 2003, the Ministry of Information and Communication has been operating a college of information and communications. In addition to primary, secondary and online high schools, e-learning is utilized in college prep institutes, English language institutes, and other private educational institutes, as well as government

offices and public organizations (MOCIE 2003). However, the rate of growth for e-learning is greatest in for-profit businesses, such as corporate education and private learning institutes. These businesses focus on building business models for e-learning that would maximize profit, and corporations tend to expand their internal corporate training programs into e-learning services for their external adult learner clients.

The primary purpose of this research is to look at the trend of e-learning in South Korea by 1) reviewing its background, goals, and structures; 2) examining the current e-learning practices and research trends found throughout Korean society; and 3) discussing the important issues for future developments based on these findings.

The Development of E-Learning in Korea

Background

What is the source of the demand for a fundamental change from traditional instruction and learning methodologies to digital-based education such as e-learning and online education? The answer can be found by focusing on the rapid societal changes, the pedagogical paradigm shift, and the advancements in information and communication technology.

1) Changes in Society

In the past, possessing refined knowledge was enough to become a respectable intellectual, and a college education marked the last stop in one's academic career. Times have changed, however. Information and knowledge are changing and expanding at a phenomenal rate. Today, an average person is expected to switch jobs several times during his or her lifetime, and the corporate management's attitude is changing from one of paternalism to pragmatism, wherein a company hires and fires specialists based on its own needs.

Such changes in society have led to increased doubt concerning

the existing instruction and learning paradigm. At a time when the amount of information increases at an astronomical rate, the body of knowledge changes by the minute, and the social system is also susceptible to change, the educational system, based on the traditional paradigm of classroom learning in which learning is confined by time and space, can no longer fulfill its function.

2) A Shift in the Educational Paradigm

It has become difficult to maintain the view that learning necessarily antecedes application; in fact, today, the emphasis is on the concept of lifelong learning, in which both the learning and application of knowledge take place concurrently. Lifelong learning belongs to the domain of learner-regulated learning, just-in-time learning, informal learning, and collaborative and systematic learning. Accordingly, opportunities for learning must always be available and accessible whenever there is a demand for it.

Regular classrooms now have a sophisticated information and communication infrastructure, and all educational institutes have easier access to information and communication systems. Through advances in information and communication technology, people are becoming accustomed to a distributive and collaborative-style workplace environment, and there is a greater possibility for distributed learning and learner-centered education for developing individual and organizational capacity.

3) Development of Information and Communication Technology Infrastructure

With rapid advancements in information and communication technologies, the prospects for e-learning are bright. E-Learning in South Korea had its start in the 1980s at the national level, when the government adopted a plan for building computer networks for all government agencies, which paved the way for establishing a high-speed information and communication network, an essential condition for building a digital society. After 1995, the government began to push

for a comprehensive plan for the informatization of education, which also helped to lay the foundation for the e-learning industry. In 1999, with the "Cyber Korea 21" campaign, the government focused on building a knowledge/information infrastructure, operating a nationwide information literacy program and distributing affordable computers. These developments were the building blocks for establishing an e-learning system. In 2002, the government introduced "e-Korea Vision 2006," a blueprint for national informatization by 2006. According to the plan, all households in South Korea, regardless of income, age, and region, will have access to a super high-speed Internet line transmitting at least 1Mbps; with the advent of fast, universal online access, it will be possible to increase the number of people participating in lifelong learning to the average level of OECD member states (National Computerization Agency 2002).

It is not unusual for a new paradigm in education to follow rapid societal change spurred by advancements in information and communication technology. New information and communication technologies have the potential to change instruction and learning methods, as well as to pave the way for the just-in-time education system that would transcend economical, cultural, and physical barriers, thereby enabling the sustainable development of human resources.

The Expected Effects of E-Learning

Ultimately, e-learning is expected to produce various effects both inside and outside the field of education, especially in terms of cost effectiveness, expansion of more democratic learning space, sharing of information resources, the facilitation of interaction and customized learning, and the creation of markets for e-learning.

1) Cost Effectiveness of Education

Cyberspace has the potential to provide instant access to unlimited online resources. The qualities that make it easy to update information quickly and provide users easy access to these resources facilitate the development and maintenance of curriculum. This, in turn,

increases cost effectiveness.

Because all administrative affairs of the e-learning institution can be managed through the Internet using an online support system, the operational cost of labor and facilities can be significantly reduced. Furthermore, advancements in various editing software, authoring tools, and server technologies have made the updating of information and instructional activities possible without having to depend heavily on the expertise of the curriculum designer, making possible the creation of instructional content and activities that better meet the learner's demands. The possibility of sustained updates to resources guarantees not only readiness and flexibility, but eventually fosters continued improvement in the quality of instruction.

2) The Expansion of Democratic Learning Space

The openness of cyberspace brings about a learning environment in which the user wields a significant amount of control. This loss of control over instruction that traditionally belonged to instructional designers has led to the loss of technical control, as well as loss of control over the educational process. Consequently, within cyberspace, the learner—the user—must now play the main role in his or her overall learning process. This phenomenon can be interpreted as a type of decentralization. In other words, the transfer of authority over instruction and learning from the provider-centered educational model to the consumer/learner-centered model and the subsequent redistribution of decision-making power that once belonged to the provider to various stakeholders are phenomena often found in online education.

3) Sharing of Information and Resources

The advantages of e-learning often discussed are information sharing and the cultivation of thinking (Feenberg 1989; Harasim 1990; Romiszowski 1997; Bannan and Miheim 1997). Cyberspace has the potential to give access not only to individual documents but also to various media resources, providing opportunities for both learners

and instructors to access the latest information. The mechanism that makes electronic publishing so easy also facilitates learners and instructors in publishing their own work online, and this function is regarded as a special feature that not only motivates the learner but facilitates self-evaluation (Kearsley 1999). Moreover, the readiness of electronic publishing helps transform the world into a learning community, which in turn promotes diversified learning.

Since the expediency of information sharing and exchange facilitates teamwork, team-based learning, and problem-based learning by promoting collaborative work, cyberspace can be said to be a vehicle for cooperation, dialogue, discussion, and communication. I have shown elsewhere that most learners recognize that sharing resources with others provides motivation to learn (Lee Insook 1999a).

4) Facility of Interaction

Various interactions, enabled through synchronous interaction, asynchronous interaction, hyperlink, various Internet and authoring tools, and instructional design, facilitate a form of education based on dialogue, communication, negotiation, and collaborative work, or at least work that aims to improve these capacities. While synchronous interaction using conferencing tools gives way to lively interaction, asynchronous interaction through E-mail or LISTSERV generates interaction unrestricted by time. In the e-learning environment, the instructor and the expert as learning facilitators can support learning, and when accompanied by suitable instructional design, provide feedback and guidance through synchronous as well as asynchronous interaction.

5) Facility of Learner-centered Learning and Customized Learning

Because cyberspace is hypertext-structured, the possibility of flexible and active learning is greater. One learns not through the simple transmission of information but through cognitive and affective immersion, and hypertext increases the learner's capacity for immersion. It does so by helping the learner identify nonlinear content and

access the desired information quickly, enhancing the individual user's control over the material, and facilitating the user's easier organization of information for more efficient cognitive processing.

Although cyberspace is still heavily dependent on the linguistic model, the combination of multimedia elements such as text, graphics, audio, video, and animation can build a learning environment that caters to all styles of learning. Moreover, the archival nature and openness of cyberspace give way to the possibility of promoting the scientification and objectification of educational methodologies, as well as those of customized learning.

6) Creation and Growth of Education Market

E-Learning is transforming education, once seen as domain belonging only to educators and educational institutes, into a marketable enterprise for commercial businesses. The market for e-learning is showing a sustained growth; for example, the total e-learning market in the United States was US\$10.3 billion in 2002 and is predicted to grow to US\$83.1 billion in 2006 and US\$212.9 billion in 2011 (Brandon-hall.com 2002). As the size of the market grows, the market share for e-learning content development, learning solutions, and consulting is expected to grow as well. Of the estimated total sales of 3.4 trillion won for South Korea's digital content business in 2001, education comprises 11.8%, the third largest share after multimedia content and games (National Computerization Agency 2002; KISDI 2002).

Evolutionary Stages of E-Learning

In terms of the extent of cyberspace utilization and the actual development process, e-learning can be classified into three different types (Lee Insook 1999a). The page-turning type based on text and video, an area of e-learning that is currently growing steadily, is expected to be followed by a mobile e-learning and a game e-learning type as technology advances and consumer demand grows. The overall trend in the development of e-learning is illustrated in Figure 1.

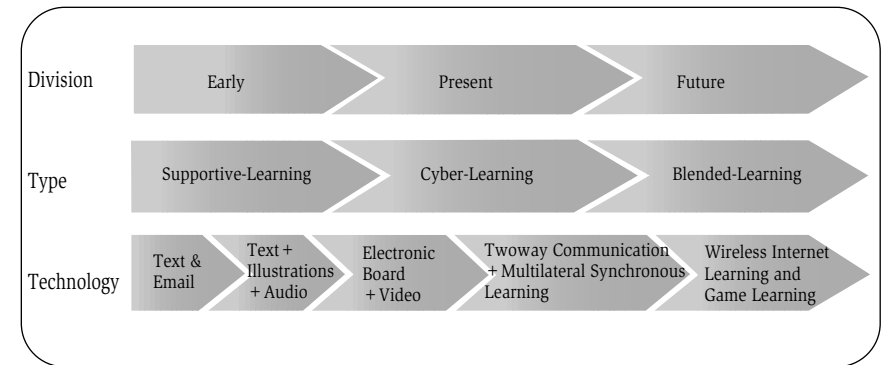


Figure 1. The Development Process of E-Learning in South Korea

1) Three Types of E-Learning

A. Supportive-Learning

Supportive-learning is a type of e-learning that utilizes web documents, discussion boards, chat rooms, and E-mail in cyberspace to supplement and deepen conventional face-to-face education. It is expected to generate more interaction outside the traditional classroom. In terms of trends in technological development, supportive-Learning has increased along with the expansion of educational computer conferencing tools.

B. Cyber-Learning

The precondition for cyber-learning is that all the communication between the instructor and the learner take place online. All the projects in South Korea that have received the most government support under the Enforcement Decree on the Lifelong Education, including distance universities and the Ministry of Labor's web-based training, fall under this type of e-learning. This type of e-learning proliferated during the period when such diverse learning systems as Learning Management Systems (LMS) and the Learning Content Management System (LCMS) were developed and certified.

C. Blended-Learning

Blended-learning is a hybrid of face-to-face and online instructional learning activities. The typical form of blended-learning is one in which face-to-face education is followed by online learning and vice versa. Technologically, blended-learning began to expand worldwide and its importance gained recognition at a time when learning objects, XML, and other similar technologies gained attention.

The object of using blended-learning may differ for each institution; however, one common goal is to minimize the limitations in using a single method-whether face-to-face education or online education-and to maximize the benefits of classroom and online learning (Lee Insook 1999a). Because it requires thorough instructional and administrative planning, design and development in terms of time, content, and learning activities for classroom and online programs, blended e-learning demands more effort and expertise. A comparative study of the various aspects of online (or blended-learning) and face-to-face education concluded that blended-learning is not merely a combination of online and face-to-face education but has unique characteristics and merits of its own (Hiltz 1990, 1994).

2) The Direction for the Next Generation of E-Learning

A. Mobile E-Learning

Mobile e-learning is making its way into the market as a natural course of events following the development of basic type of e-learning. In the transition to mobile e-learning, there is a noticeable recurrence of the same evolutionary process that brought the present type of e-learning that followed the traditional face-to-face education, and the growth of mobile e-learning is part of the general trend in mobile and ubiquitous computing technology. Although the market share for mobile e-learning in Korea is insignificant today, it is likely to grow rapidly in the next four to five years. In the United States, for example, the market trends are favorable for mobile e-learning, and the mobile e-learning market is expected to reach US\$5 billion by 2006 (Adkins 2002). The same trend can be also observed in European

markets (ASTD 2003).

The market for mobile e-business in South Korea reached one trillion won in 2002 and is expected to rise to four trillion won. The number of wireless Internet users as of May 2002 reached some 26 million, a rate surpassing that of mobile phone users (National Computerization Agency 2002). If the trend continues, there is no doubt that mobile e-learning, facilitated by rapid growth in mobile technology, will play a leading role in the next generation of e-learning.

B. Game Simulation E-Learning

The existing e-learning industry, comprised primarily of page-turning, text and video, seems to have carved out its own market and has reached the profit-generating stage. The consumers now want more advanced e-learning, and game simulation seems to be the answer to the new demand.

The rapid development of wide area network (WAN) and computer performance is lowering the barriers that made it difficult for businesses and public educational institutes to use game simulation. For example, in 2003, the Ministry of Culture and Tourism launched the "edutainment contents production support project" to promote edutainment content production in which the elements of cartoons, animation, characters, music, and games are well synthesized into the production of educational materials. Scenario-based e-Learning¹ and e-learning simulation will provide a solution to consumers' demand for more effective and participatory learning programs.

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1. The institutes specializing in e-learning are moving away from the traditional tutorial design-based method and seeking to revolutionize instructional models using the GBS (Goal-based Scenario) method based on possible scenarios that may come up in the actual workplace. For example, the Credu Corporation, the company specializing in e-learning for corporations, is in the process of sophisticating GBS model by developing a scenario-based e-learning program, which applies cognitive scientist Roger Schank's theory, for the iMBA program of Sungkyunkwan University as a way to meet the client corporation's increasing demand for achievement based e-learning.

E-Learning Practices in Korea

Primary, secondary, and higher education, online university and college, corporate training, government employee training, and general public education are the primary areas where e-learning is expanding in Korea. However, these various institutions show some differences in their missions and goals, due primarily to the differences in the target learners for each institute. Moreover, the extent of proliferation and promotion of e-learning in schools and each concerned state department are somewhat different.

Primary and Secondary Education

In the area of primary and secondary education, e-learning has been taking root and expanding through projects led by the Korea Education and Research Information Service (KERIS).² The contents developed by KERIS in 2002 are learning materials that can be used online by both instructor and learner, and they are provided by such various projects as an instructional content development project, a learning content development project, and a content utilization support project.³ The number of studies on primary and secondary e-learning education systems as well as instruction and learning models appropriate to e-learning has been growing recently.⁴ Distance teacher professional development centers have been established as an alterna-

2. The Korea Education and Research Information Service (KERIS) was founded in 1999 for the purpose of raising the quality of education and research through the establishment and operation of a nationwide knowledge and information service system. As part of its mission, KERIS has been operating EDUNET, an e-learning portal site, servicing elementary, middle, and high school teachers, students, and parents since 1996. It is also a major institute for policy studies related to distance learning for higher education and lifelong learning. For more information, see <http://www.keris.or.kr/english/index.jsp>.

3. For more detailed information on the development projects, see Jeong Seong-mu et al. (2002).

4. For example, the EDUNET Pilot School Project operated by KERIS.

tive to the face-to-face based ones. As of December 2001, 39 distance centers for teachers have been operated, and this number is expected to grow steadily.

Nevertheless, e-learning in the regular primary and secondary schools curriculum, compared to lifelong education and higher education, is not as widespread. In fact, the private education sector in primary and secondary levels is likely to become one of the biggest e-learning markets. One study indicates that the projected proliferation of e-learning in the private education sector is accelerated by the educational system in which a student's academic evaluation is solely for getting admissions to college (Kang Suk-hui et al. 2003). The private e-learning market for primary and secondary schools is comprised of businesses that provide only online learning, groups that operate online education, and publishing businesses (MOCIE 2003).

Higher Education

The government's active role has contributed to the introduction of e-learning into Korean colleges and universities, though the scale of contribution may be small compared to e-learning in primary and secondary education. In February 1998, the Ministry of Education and Human Resources Development (MOE) selected five model institutes and ten pilot institutes to operate online universities, and the selected institutes were comprised of seven consortia and eight independent individual universities. As of August 1999, 68 traditional offline universities (13 individual and 55 in consortia) participated in this university project.

E-Learning, which started among a few departments in a handful of universities in the mid-1990s, along with the pilot online university under the MOE project, opened 836 e-learning courses in the spring semester of 1999. The number of students enrolled at that time reached 56,000, and this number quadrupled in the spring semester of 2000 with 1,000 courses and 200,000 students. It is astonishing that 1 out of 8 four-year college students registered for online courses. The pilot project sponsored by the MOE, which ended in 2000,

was not implemented under any specific law or any financial or technical support. Instead, the MOE simply encouraged individual universities and organizations to participate in the pilot project voluntarily, analyzing various emerging problems and researching alternatives to be used later in the policy decision-making process when online colleges were formally launched.

The results of this two-year (1998–2000) pilot project run by existing offline universities contributed in establishing the legal basis for online universities under the Lifelong Education Act that became effective after March 2000. Moreover, the project catalyzed the introduction and establishment of e-learning in government and other public institutes, such as the online graduate school program of the Ministry of Information and Communication, and Cyber Environmental Education Center of the Ministry of Environment in 1999, and the Cyber Unification Education Center of the Ministry of Unification, created in 2000.

However, the monitoring research on the pilot project by the MOE shows that participating online universities suffered financially and technologically and tended to be heavily concentrated in popular departments such as information technology, design, and business management (Kim Dae-won 2000). These features anticipate the potential problems that online universities may undergo under the Lifelong Education Act.

In April 2001, the Korean University Alliance for Cyber Education (KUACE) was established for the advancement of e-learning in higher education. According to a KUACE study on the current state of e-learning, over 40 percent of Korean universities have implemented e-learning in one form or another. More specifically, of 376 Korean universities nationwide (including 9 online universities), 151 universities have implemented e-learning either partially or entirely in their curriculum. Twenty of these are four-year national or public universities, 6 are elementary school teachers' colleges, with 75 four-year private universities, 31 two-year private colleges, and 19 other universities. Moreover, the Higher Education Act has authorized the establishment of online special graduate schools, and as of January 2003,

six universities are operating online graduate programs. Policy studies on e-learning in higher education began appearing since 2002.

Online Universities

The establishment of nine online universities in March 2000, under the Lifelong Education Act (MOE 2000) legislated in August 1999, signaled the beginning of the second generation of e-learning universities, and as of March 2003 there are a total of 16 online universities in operation. In the meantime, lifelong education institutes accredited by the Lifelong Education Act became eligible to offer credit courses under the Credit Bank System.

Established under the Lifelong Education Act, the online university is a lifelong education facility as well as a higher education institute. Upon completing the courses defined by law and academic regulations, students of an online university will be accredited with the same degree as a traditional college or university graduate. As of the second-half of the 2002 academic year, students enrolled in online universities are primarily in their twenties and thirties. Additionally, the fact that 85.8 percent of the total students have jobs indicates that the majority of the students are workers seeking a degree or continuing education while working.

Since the online university is only at the start-up stage, more time, effort and legal support is needed for e-learning culture to take root. Since online universities are authorized, operated, and supervised under the Enforcement Decree of the Lifelong Education Act without an accompanying set of operational regulations, there may be some potential limitations and problems. The criteria for establishing an online university (school buildings, education facilities, recruitment of teachers, etc.) as well as provisions for managing academic affairs (the number of school days per semester, academic year, number of hours per credit unit, etc.) are based heavily on quantitative factors inherited from the regulatory policy of the traditional offline classroom educational institutes. Recent research for making improvements in online universities is in the areas of content

design, educational system establishment, the current situation survey, guidelines for establishing online universities, and quality management.

Corporate Training and Education

With a gradual upward trend in the number of the Internet users, e-learning in the vocational sector is also growing. The growth of e-learning is particularly visible among large corporations, where both in-house programs and outsourcing programs supplied by e-learning companies operate side by side. Corporate training divisions employ blended e-learning to maximize the learning effect as a methodological strategy and focus on designing a customized educational system that would contribute to the company's competitiveness while meeting individual learner's needs and demands (MOCIE 2003). In the corporate sector, companies tend to form alliances to better represent their interests.⁵

Currently, the Ministry of Labor provides policy and financial support for the enhancement of employees' vocational competency. In 1999, the Ministry of Labor added web-based training (known as Internet-based training) to the Vocational Training Promotion Act as a new form of vocational training and education. The Ministry has been subsidizing part of the training expenses to the employers who, in compliance with the Employment Insurance Act, have their employees take web-based training courses. Moreover, in August 2001, the Ministry announced a plan to promote Internet-based training, and it is currently being enforced.⁶ In 1998, the Internet-based

5. In addition to the Korea Alliance of Cyber Education and Korea, the Korea Federation of e-learning, primarily comprised of businesses specializing in e-learning, corporate training and education centers, and corporate departments in charge of e-learning, was founded in June 2003 with the objective of expanding the base for e-learning and increasing the competitiveness of e-learning related businesses.

6. The Korea Research Institute for Vocational Education and Training (KRIVET), through its Center for e-learning, advises the Ministry of Labor regarding Internet communications training and promotes research and related projects for vocational and lifelong education. See <http://www.krivet.re.kr>.

Training Project was implemented in seven companies, with 67 courses and 7,187 participants. In September 2000, there were 18 companies operating these training programs and a total of 206 courses offered (Yi Su-gyeong et al. 1999).

Through full utilization of the Ministry of Labor's Internet-based Training, there have been positive results in terms of the educational cost effectiveness of education. However, as a response to the criticisms that the criteria for reimbursement of employment insurance has produced uniform Internet-based educational content (*Digital Times*, 10 July 2001) and that subsidies for training have been given mostly to large corporations (MOCIE 2003), the Ministry of Labor is directing its efforts towards quality management and to necessary revisions of the relevant laws and regulations

Within the area of corporate e-learning, there is much discussion addressing current critical issues and future development. There is a growing demand to expand blended learning to maximize teaching outcomes and to conduct more measurable and specific studies on the effects of e-learning. From 2003, research in such areas is expected to be in full swing, led primarily by e-learning companies and large corporations. Along with the concerns about inefficient information sharing and resources due to a lack of consistent standards, there has also been a growing debate about the standardization of e-learning since 2002, which will be the top priority for future expansion and marketability of e-learning. Similarly, high-quality customized content, improvements of the Internet-based Training System, and the fostering of e-learning professionals have all been receiving much attention.

Training for Government Employees

E-Learning for government employees is expanding with the Central Officials Training Institute (COTI), subsidized by the Ministry of Government Administration as well as with local officials training institutes. Twelve of the 37 training institutes operate e-learning courses, and most of them have been implementing e-learning courses as part

of the traditional classroom curriculum. With the leadership of the COTI, the government's official training institutes—the Seoul City Officials Training Institute and the Incheon Metropolitan City Local Officials Training Institute—have organized the Council on the Cyber Training of Government Official to prevent overlapping content development and to cut costs by sharing existing content. In addition to content sharing, they are sharing a server system. Among 16 institutes, including 4 self-governing bodies, 14 institutes are sharing a server system, and 12 institutes are sharing content (MOCIE 2003).

Because e-learning in government officials' training institutes is still at the start-up stage, hardly any research is currently in progress. However, there are several issues under discussion to promote e-learning for government officials. First of all, a need to appoint an e-learning specialist to manage the project for e-learning has been noted. This demand for an e-learning specialist seems to arise from the fact that in most of the training institutes there is no e-learning specialist or expert, or else they are hired on a short-term contract, making it difficult for them to be involved in long-term planning and strategy building. Moreover, the need to support self-directed learning and to link the e-learning to the Knowledge Management System is being acknowledged (MOCIE 2003). These concerns seem to arise from the awareness of the urgency to create a lifelong government employee education system, responding to the effort to establish an electronic government.

Education for the General Public

The e-learning opportunities for the general population are steadily increasing. Among them, the following two cases are representative in illustrating the mission and trend in e-learning for the general public. Since September 2001, the Korean Agency for Digital Opportunity and Promotion (KADO), the agency in charge of bridging the digital divide, has been operating a web site named "estudy" (www.estudy.or.kr) to expand information literacy training for those least exposed to information literacy, while trying to reduce the information gap

between different regions and social classes. In its first year in 2001, KADO developed 9 courses for basic information literacy training content and 13 additional courses, including intermediate courses as well as preparatory courses for certification in the second year. It currently operates 22 information literacy training courses, and the total number of recipients has reached 100,000. The demand is greater for intermediate courses than basic courses; the age group between 30 and 40 make up a significant portion of enrollment; the learners are comprised of office workers, homemakers, and students, in descending order of size; and outside the Seoul metropolitan area and Gyeonggi-do province, training recipients are evenly distributed among different regions (MOCIE 2003).

In November 2001, the Agriculture Forestry Fisheries Information Service launched a distance learning web site (www.farmedu.net) for farmers and currently operates 11 courses. In 2002, there are a total of 24 courses, after adding 13 courses to teach farmers how to utilize agriculture software programs. Moreover, the training programs have been restructured in 2003 according to the information literacy education system for farmers, and based on the evaluation of the farmers' information literacy level, the ICT level checking service has been providing assistance in choosing the course that fits the individual learner's competency.

Issues for Reflective E-Learning Evolution in Korea

South Korea's technological infrastructure ranks among the highest of advanced nations. Some suggest the following factors as criteria for predicting the future prospects for e-learning: accessibility of the home and workplace to the Internet and network; the costs of Internet connection; benefits and values of services through the Internet; the impact of the rapid development of new technologies on the Internet; and the influence of the Internet on interpersonal communication (Cunningham et al. 1998; McCahill 1998; Posner et al. 1997). In terms of those technology factors, South Korea holds a relatively

advantageous position in expanding and establishing e-learning.

South Korea is ranked first in the world in subscription rates of high-speed Internet service, according to the OECD and the International Telecommunication Union (ITU) (*JoongAng Ilbo*, 26 September 2001). Due to the dissemination of high-speed Internet service, the usage of audio, video, and other multimedia content in South Korea is 65.4%, which is far greater than Hong Kong (26.9%), Singapore (26.3%), or any other Asian country (National Computerization Agency 2000). With the accessibility to the Internet and the availability of high-speed broadband connections, South Korea has the infrastructure for e-learning to emerge as an effective vehicle for establishing open and lifelong education for rational human resources development. However, several issues to be resolved can be found when taking stock of the current state of e-learning in primary, secondary, and higher education, online universities, corporate training, and general public education. Only when issues related to quality management, human resources development and recruitment, the amendment of e-learning laws and regulations, and the standardization of e-learning technology are addressed mutually and ecologically, can e-learning in Korea make a successful transition to its next generation.

Quality Issues

Since the quality of e-learning content is the most essential for the success of e-learning, government agencies and departments in charge of e-learning need to continuously develop various methodologies for quality management. Nevertheless, compared to the quantitative growth of e-learning, there is a growing concern that accurate quality assessment for e-learning is so lax that it will result in poor quality of e-learning. The inadequacy in quality management systems in the content development process and the absence of instructional designs to enhance the characteristics of the e-learning environment (MOCIE 2003) are seen as the main causes impeding the development of high-quality e-learning content. Also, in the area of corporate training, quality management in content and methodology has

become the most important issue in e-learning.

There are many instructional design studies currently underway focusing around designing an e-learning environment that would support self-regulated learning worldwide and in South Korea. Solutions for quality management have also been suggested. Among them, the most frequently discussed issues are the need to foster more e-learning specialists (MOCIE 2003) or to operate a quality management system, such as an internal or external experts' evaluation committee (Lee Insook et al. 2003).

Human Resources Development and Recruitment

In order to develop and distribute an instruction-learning model that maximizes the special advantages of e-learning, we must foster specialists who can meet the demands. For this, the training and support system for specialists in educational development, instruction, and administration should be operated in a mutual and concurrent manner.

A foremost concern is the professional development of the e-learning instructors. In the e-learning environment, just as in traditional classroom-based education, the instructor plays a decisive role in the success or failure of the learning. But e-learning instructors require additional roles and competencies (Lee Insook et al. 2003; Jang Su-jeong and Im Jeong-hun 2003; An Mi-ri et al. 2000). For online universities founded by the Enforcement Decree of the Lifelong Education Act, recruiting competent instructors is likely to be a difficult challenge. Recruiting online instructors within the policy framework for hiring instructors in the traditional university system, though not impossible, will be a challenge. The greatest challenge, however, is likely to be in recruiting the specialists in the area of educational development. They include instructional designers, graphic designers, web designers, and database administrators (Lee Insook et al. 2003). In particular, the instructional designer plays a key role in developing high-quality content for e-learning; therefore, the state's long-term plan is recommended to foster instructional design specialists.

Amendment of E-Learning Laws and Regulations

It is important to acknowledge that the South Korean government played a key role in the development of the e-learning industry since the latter-half of the 1990s in terms of policies, laws, and enforcement of these laws. However, there is a tendency towards ignorance about the laws related to e-learning; thus, a comprehensive review is necessary. An open lifelong education system demands new or revised laws and regulations that accommodate the diversity of educational types and services, application technology and learners.

Despite the promotion of various e-learning projects by the government at different levels of education, the current laws and regulations lack a specific legal means to support the various e-learning programs. The deficiency is particularly salient in the areas of primary and secondary education laws, and even though there are related regulations for colleges, they are so sporadic that they are effectively insignificant. In the cases of primary and secondary education laws, however, even the legal basis for e-learning is virtually nonexistent (MOCIE 2003).

Meanwhile, the online universities currently in operation under the Enactment Decree of the Lifelong Education Act are restricted by the similar legal framework for traditional campus-based universities, making it difficult to fully utilize the advantages of distance learning. There has been a recent rise in interest in the laws and systems related to online universities, which has led to several relevant studies. Still, it is rare to find studies amending and improving the legislative framework in order to reflect the needs of online universities (Jang and Im 2003).

Standardization of E-Learning Technology

Unlike during their start-up phase, e-learning businesses and organizations are becoming yet another auxiliary industry to that of offline education, in terms of the number and system. While the e-learning market is growing, both demands and policy efforts for the standard-

ization of e-learning technologies are increasing. The primary goal for standardization is to achieve economic efficiency in interoperability, re-usability, and interchangeability; the secondary goal is learning effect. Ultimately, through standardization, we can expect to cut development costs by reusing existing content, to have easy access to the contents needed to redesign curriculums through efficient indexing, and to create the possibility of re-usage and revision of content through various development tools. In addition, standardization will allow the independence of content from the upgrades of the LMS (Learning Management System) and the ability to conveniently manage content (MOCIE 2003).

Currently, there is no international standard for the standardization of e-learning systems; however, there is a movement to create an international standard. South Korea is currently participating as a voting member in JTC1/SC36, the legislative organization of International Organization for Standardization (ISO). The need for standardization to reduce expenses and to enhance national competitiveness is recognized at the government level, and the plan for standardization is included in e-learning promotion project in progress under the MOCIE. Many companies today are adding to their own solutions a system that can utilize the interface based on SCORM (Sharable Content Object Reference Model) recommended by ADL (Advanced Distributed Learning). With the qualitative growth of web sites devoted to servicing, producing, and maintaining large-scale content, there is a steadily growing demand for standardized technology, so much so that the prospects for the e-learning market are relatively bright.

Conclusion

As society grows more intricately interconnected with information and communications technology, and as people's lives become more dependent on information, there is a growing demand for not only high-quality education but also continuous and open lifelong education. Along with it, so is the demand for e-learning as a methodology.

The primary motives for interests in e-learning as an organization can be divided into the following four types (Oblinger, Barone and Hawkins 2001): to expand accessibility to educational services; to alleviate the growing difficulty in securing student enrollment for higher educational institutions; to generate new revenues by inviting adult learners for vocational development or learners from the international market; and to attempt a revolutionary organizational change using information and communications technology at a time when all organizations face the challenge of making rapid adjustments to ever-increasing competitiveness.

Internet analysts are predicting a phenomenal growth in the demand for e-learning. Although it is not readily visible today, in four or five years the importance of e-learning in higher educational institutions will increase more rapidly than in any other area, and corporate teaching will continue to utilize e-learning as a tool. Independence from time and space, significant cost reductions, learner-centered, customized and one-on-one education, provisions for the most updated information, and multimedia based learning will offset the disadvantages of traditional classroom learning, making e-learning an attractive alternative in corporate training. However, because e-learning demands innovative changes, a systematic and strategic approach (Hall and LeCavalier 2000) is necessary for the individual learner and organization, the final decision makers in implementing and operating e-learning, to fully recognize the potentials of e-learning.

South Korea's technological infrastructure, which is one of the most advanced in the world, provides the necessary condition for the proliferation of e-learning. As e-learning in Korea approaches a certain level of maturity, several issues will demand resolution at the national level for a more reflexive progress of e-learning. The future of e-learning in Korea will be promising when measures to create an efficient and effective e-learning culture—such as promoting the awareness of the need for e-learning,⁷ the establishment of a quality

7. See also KERIS (2001a).

management system, the development and recruitment of e-learning specialists, the amendment of e-learning laws and regulations, and the establishment e-learning technology standardization—result in a favorable synergic outcome.

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