International Review of Research in Open and Distance Learning
Volume 8, Number 1. *ISSN: 1492-3831*

March – 2007

The Current Status of e-Learning and Strategies to Enhance Educational Competitiveness in Korean Higher Education

Junghoon Leem
University of Incheon, Korea

Byungro Lim
Kyung Hee University, Korea

Abstract

The purpose of this study was to examine the current status of e-Learning in Korean higher education and find ways to encourage the further use and development of e-Learning systems that aim to enhance Korea's academic competitiveness. A total of 201 universities in Korea (27 national and public, 163 private, and 11 national universities of education) were examined in this study. At the time of the study, 85 percent of the universities and colleges had investigated implementing e-Learning. There were special e-Learning teams in most national and public universities, as well as private universities and colleges. Findings from this study found that both teachers and learners alike, lacked meaningful support systems and opportunities to actively participate in e-Learning programs. Although such lack of support was found to be endemic, such lack of support and opportunity was found to be more accute in private universities, private colleges, universities of education, than mid-sized, small-sized, and provincial universities and colleges. Except for a few mid- and small-sized universities and colleges, most large universities and colleges were equipped with technical support such as infrastructure and operational platforms. These same schools, however, did not provide institutional support, nor did they employ appropriate policies needed to further the quality and enhancement of e-Learning offerings. Also, there was no meaningful link found between schools and industry, nor was there adequate financial support in place for the implementation of e-Learning systems, simply because many universities failed to allocate sufficient funding for e-Learning.

In conclusion, the strategies for enhancing university competitiveness through e-Learning are as follows: 1) establishing support strategies according to the types of universities; 2) developing quality assurance systems for e-Learning; 3) enhancing support systems for professors and learners; 4) developing knowledge sharing systems between schools and industry; 5) enhancing international collaboration for e-Learning; and 6) developing and supporting e-communities of knowledge for research and education.

Keywords: e-Learning; e-Learning strategies; higher education in Korea; e-Learning in Korea; e-Learning policy

Introduction

Traditionally the role of universities is to produce, distribute, and apply knowledge to various contexts (Brown & Duguid, 2000; Duderstadt, 2000). Unquestionably, research, education, and service to the larger academy and greater society are major functions of most universities. In the present era of knowledge-based societies, however, there remains a great need to move beyond the traditional roles for universities (de Alva, 1999; Duderstadt, Atkins & Van Housweling, 2002). For example, James Duderstadt (2000), a former president of the University of Michigan, stated in his book, *A University for the 21st Century*, that universities should: 1) move beyond the roles of research, education and service and be a knowledge server engaged in producing, conserving, distributing, and applying knowledge to different contexts; 2) serve as learning communities for teachers, learners, and graduates by preparing them to engage in life-long learning; and 3) change organizations into learner-centered systems wherein learners determine and control what, when, where, how, and with whom to learn.

Tremendous effort will be needed to achieve Duderstadt's (2000) goals. However, this can only be achieved through the provision and application of information and communication technology (ICT) designed to establish universities as both knowledge servers and learning communities. In this effort to innovate universities, the introduction and utilization of e-Learning will be a critical component. Using e-Learning systems, course lecture contents such as that delivered in traditional classroom settings, can be saved to the 'knowledge server' to add the cumulative knowledge stored by a university. Such content can then be used by students, as well as others who may be interested. Further, the quality of the 'knowledge server' will likely only get better with time, especially as more information and data is gathered and archived. Clearly, e-Learning goes beyond the limitations imposed by time and space (such is typical in traditional educational systems) to provide learning opportunities for all members of the general public. e-Learning also can enable one to enjoy high quality academic programs. Moreover, since e-Learning is based on self-regulated learning, universities should evolve to become learner-centered educational entities, further contributing to the continued innovation of any Korean university.

At present, most Korean-based universities have either introduced an e-Learning plan or have implemented such a plan. Moreover, many students have taken fully online courses or have experienced Internet-based classes. New and unexpected problems have emerged, however, with the increase in e-Learning. Such problems include: the development and maintenance of infrastructure; stabilization, enhancement, and standardization of operational systems; management of academic records and policy issues; quality and management of course contents; increased faculty workload; and the general lack of support for learning, to name a few. Further, current e-Learning programs on offer are severely limited in scope simply because they continue to operate within classroom-based educational paradigms. Put simply, broader educational strengths of e-Learning are not yet being fully realized. Put simply, universities general lack of vision and innovation has created barriers to e-Learning. More significantly, they have not yet learned how to enhance their institutional competitiveness by taking advantage of ongoing opportunities to utilize e-Learning. To address these problems, therefore, it is necessary to carefully examine the current state of e-Learning in Korea in terms of actual utilization of e-Learning by a university-by-university basis. It is anticipated that such an examination will shed new light on emerging developmental strategies that can support more effective e-Learning systems.

e-Learning in Korean Higher Education

The history of developmental process of e-Learning in Korean universities

e-Learning in Korean higher education began in the late 1990s when several Korean universities introduced their own online classes. Soon after, other Korean universities formed a consortium with the aim of offering an intra-campus exchange of online courses and credits. In 1997, the South Korean Ministry of Education and Human Resources Development (MEHRD) initiated the "Model Universities of Cyber Educational Programs," which allowed specific schools to model and build e-Learning programs for implementation elsewhere in Korea. Initially, this endeavor comprised 65 domestic universities and gradually expanded to include more. These programs acted as a catalyst for increasing public awareness of e-Learning throughout Korea. In 1998, for example, cyber universities such as Korea National Open University (KNOU) were established to provide online teaching and learning activities. During this same time, other universities started to introduce and operate their own independent cyber university programs. Soon, even those universities that were not participating in e-Learning started to recognize the importance of e-Learning.

In 1998-99, and soon after the MEHRD-sponsored "Model Universities of Cyber Educational Programs" had succeeded in drawing greater interest in e-Learning from a large number of schools, MEHRD passed into law the "Promoting Lifelong Education Act." This law, which as passed in March 2001, made it possible to establish cyber universities in Korea. The law also granted cyber universities the right to offer all their course offerings and programs online, as well as the authority to confer undergraduate degrees. In total, nine cyber universities opened in 2001. Six more opened in 2002. One in 2003, and two more in 2004. As of 2006, there were 17 cyber universities in operation across Korea.

This explosion of new universities has not come without a host of problems, including: the lack of administrative stability; classes and course contents of marginal or limited quality; and the questionable adequacy of educational services. Nevertheless, as of 2003 there were more than 40,000 students registered in these 17 universities, and each student can be said to be benefiting from an increase in flexible educational opportunities (i.e., lifelong education and diversity in higher education).

With the passage of the Promoting Lifelong Education Act in 2001, Korean e-Learning and cyber universities have become key components in the country's higher educational system. As a result, other universities have also begun to offer e-Learning as an option. e-Learning in non-cyber universities is now being offered in conjunction with traditional face-to-face classes in so called *blended learning* situations. Moreover, there has been a steady increase of e-Learning in Korea in general, which is reflected in more credit exchange programs springing up among universities. Some universities have even begun to establish and operate cyber universities in the form of specialized graduate schools under the Higher Education Act, instead of relying on the Promoting Lifelong Education Act. That is, cyber graduate schools are operated as part of specialized graduate schools and offer their curriculums via an e-Learning system. As of 2006, there are six cyber graduate schools in Ajoo, Sookmyung, KNOU, Sejong, Joongbu, Sungkyunkwan universities, all which confer Master of Arts and Master of Science degrees. Except for KNOU, which operates its programs under the Promoting Lifelong Education Act, these other five cyber universities confer formal Master degrees under the Higher Education Act.

In 2002, e-Learning in Korean higher education was given a huge boost by a government program called "E-campus Vision 2007," which was a sub-part of a larger government program entitled: "Comprehensive Plan for the Encouragement of Using Information Communications

Technology (ICT) in Universities." This new program was initiated in response to the struggling state of ICT in universities. The Korean Government, aware that despite a high level of informational infrastructure, realized that there was a paucity of appropriate e-Learning information being compiled, developed, and utilized in various databases, such as education and academic research. There was also inefficient exchange of information between and among universities and wide gaps in the technological levels of those schools using ICT. In addition, there were shortcomings found in the application of leading technologies, such as up-to-date e-Learning instructional techniques and e-Learning support systems. Finally, weak legislative and institutional systems slowed the growth and momentum of e-Learning across Korea.

In order to resolve these problems, MEHRD announced a Comprehensive Plan for Promoting the Use of ICT for Universities in 2002. This plan presented several key steps, the most critical being the task of expanding Korea's e-Learning infrastructure and the sharing and distribution of education and research information on e-Learning. In response, MEHRD designated 10 regional areas and announced plans to establish an e-Learning support center for each region. These regional e-Learning support centers aim to provide assistance in developing learner-centered teaching practices and applications. These centers will also assist faculty who are using e-Learning in their classes, and lend general support in establishing both the infrastructure and learning techniques needed to support e-Learning. When and where necessary, these centers will provide e-Learning specialists who will facilitate the creation of solid support systems among universities.

Each e-Learning support center is equipped with studio-type instructional rooms, integrated support systems for teaching and learning, and editing and distribution systems. e-Learning centre staff members support content development, instructional management, and other technological and administrative tasks (KERIS, 2003). As of 2006, seven regional e-Learning support centers were active in Jeju University (established 2003), Kyungsang University (established 2004), Chunnam, Kangwon, and Youngnam Universities (established 2005), and Chungju and Chunbuk Universities (established 2006).

In furtherance of its mission to promote e-Learning, each support center engages in a wide range of common projects such as the collaborative development, sharing, and use of contents within universities throughout Korea. Each center has also been hard at work identifying specialized projects such as content development in the field of tourism, or seeking out ways to increase university-industry collaboration for e-Learning. Another highly specialized project is the creation of support systems needed to develop military human resources. These projects are prime examples of regional efforts that aim to enhance the competitiveness among and improvement of Korea's entire system of universities.

Basic Directions for e-Learning in Korean Higher Education

What is the vision and direction for e-Learning in Korean higher education? The Ministry of Education and Human Resources (MEHRD, 2004) announced a comprehensive improvement plan for e-Learning for the realization of a 'learning society' and development and innovation of human resources. In this report, MEHRD emphasized an innovative approach to balancing high education and competitiveness through the provision of e-Learning. In order to achieve this goal, the ministry proposed several steps, including: improving the general research environment; promoting greater specialization in particular academic fields; supporting the development of high-quality e-Learning curricula; and erasing the knowledge gaps that exist among universities in the 10 regions.

Korea's approach to e-Learning, however, is not without merit. According to Kim (2004), Korean universities want to utilize e-Learning because it offers: 1) less limitation in time and space compared to traditional offline classes; 2) the possibility of providing multiple learning practices based on self-regulated learning for adults; 3) individualized learning based on personal needs and the possibility of project-based teaching, which allows for more effective and interactive teaching and learning strategies; 4) diverse educational information and services; 5) a high assurance of information accuracy; 6) interactivity in the process of communication; and, 7) cost effectiveness compared to traditional classroom-based teaching and learning. Simmons (2002) also observed that although there are many different types of re-usable e-Learning formats, ranging from the simple to the complex, e-Learning in institutional contexts have three distinct goals: 1) individualized learning, 2) the sharing of knowledge, and 3) the interactive use of e-Learning technology. Leem (2004) advocated three additional goals as e-Learning strategies to enhance the quality of university education: balancing progress among universities; narrowing regional gaps; and strengthening the potential of universities, collectively and individually, through specialization of e-Learning. And finally, Lim and Leem (2005) have also suggested a set of e-Learning policies to improve the quality and balance of e-Learning in Korean higher education. This includes emphasis on building professional e-Learning organizations and activating spontaneous community activities. The creation of high quality e-Learning systems includes building knowledge portals to share information and developing standard digital contents and management strategies.

In summary, the current direction that e-Learning is taking in Korean higher education today can be listed as follows:

- First, e-Learning in higher education should reflect the ideals of university learning in the era of knowledge-based society, provide a space for knowledge production, and share this knowledge with the learning community.
- Second, e-Learning in higher education should, more than anything else, aim to enhance the quality of overall university education.
- Third, e-Learning in higher education should aim to narrow regional gaps on the level of education and academic research.
- Fourth, e-Learning in higher education should be geared towards strengthening competitiveness through specialization.

A Survey on the Current Status of e-Learning in Higher Education

The primary goal of this study was to examine the current state of e-Learning in Korean higher education. All the respondent universities were investigated using a survey questionnaire. The survey questionnaire was designed to gather data used to examine the present status of e-Learning in Korean higher education and gather objective data used to predict future directions of e-Learning in Korea. Accordingly, this study yielded basic data to help us assess the current state of e-Learning in Korea, and objective data on the attitudes of those involved to help us identify existing problems and possible solutions to fix such problems.

Subjects

All 201 national or public universities including KNOU, private universities, and national universities of education in Korea were examined: 25 national universities, two public universities, 163 private universities, and 11 national universities of education.

Methods and Procedure

The survey questionnaire, previously developed and used in 2002 for the investigation of the state of nationwide cyber education (Lim, Leem and Jung, 2003; Lim & Leem, 2004), was modified to fit into the goals of this study. The survey included question items to establish whether or not individual universities had existing e-Learning programs; collaborative relationships with other universities; and specific support organizations in place. In addition, the current state of the e-Learning system and problems in e-Learning programs used on campus were also investigated.

To make sure all the universities could participate, the survey was administered twice between mid-October and the end of October 2004. The survey was sent via email or mail, attention to the officer or staff person in charge of e-Learning under the names of MEHRD and KERIS. Responses were collected via email, fax, or mail. The returned data were coded using SPSS 11.0 for Windows and analyzed using mainly descriptive statistics; to see whether there were any statistically significant differences in the results, inferential statistics were also undertaken according to the type of universities (national, public, or private universities of education), the size (large or mid-/ small-sized), and location (city or provincial).

Survey Results

Survey response rate

According to the type of universities, 26 national and public universities out of 27 returned their responses (including KNOU), while only five out of 11 national universities of education did so. In the case of private universities, 66 out of 163 universities responded, yielding a 40.5 percent response rate for private universities. Among all the universities that responded, 38 large size universities out of 68 (56%) responded; while only 28 out of 98 mid-/ small-sized universities responded (28.5%). In terms of geographical location, 34 out of 74 universities (45.9%) that responded to the survey were located in Seoul or vicinity; while 57 out of 124 provincial universities did so (45.9%), yielding the same response rate. Overall, 92 out of 201 universities (45.8%) participated in the survey. Table 1 is on the next page.

Table 1. Response Stated by Type and Size

Type	Size	No.	No of universities responded	%
National/ public	Large*	20	17	85.0
	Mid or small**	7	4	57.0
	Total	**27**	**21**	**77.8**
Private	Large*	68	38	55.9
	Mid or small**	95	28	29.5
	Total	**163**	**66**	**40.5**
National Universities of education	Mid or small **	11	5	45.5
Total		**201**	**92**	**45.8**

* Large = enrollment of more than 10,000 students
** Mid or Small = enrollment of less than 10,000 students

Overall Status of e-Learning in Regular Four-year Universities

Percentage implementing e-Learning ~ Among universities that responded, 85 percent of the universities reported that they were using e-Learning educational systems. There were statistical differences found among the type and size of the universities.

As shown in Table 1, e-Learning was used most widely by large national and public universities, which can be contrasted to mid/small-sized universities which revealed that participation is only slightly lower. That is, regardless of whether they are national or public, nearly all of universities surveyed had some form of e-Learning programming in place. Among large private universities surveyed, 97 percent indicated that they had their own e-Learning in place, while only 68 percent of mid-/small-sized universities did so. In addition, only 40 percent of the national universities of education reported that they had e-Learning programs.

Table 2. State of implementing e-Learning

Type	Size	No. of universities responded	No. of universities implementing e-learning	%
National/ public	Large*	17	16	94.1
	Mid or small**	4	4	100.0
	Total	**21**	**20**	**95.2**
Private	Large*	38	37	97.4
	Mid or small**	28	19	67.9
	Total	**66**	**56**	**84.8**
National Universities of education	Mid or small **	5	2	40.0
Total		**92**	**78**	**84.8**

* Large = enrollments of more than 10,000 students
** Mid or Small = enrollments of less than 10,000 students

Support for Cyber Class (e-Learning class) on a University Level ~ Seventy-six percent of the universities reported that they run and support -e-Learning classes on a university level and had appropriate policies in place. While 90 percent of national and public universities, and 76 percent of private universities, confirmed they had such support systems; only 20 percent of universities of elementary education responded that they had such supportive operation systems in place. In terms of student body size, 89 percent of large universities with more than 10,000 students reported having such systems in place; only 54 percent of mid-/small-sized universities with less than 10,000 students reported having e-Learning in place, revealing some statistical difference.

Independent Support Organizations for e-Learning ~ It is necessary to have independent support organizations to effectively run e-Learning programs. Of those universities that responded to a question that sought to determine of level of independent support organizations needed to underpin e-Learning, 61 percent of those universities surveyed reported that they had such an independent organization in place; there was no significant difference found among the different types or locations of universities. In terms of size, however, universities with more than 10,000 students (78%) reported having an independent organization in place, while only 35 percent of the universities with less than 10,000 students had such organizations in place.

Collaboration with Other Universities or Institutions

Consortium with Other Universities ~ Fifty-one percent of the universities reported that they had formed a consortium to share e-Learning systems with other universities. There were no

differences found in universities in terms of type or geographic location, however. In sum, 58 percent of the universities with more than 10,000 students and 40 percent of the universities with less than 10,000 students reported in engaging in such consortiums, again showing some difference according to the size.

Partnerships between University and Industry and International Cooperation ~ According to the results of the analysis on the collaboration or cooperation between schools and industry in terms of running e-Learning programs or programming, only nine percent of the universities reported that they had cooperative systems in place with private sector companies. Though minor, the number of private universities which had such cooperative/ collaborative relationships with industrial organizations was twice as large as compared to national and public universities. In addition, only four universities (4.5%) reported having collaborated with foreign universities. These universities were all large and located in Seoul or vicinity.

State of Content Development

State of Content Development within a University ~ The percentage of universities reporting that they have been developing specific contents within a university level was 74 percent. More national and public universities (85%) reported that they were developing their own contents, while 76 percent of private universities reported developing contents on their own or through outsourcing. There was some difference found in terms of the size of the universities. Eighty-six percent of the universities with more than 10,000 students surveyed, and only 57 percent of the universities with less than 10,000 students surveyed reported developing their own contents. The contents developed by these universities, however, were mostly for PCs. Further, there were only two private universities which were involved in the development of mobile-based contents development. It seems, therefore, that Korean universities are seriously lacking in preparation for mobile learning.

State of Purchasing Contents Developed Externally ~ There were a very small percentage of universities (24%) who reported that they had purchased contents from external companies. In fact, there were no overall differences according to the type and size of the universities in the pattern of securing their own contents, in that these universities were developing or outsourcing the contents in most cases, instead of purchasing existing commercial programs.

Supports for Teaching Staff and Learners

Supports for Teaching Staff ~ According to survey results, the most typical means of support was to provide incentives to teaching staff for content development and the provision of support and management through specialized organizations. Less than half of the universities, however, reported providing support for tutors and there was a substantial lack of incentives for faculty. Thirty-four percent of the universities awarded extra credits for faculty achievement evaluation. Twenty-six percent of the universities reported providing monetary reward in case of excess in enrollment; and 21 percent reported reducing teacher workload (i.e., less teaching hours). Only a small number of private universities reported an award for excellent content. Regarding the criteria of supporting teaching staff, there were statistically significant differences found between the type and size of the universities. Most national and public universities provided funding for content development, while only 66.7 percent of the private universities surveyed did so. In the case of national universities of education, only one reported providing such support. Further, most large-sized universities surveyed provided funding for content development, but less than half of the mid-/small-sized universities did so. There were also significant differences in other supporting areas reported as well: large-sized universities provided more support in the form of

specialized organization and awarded more credit for the evaluation of faculty achievement than mid-/small-sized ones. There was a statistically meaningful difference found in terms of provision of more teaching assistants or tutor based on the locations of the universities investigated. The universities in Seoul or its neighboring areas (64.7%) provided more teaching assistants or tutors than those in provincial areas (37.9%).

Table 3. State of Faculty Support for e-Learning

Items	(%)	Type(%)			Size(%)		Location(%)	
		National/ public	Private	Nat'l Univ. of Education	Large	Mid & Small	City areas	Provincial
The cost of content development	68.5	90*	66.7*	20*	85.5*	43.2*	79.4	62.1
Support from specialized organization for content development and management	59.8	55	65.2	20	74.5*	37.8*	70.6	53.4
Assistants or tutors for content development of class management	47.8	50	51.5	0	54.5	37.8	64.7*	37.9*
Extra credit for the evaluation of faculty achievement	33.7	20	41	0	41.8*	21.6*	29.4	36.2
Incentives offered in case of excessive enrollment.	26.1	15	31.8	0	29.1	21.6	26.5	25.9
Reduction of teaching hours	20.7	10	25.8	0	20	21.6	26.5	17.2
Award or monetary compensation for excellent contents	6.5	0	9.1	0	9.1	2.7	11.8	3.4

* Statistically significant items

Supports for Learners ~ There was an overall lack of support found for learners involved in e-Learning. On the questionnaire items regarding the credit acknowledgement or limit in enrollment, only half of the universities surveyed responded in the affirmative. Only 40 percent of the universities reported that they provided tutors, assistants, or digital libraries. In addition, only one third of the universities had separate evaluation systems for classes and very few universities reported providing training or seminars for learners on e-Learning. It can be assumed, therefore, that there were no systematic or goal-oriented support programs for learners in the universities surveyed.

There were statistically significant differences in the provision of diverse services at large universities, however, as compared to mid-/ small ones. In fact, there was a significant difference between the two groups of universities in terms of problem-solving systems for technical difficulties, the acknowledgement of credits, limits placed on enrollment, and the provision of

digital libraries, and so forth. In addition, there was also statistically significant differences found in terms of providing solutions for technical difficulties and independent course evaluation systems between the universities in cities or its neighboring areas versus those in provincial areas.

Table 4. State of Learner Support for e-Learning

Supporting Items	(%)	Type (%)			Size (%)		Location (%)	
		National/ public	Private	Nat'l Univ. of Education	Large	Mid & Small	City areas	Provincial
Immediate problem-solving for technical difficulties	72.8	90*	74.2*	0*	87.3*	51.4*	85.3*	65.5*
Partial or full acknowledgement of credits taken other cyber universities	52.2	55	56.1	0	65.5*	32.4*	55.9	50.0
Limit on enrollment per cyber class	47.3	50	50.8	0	57.4*	32.4*	47.1	47.4
Helping Learners using tutors or assistants	41.3	35	47	0	50.9*	27*	50.0	36.2
Provision of diverse service through digital library	38.0	40	37.9	40	49.1*	21.6*	35.3	39.7
Existence of separate evaluation system for cyber classes	28.3	30	30.3	0	30.9	24.3	44.1*	19.0*
Management of learning enhancement programs for autonomous learning	13.0	15	13.6	0	16.4	8.1	8.8	15.5

* Statistically significant items

e-Learning infrastructure and learning management systems

Infrastructure and Server for e-Learning ~ Of the universities surveyed, 72.8 percent reported that they have their own infrastructure and servers in place for e-Learning; this finding can be compared to 10.9 percent of respondents who reported that they relied on outside services. However, 8.7 percent of the universities reported that they did not have any infrastructure or server. While there was no difference according to the types of the universities, 86.8 percent of the universities with more than 10,000 students, and 61.8 percent with less than 10,000 students, reported that they had their own infrastructure and servers in place.

LMS for e-Learning ~ Seventy percent of the universities surveyed reported that they have a learning management system (LMS) of their own. Ninety percent of the national and public universities reported that they had their own management systems or those from the outside, while 13 percent of the private universities reported that they did not have any LMS. Regarding the percentage having their own LMS instead of ones from outside, there was a big difference between the universities with more than 10,000 (83.6%) and those with less than 10,000 (56.3%). This indicates that almost half of the mid-/ small-sized universities did not have any learning management system.

Staff awareness of problems in e-Learning

A five-point Likert-type questionnaire was administered to those staff members involved in e-Learning. The purpose of this survey was to determine and examine the problems – possible solutions – related to e-Learning at the university level. The following shows the results of the analysis.

Expertise of the Organization and the Personnel ~ Regarding the question of whether there is enough manpower to manage e-Learning, the policy makers and those who are in charge of e-Learning reported that there was a serious shortage of personnel for e-Learning. Such a shortage was found to be more serious in national and public schools than in private ones. As Table 5 shows, there was some difference found between national and public universities (4.16) and private ones (3.71).

Table 5. Staffs' Awareness on Problems in e-Learning

Items	Mean (SD)	Type (%)			Size (%)		Location (%)	
		National/ public	Private	Nat'l Univ. of Education	Large	Mid & Small	City areas	Provincial
Lack of e-learning personnel	3.87 (1.00)	4.16*	3.71*	4.80*	3.80	4.00	3.76	3.94
Lack of expertise of e-learning personnel	3.16 (1.21)	3.25	3.05	4.20	3.02	3.39	3.06	3.22

* There was a statistically significant difference, but the post hoc analysis did not show any statistically difference between the national and public and private universities. There was, however, a statistically significant difference between national universities of education and others.

Support for Teaching Staff in e-Learning ~ Respondents were generally aware of the problems concerned with the teaching staff. Table 6 shows that they responded in the affirmative to the questions related to the lack of support for the faculty in terms of providing assistants or other incentives. In addition, they also responded that there was an overall disinterest or lack of participation on the part of the faculty.

Table 6. Problems Related to the Faculty Support

Items	Mean (SD)	Type (%)			Size (%)		Location (%)	
		National/ public	Private	Nat'l Univ. of Education	Large	Mid & Small	City areas	Provincial
Lacks support for assistants who help with content development and management	3.30 (1.37)	3.65*	3.05*	5.0*	3.13	3.58	2.94	3.52
Lack of incentives for those who are involved in e-learning	3.41 (1.17)	3.8*	3.17*	4.8*	3.35	3.52	3.32	3.46
Lack of interest and participation of faculty	3.59 (1.00)	3.5	3.59	4.0	3.62	3.55	3.62	3.57

* There was a statistically significant difference, but the post hoc analysis did not show any statistically difference between the national and public and private universities. There was, however, a statistically significant difference found between national universities of education and others.

Support for Learners in e-Learning ~ Most of the respondents did not agree with the questions that the learners were not interested or did not participate in e-Learning actively. Table 8 reveals that except for the national universities of education, they thought that the students were interested and actively participated in e-Learning.

Table 7. Awareness on Learners' Interests and Participation

Item	Mean (SD)	Type (%)			Size (%)		Location (%)	
		National/ public	Private	Nat'l Univ. of Education	Large	Mid & Small	City areas	Provincial
Lack of learners' interests and participation in e-learning class	2.59 (1.17)	2.65*	2.46*	4.0*	2.49	2.76	2.68	2.54

* There was a statistically significant difference, but the post hoc analysis did not show any statistical difference between the national and public and private universities. There was, however, a statistically significant difference found between universities of elementary education and others.

Contents ~ The survey respondents said 'neutral' on the question of whether the level of contents in current e-Learning was low. Table 8 shows that they did not think the quality of the contents were high. In fact, they said the quality of contents in the national and public universities and national universities of education were lower than that in the private universities. However, there was no statistical significance in these three different types of schools, but the staff in the national and public universities were more concerned about their quality of their e-Learning content in general.

Table 8. Awareness on the Quality of e-Learning Contents

Item	Mean (SD)	Type (%)			Size (%)		Location (%)	
		National/ public	Private	Nat'l Univ. of Education	Large	Mid & Small	City areas	Provincial
The overall quality of e-learning contents is low.	2.91 (1.05)	3.30*	2.69*	4.0*	2.76	3.15	2.85	2.94

* There was a statistically significant difference but the post hoc analysis did not show any statistically difference between the national and public and private universities. However, there was a statistically significant difference between universities of elementary education and others.

Evaluation System and Quality Assurance ~ Most of the respondents thought that the levels of e-Learning evaluation and quality assurance systems were low. In Table 9, they responded in the affirmative regarding the lack of systematic evaluation and quality assurance. They said there were especially serious problems in these areas in national and public universities and national universities of education.

Table 9. Awareness on the Evaluation and Quality Management System

Items	Mean (SD)	Type (%)			Size (%)		Location (%)	
		National/ public	Private	Nat'l Univ. of Education	Large	Mid & Small	City areas	Provincial
Lack of systematic evaluation system on cyber classes	3.53 (.99)	3.7*	3.38*	4.8*	3.38	3.79	3.71	3.43
Lack of management system in place to enhance the quality of e-learning	3.69 (.91)	3.75	3.63	4.20	3.63	3.79	3.85	3.58

* There was a statistically significant difference, but the post hoc analysis did not show any statistically difference between the national and public and private universities. There was, however, a statistically significant difference found between universities of elementary education and others.

Conclusion: Strategies for enhancing the Competitiveness of Higher Education through e-Learning

Based on the results of the study outlined above, this paper suggests some ways to strengthen and enhance the competitiveness of Korean universities, especially at the level of policy development and implementation.

Differentiated support according to types, sizes, and locations of universities

There were differences in using e-Learning depending on the types, sizes, and locations of the universities. The national and public universities received more support for development and management through the provision of supportive policies compared to private universities or national universities of education. There is also some difference found in terms of support for

curriculum development and the provision of specialized organizations for e-Learning internal to universities. Such differences indicate that in order to establish effective policies, there needs to be differential support based on the types, sizes, and locations of the universities. At a government level, policies should be implemented that aim to provide better conditions for using e-Learning and adequate funding needed to establish organizations which are specifically and exclusively in charge of e-Learning. Governmental policies should also place high priority to the utilization of regional e-Learning support centers for mid-/ small-sized private universities and national universities of education. In addition, those national and public universities and large private universities that have active e-Learning programs should be encouraged to establish cooperation programs with diverse industries or foreign countries, and share their contents with mid-/ small-sized Korean universities.

Development of Quality Assurance Systems for e-Learning

In order to provide high quality e-Learning, content is clearly important. Other areas critical to e-Learning are: enrollment control; quality management in teaching and learning; quality and timely feedback for learners; and reliable and valid student evaluation. In other words, the resolution of these problems cannot rest solely on the shoulders of faculty and practitioners, but instead fixing these problems requires systematic support at an institutional level, including the creation of specialized organizations that support e-Learning. In this vein, the government should provide policy support for those institutions of higher education that lack quality management systems. They must be encouraged to establish specialized organizations through the provision of special educational funding. It is also suggested that the government could even utilize military personnel who specialize in computers to support such organizations, providing the much-needed manpower to launch and support such e-Learning endeavors. In addition, the government should have a long-term plan in place for developing the human resources needed to support e-Learning systems, as well as a short-term plan to offer interdisciplinary programs in the departments of education, educational technology, and computer sciences, or even an MBA or certified courses for e-Learning experts.

Enhancement of faculty support systems on a university and governmental level

Active faculty participation and effort is critical in e-Learning and therefore the provision of incentives for faculty is clearly important. Staff members involved in e-Learning currently face a serious lack of support (i.e., little financial support or reduction in workload in lieu of additional workload related to e-Learning, etc.). Without such incentives, it will be virtually impossible to expect faculty to embrace and use e-Learning as a modality. Providing faculty support, therefore, is not just an issue that impacts university level education, it impacts development and competitiveness on a national level as well. Put simply, the Korean Government should find ways to increase its support for e-Learning. For example, the government can provide awards for professors who develop outstanding contents or for faculty with excellent records in managing e-Learning. Criteria can also be created to evaluate the extent to which respective professors and universities employ e-Learning. Each university could similarly provide incentives or award extra points for professors who use e-Learning, especially the provision of credit needed for promotions or contract extensions.

Increased learner support systems to strengthen the e-Learning foundation

Compared to the issue of faculty support, little discussion has been paid to supporting learners in e-Learning classes. Learners, in general, wish to receive a diverse and quality education beyond which is currently offered in traditional classroom-based settings. It is essential, therefore, that universities provide not only technical support necessary for e-Learning, but also opportunities for learners to interact with faculty and staff online in e-Learning environments. If such quality interaction means that e-classes must be smaller, efforts must be taken to reduce the e-Learning class sizes.

Moreover, learner support tends to be more readily available at large universities than mid-/small-sized universities who tend not to provide more robust, interactive forms of learner support. And even though learner support is implemented on a university level, support at the policy level remains vitally necessary. Such support could include the offering of mutual degrees, or the creation of a 'credit banking' system that enable students to transfer any credits earned between universities. In this manner, learners can freely take e-Learning classes and acquire credits, which they can apply towards a degree or diploma. To rationalize information, the Korean Government should also develop a national e-Learning portal, which provides tutorial services between universities, and provide a centralized place to assist learners when they encounter difficulties taking e-Learning courses or classes.

Development of Knowledge Sharing Systems and Collaborative Contents: Development and management for university and industry cooperation

Few Korean universities receive the benefits of university-industry cooperation for e-Learning, even though some unique partnerships between universities and industry – albeit limited – are in place. Use of industrial e-Learning contents, or the provision of e-Learning contents developed by private sector companies and corporations remains limited and overall, it is opined here that industry-university collaboration still remains a relatively untapped potential in Korea. Indeed, truly meaningful e-Learning collaboration should involve the development of learning contents by both universities and industry. For example, expert groups from both Korean universities and industry could work together to research, design, and implement e-Learning course contents in their respective fields. Both university and industry could also provide incentives for those who participate in e-Learning contents development. In terms of end users, students who take e-Learning courses should be given incentive to upgrade their knowledge and skills via e-Learning. Mutual interests must be established between the university and the private sector, including the sharing of knowledge and information via a 'community of knowledge.' In this manner, online e-communities can be formed that connect university faculty with industry experts – specifically those who are in an ideal position to share and leverage their interests, goals and information to advance their fields. Put simply, the e-Learning contents they develop could be used to teach specific academic and professional skills, to help bridge academia to actual application in industry. And even though such efforts will undoubtedly take time and money, the support and ongoing development of such 'knowledge sharing systems' such as the e-communities between university and industry, should be undertaken at the outset in an effort to align industry needs to that of university-level e-course offerings.

Seeking international relationships for e-Learning through links among relevant organizations

Though clearly important, establishing cross-institutional relationships on an international level tend to be difficult for most universities to accomplish. Even though the exchange of academic expertise or students (i.e., via exchange programs) is relatively easy, the reality remains that it is difficult to develop e-Learning contents that satisfy the different needs of different learners studying in different areas of the world (i.e., provision of foreign language contents). Some universities in Korea, however, have plans that support the international exchange of e-Learning contents, but at time of publication there are no such programs concretely in place. A good example is the Korea National Open University's recent plan to develop e-Learning content exchange programs. Indeed, KNOU generated e-Learning content, such as 'Korean Studies,' or other common subjects such as 'Statistics' or 'Computing Science' can be developed and shared both inside and outside of Korea. However, it is suggested here that an agreement could be made with other 'institutes' that already have international exchange programs in place and vice-versa. For instance, such 'institutes' could mediate the delivery of KNOU's e-Learning contents to other countries and/ or any other institutes. In addition, universities must seek to find more effective ways to advertise and market Korean university-level e-Learning programs outside of Korea (i.e., to other countries in Asia, and to other continents such as Africa, Europe, or North America). This can only be achieved, however, through agreements with similar institutes or organizations elsewhere in the world.

Development and support of e-communities of knowledge for research and education

Even though it is generally desirable if knowledge-based communities form on their own accord, there remains some limitations in developing 'e-communities of knowledge' for research. Using such communities as spaces for educating learners and as a common area to engage in research are expensive to launch and maintain. In order to develop diverse e-communities to support, connect, sustain, and grow various academic fields, MEHRD should aim to provide active support through organizations such as Korea Research Foundation or various science foundations. The ideal would be to provide extensive support for interdisciplinary fields to carry out mutual projects or in fields that are well suited to perform collaborative research using the Internet. Another consideration is that academic databases housed on 'e-communities of knowledge' (i.e., content developed by both faculty and researchers in the field and industry) should be compiled to provide direct and indirect help to undergraduate and graduate students. Furthermore, such online content should keep in mind students' learning outcomes, as well as academic activities. By strategically managing the process of e-community development, momentum can be built for faculty and researchers to help them help themselves through the production of new types of knowledge.

References

Brown, J., & Duguid, P. (2000). *The Social Life of Information.* Cambridge, MA.: Harvard Business School Press.

de Alva, J. K., (1999). *Remaking the Academy in the Age of Information: Issues in science and technology.* Washington, DC.: National Academy Press.

Duderstadt, J. (2000). *A university for the 21st century.* Ann Arbor, MI.: University Michigan Press.

Duderstadt, J. J., Atkins, D. E., & Van Housweling, D. (2002). *Higher Education in the Digital Age.* Ann Arbor, MI.: University Michigan Press.

Kim, H. B. (2004). e-Learning in higher education. In '2004 Proceedings of e-Learning Seminar, Korea Society for Educational Technology.

KERIS (2003). *e-Learning Support Center for University.* Korea Educational Research & Information Service (KERIS) website.

Leem, J. H. (2004). e-Learning Strategy for Improving the Quality of Higher Education: Blended learning. In the Proceedings of the *3rd International e-Learning Workshop*, Korea National Open University.

Lim, B., & Leem. J. H. (2005). e-Learning status in higher education and its implications for policy-making. *KERIS Research Report* KR-2004-25.

Lim, B., Leem, J. H., & Jung, I. S. (2003). Current Status of Cyber Education in Korean Higher Education and Quality Control: The year of 2002. *Korean Journal of Educational Research, 41*(3), 541-569.

MEHRD (2004). *A comprehensive improvement plan for e-Learning for the realization of learning society and development and innovation of human resources.* Seoul: Ministry of Education & Human Resource Development.

MEHRD (2002). *E-Campus Vision 2007 (2003~2007).* Seoul: Ministry of Education & Human Resource Development.

Simmons, D. (2002). The Forum Report: e-Learning Adoption Rates and Barriers. In Allison Rossett (Ed.) *The ASTD e-Learning Handbook: Best Practices, strategies, and case studies for an emerging field.* London McGraw Hill.