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ABSTRACT

In Korea, e-learning is becoming increasingly prevalent and spreading into various aspects of human resources development. Korea's Ministry of Education and Human Resources Development (MOEHRD) and Ministry of Labor (MOL) have been especially active in establishing the legal basis and institutional framework to make e-learning a reality. E-learning in Korea revolves mainly around cyber universities, which are supported by the MOEHRD, and around e-learning programs targeting workers to develop their vocational potential, which are sponsored by the MOL. Both forms of e-learning suffer from the following problems: (1) programs are designed and provided for a limited target group; (2) quality control of programs' content and methods of instruction is insufficient and inefficient; and (3) the roles of the different actors involved in e-learning have yet to be clarified sufficiently. Although Korean adults are generally well aware of e-learning and have high expectations of it, they remain relatively uninformed about the various support systems and government policies promoting it. The following recommendations were presented: (1) foster participation in e-learning by expanding and diversifying the base of e-learning participation; (2) enhance the quality of e-learning, including by strengthening institutions' autonomy and accountability; and (3) maximize e-learning's potential through networking, informalization, and standardization. (Seven tables/figures are included. The bibliography lists 25 references) (MN)

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Promoting e-Learning for Human Resource Development in Korea

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RM 02-16 Promoting e-Learning for Human Resource Development in Korea

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I. Introduction

1. Background and objectives

The digital society of the 21st century is marked by the dramatical growth of the information and communication sector. Consequently, all countries around world are experiencing rapid changes in society, economy and culture. To adapt to the shifting environment, each individual now faces the need to develop one's vocational competency through lifelong learning. At the same time, more and more people have come to recognize the important role of the government in both leading and supporting the individual's development in this regard.

At this juncture, e-Learning presents itself as an appealing alternative to the traditional ways of developing human resources. e-Learning's prime merit to enable people to get more opportunity to learn beyond the limitation in time and space. Moreover, the internet-based system of education and training is being continually upgraded as swiftly as the development in information and communications technology and the increase of demands. The Internet has also expanded the scope of education in terms of opportunity, content and methology from what it had been in the analogue era.

In Korea, the e-Learing is speedily growing in size and spreading into various aspects of human resources development. A primary factor to foster e-Learning is the support. While each ministry in Korea has shown commitment to promoting e-Learning. 「The Ministry of Education and Human Resources Development」 and 「the Ministry of Labor」 have stood out in pioneering effort, namely establishing the legal basis

and institutional framework that make e-Learning a reality.

The Ministry of Education and Human Resources Development (MOEHRD) endeavors to ensure that everyone can participate in education throughout life, unbarred by conditions of time and place. As an important initiative, the ministry grants approval to cyber universities as institutions of higher education. Under the Lifelong Education Act, cyber universities are recognized as being on par with other institutions such as junior colleges, colleges and universities in terms of the level of education they provide and the value of degrees issued to graduates. Prior to the founding of cyber universities, the MOEHRD in March 1998 launched a two-year pilot project in which many institutions of cyber education participated. For this project, the ministry named 7 cyber education consortia, including the Open Cyber University, and 6 independently participating universities, such as Sookmyung Women's University, as pilot cyber universities. In case of the 7 consortia, at least 65 colleges/universities and 14 enterprises are participated in the pilot project. Totally, 37% of all colleges and universities estimately, about 180 in Korea participated in this initiative in one way or another. Supported by the outcome of the project and the Lifelong Education Act which newly went into effect in March 2000, the MOEHRD began to officially approve the founding of cyber universities. By December 1, 2000, 9 cyber universities, including the Open Cyber University, were granted recognition by the MOEHRD.

The Ministry of Labor (MOL), on the other hand, has pursued e-Learning initiative. Throughout constructing the legal system of supporting web-based training conducted in the enterprises. After completing a pilot-testing project in 1998, the ministry included web-based training (WBT) as one form of vocational training in the Vocational Training Promotion Act. The ministry then began giving

financial support to entrepreneurs who provided mandatory web-based training courses for their workers (up to 80% and 90% of training costs, respectively, for large corporations and small- and medium-enterprises).

The MOL's e-Learning initiative has substantially enhanced public awareness of web-based training and the number of workers as well as enterprises taking advantage of this particular form of training is steadily growing. Compared to the year of 1998 when only 7 institutions took part in the pilot project launched by the MOL, the number of institutions providing web-based training had dramatically risen to 40 by the next year, by which time the web-based training initiative was in full operation (Lee, S. K., 1999). The number of web-based training institutions had still increased up to 133 by 2000, and the trend is expected to continue for some time to come.

The efforts of these two ministries exemplified in the cyber-university and web-based training have effectually promoted e-Learning as an integral part of lifelong education in Korea. Yet, this innovation in the education and training sector needs further to be developed and improved upon. Still in its very early stages of introduction and adaptation in the field, the e-Learning has been criticized by domestic educators who point out the deficiency in substance and effect.

One of the most often cited problems is the lack of diversity in the structure, target group, content and method of e-Learning in Korea as compared to countries where this is more developed. There is only a limited variation in the types of educational programs in progress. Also, most of those programs are theory-oriented, possibly because it is relatively easier to develop theory-oriented programs than those programs that are practice-oriented. Some of the programs, in fact, are little more than textbooks put online instead of on paper.

The absence of an extensive network of human, material, and

information resources, on the other hand, binds e-Learning within closed and disconnected systems. As a result, the merits of the internet are not aptly put into effect while the so-called e-Learning retains many of the qualities and limitations of its traditional predecessors. Without further development and innovation, it would be hard to achieve the ideal lifelong education society using the education and training system of e-Learning system, not to mention the difficulty of establishing Korea as one of the world's leaders in human resources development.

The most critical task at present is firstly to analyze the status of e-Learning in Korea, and secondly, based on the result of the analysis, to set up the direction which is systematic and workable under the specific domestic conditions for the aim of developing this new form of education and training effectively. Such an approach should involve a close examination of the various aspects of e-Learning as well as an in-depth estimation of the public's demands for this type of education and training.

This study seeks to accomplish the task of developing a strategy to make e-Learning in Korea substantial and to upgrade it in quality. For this, the study analyzes the existing conditions of e-Learning and defines the problems that need to be addressed. Furthermore, the study identifies the needs of the general public, (the learners who participate in the education and training, and the providers of institutions that provide it, etc.) in e-Learning and of the stakeholders.

2. Methodology

A. Analysis of existing data and literature

Existing literature on e-Learning, including research work on the subject, has been reviewed and analyzed. Other various data have been examined for an accurate and objective view of the status of e-Learning.

B. Survey on the providers of e-Learning

A complete enumeration was conducted on the institutions that provide e-Learning, with the aim of analyzing the status of management of these institutions. Target group included cyber universities approved by MOEHRD and enterprises recognized by MOL. Questionnaire and guidelines were developed and delivered by e-mail and/or post. All nine of the cyber universities participated, while 51 of a total of 60 institutions participated, which had run e-Learning programs in the year of 2000, recording an 85% participation rate.

C. Surveys on the general public and participants in e-Learning

Surveys were carried out on two different samples, (1)the general public and (2)the group of learners who were taking part in e-Learning. The first of the surveys, which was designed to find out how aware adults in Korea are of e-Learning, was conducted over the phone. A total of 1,005 respondents were sampled from the 20 ~ 50 age group through stratified random sampling based on population ratio. The questionnaire dealt with the following items: (1) awareness of e-Learning; (2) relative awareness of the web-based as compared to traditional education and training; (3) willingness to participate in e-Learning; and

(4) demands/needs for program development and expectations for the future of e-Learning.

For the second survey、research participants was consisted of learners who were taking part in e-Learning programs approved by MOL. The survey was designed to identify the needs of these learners. Ten institutions offered to cooperate in the survey and their students/trainees were questioned through the Internet servers operated by these institutions. As many as 2,261 people responded, which addressed the following items: (1) degree of satisfaction and rate of participation; (2) learning behavior; (3) relative awareness of the web-based as compared to traditional education and training; (4) demands/needs for program development and expectations for the future of e-Learning; and (5) the actual use and promotion of training outcome.

Ⅱ. e-Learning: Concept and Characteristics

As demands for human resources development continue to rise, the e-Learning is viewed as a useful way to widen the opportunity for adult learners who must work even as they pursue learning. It is also drawing much attention and hopeful expectations as a learning method that can apply to the characteristics of the adult who's attention is on self-direction, real-life experience, lifestyle-fitness. Meanwhile, much of the e-Learning that is currently taking place in Korea fails to make use of the merits compared to that of the Internet. Often, in fact, these e-learning programs are copies of the existing printed learning/training material. Questions are steadily raised about the appropriateness of some

of these e-Learning programs as to whether Internet is the suitable and efficient medium for their provision. A thorough analysis of the characteristics of new media should precede any effort to establish the e-Learning as a new learning method. This section will investigate the concept of e-Learning and its characteristics based on the review of existing literature.

1. The Concept of e-Learning

E-Learning is defined as a computer-based form of e-Learning conducted using the methodology and technology of the internet, in order to support and to promote learning necessary for the performance of work responsibilities. In other words, it is a systematically organized activity utilizing information and communications technology to assist the learner in improving his/her performance as well as developing the potential the individual has for achievement in the workplace.

E-Learning is a form of distance education that was bred from the changes in corporate environment and popularization of the Internet. Today's enterprises are shifting from placing the crown value on efficiency toward putting greater emphasis on creativity. This in turn has led to the transformation of education and training from one that focuses on feeding information and knowledge to one that helps learners to obtain and develop knowledge on one's own skills. Another change in corporate culture is the spread of the total customer satisfaction paradigm. In such an environment, vocational education and training has become a service commodity to satisfy the needs of individuals and enterprises, which are becoming increasingly diversified. Finally, the introduction of new learning systems based on state-of-art information and communications technology has broken down much of the limitations

on where and when teaching and learning may occur. Such a development facilitates learners to participate in distance education, pursuing learning while working. The e-Learning, especially, is a forerunner in breaking new grounds and maximizing the merits of distance education through rapid technological innovation.

One of the best things about e-Learning is that it promotes strong interactivity. Participants of online education programs can enjoy one-to-one communication with the instructor or fellow learners as well as take part in large group discussions. By computer conferencing, one person can send a message out to the entire group for feedback and opinion exchange. The e-mail, on the other hand, helps communication between the learner and the instructor as well as among learners.

Another advantage of e-Learning is that it enables different forms of information exchange. One may choose to send a written document, while another may send data in audio and visual format. Assignments, therefore, may be produced and submitted in various forms.

E-Learning also gives learners access to an unlimited amount of information. The extensive network of the web allows an individual to exchange all sorts of written texts and audiovisual data with nearly anyone on the globe who likewise has access to the Internet. The sheer amount of information is overwhelming and unimaginable at the least.

Besides the three merits mentioned above, the web environment has other characteristics that are valuable in education and training. One example is the convenience of updating and upgrading information on the web. This is done easier and faster than through many of the other forms of communication.

2. The Characteristics of e-Learning

In summing up the existing theories on e-Leraning, it may be said that there are mainly four merits to this particular form of learning: (1)easy-access, (2)individualized and self-directed in learning, (3) interactive learning and (4)cost-effectiveness. These advantages are essential characteristics that define e-Learning, and they distinguish it from the more traditional forms. The following section will discuss the significance of each merit, and present ways that may help maximize the merits.

A. Easy Access

Unlike in the traditional environment of the classroom, e-Learning makes use of information and communications technology that allows access unlimited by time and space. In other words, more learners may access the diverse educational programs they need, while they are free from the limitations of time and space and capable of maintaining a working life.

The ease of access is often affected by other conditions. It may depend upon how effectively the program is advertised to potential participants. Before they begin the educational program, adequate orientation and guidance for learners may also facilitate access. The existence or absence of incentives of participation, quality of facility/support system, and the culture and/or environment shared among fellow participants can have decisive influence on how accessible a e-Learning program is applied to learners. To enhance accessibility of program, it is important for providers to create the environment and the

incentives that motivate learners to actively take part.

Technical factors can also have critical impact on accessibility. (Because the providers of e-Learning must effectively deliver their services to the homes and the workplaces of learners, efforts should be made to enhance the computer or internet technology and to acquire the necessary facilities and equipment (Frankline, 1995).) The technical essentials include social infrastructure, such as the information and telecommunications network, computer hardware, quality multimedia material, and technical assistance of computer experts. Meanwhile, an ongoing effort needs to be made to advance the Internet technology, which is the foundation on which e-Learning stands. Examples of significant technological progress can increase the speed and the invention of new multimedia service capacities.

Another factor that may influence accessibility is the organizational culture surrounding the learner. For someone who is employed, workplace regulations on learning at work, moral support from superiors and co-workers, and a culture of innovation shared in the work environment can have substantial impact on how easily he/she may access e-Learning.

There are tasks that the government should carry out to make e-Learning more accessible. The government should, for example, devise legal and institutional measures to assess and support e-Learning. Legislations should set clear guidelines as to what basic standards e-Learning institutions must meet, and stipulate the rules and process of approval as well as assessment procedures. These laws should also protect and promote the possibility of expanding the scope of web-based education and training in terms of the target group, time and space. A long-term outlook is therefore, necessary.

B. Interactive Learning

Interaction via the computer network means mainly communication and data exchange. Some scholars have thus defined interaction in e-Learning as a two-way activity that induces vigorous participation and cognitive activity of the learner (Chung & Choi, 1998), or as bilateral communication between the instructor and the learner and/or between and among learners via networked computers (Moore & Kearsley, 1996; Yang & Cho, 1998; as cited in Im, 1999).

Interactivity in e-Learning is significant because it maximizes the participant's knowledge and experience, makes learning interesting, and encourages problem-solving, critical thinking and more importantly, its effects on creativity. Interactivity, in other words, provides and increases possibility and the opportunity that create and share knowledge among the learners. In e-Learning, it is important to make enough room for the learner to add to his/her knowledge base by understanding, integrating and applying what has been acquired.

A number of conditions must be met before this special advantage of e-Learning can be put into effect. First, the learning environment should be such that interaction is easy for the learners. This depends on the interface and instructional design done by the instructor. Secondly, learners should be given tools that are optimized for the distinct features of their program. Thirdly, the learning environment should allow interaction to take place quickly. Without immediate feedback learners tend to lose their interest and motivation dramatically. Fourthly, interactivity should be fostered so that it can occur on a continual basis. Education and training providers need to keep track of the learner's performance and give feedback accordingly. Finally, the learning environment should promote harmony among diverse subject matter.

E-Learning providers need to make wise decisions as to what kind of interactivity is needed in a certain program or in a particular learning situation. After that, they need to think of ways to activate each of the different types of interaction, and at the same time to harmonize them for optimum result.

Interaction can occur in different forms. Depending on timing of the interaction it can be categorized into the synchronous and the asynchronous interaction. It is notable that asynchronous interaction rarely takes place in other media (Park, I. W., 1999: 120), whereas on the internet it frequently occurs as video document, lecture notes, supplements, electronic bulletin board, discussion rooms, cyber labs, e-mails, computer conferencing, etc.

Interaction can also vary according to the parties involved. It could be between (1)the learner and the content, (2)the learner and the tutor, (3)the learner and the operator of the program, or (4)between different learners. Interaction between learner and the content includes task selection, learning pace control, and data collection initiated by the learner, who makes selective use of the delivered content according to one's own needs. The first kind of interaction is dependent upon the interactive instructional design of the hypermedia.

Interaction between the learner and the tutor often takes place in the form of the tutor's feedback regarding to learner's performance and questions. To facilitate this interaction requires optimal class size and an environment amenable to networking, where various communication mechanisms such as electronic mail, bulletin board, database, and discussion rooms are accessible to the learner. These means are also used in interaction between different learners and they enable collaborative learning among a large group of participants who may be geographically dispersed. Besides engaging in instructional interaction, the

main purpose of which is to accomplish educational tasks, learners tend to participate actively in social interaction via chatting rooms and e-mail (Johnson, 1995; as cited in Chung & Kim, 1999). The program operator should stay involved in one way or another in these interactions so that he/she may spot technical problems as they arise and fix them as quickly as possible. The operator should also be able to access the different classes that are in session and answer any technical question.

There are a number of approaches to take in designing the e-Learning program based on various theories: behaviorism, cognitive theory, constructivism, learner control theory, and interaction principles from human-computer interface perspective. The behavioristic perspective suggests differentiated stimuli, clear objectives, educational content broken down and sequentially organized, and reinforcement by diverse feedback as keys to promoting interactivity. The cognitive approach, on the other hand, proposes attracting the learner's attention and leading the learner to recall and reactivate his/her storage of prior knowledge, by beginning sessions with introductory questions and going into presentation of knowledge in hypertext form (Gagn , 1985; as cited in Im, 1999). According to experts who advocate the constructivist approach, vigorous interactivity can be fostered by sophisticated use of frames in interactive designing. From the learner control perspective, it is best to store and organize online a guidance system, a learner adaptive system, and learning progress, which should then be turned into a database and analyzed. Lastly, there are theories adopting the human-computer interface (HCI) perspective, such as the button theory and agent theory.

C. Individualized and Self-directed Learning

E-Learning has made it possible for learners to take their own

initiative in learning, while providing the kind of learning that suits their individual characteristics and needs. More specifically, it guarantees the learner's right to choose the content, level, amount, speed, frequency, timing and place of learning.

According to scholars who emphasize learner's autonomy, self-directed learning occurs when the learner has control over the learning process - in other words, he/she has the ability to remove obstacles to learning in terms of time use - and takes his/her own initiative in learning, including the creation of a learning environment most appropriate for oneself and one's goals (Knowles, 1975; Hahn, 1999). Self-directed learning is a concept which incorporates self-learning, self-teaching, and self-direction. It is especially effective for adult learners, who are encouraged to recognize the existing conditions of learning and to overcome the institutional deficiencies through voluntary efforts for modification and achievement.

A number of pre-conditions must be met to achieve effective self-directed learning, so that the learning environment is amenable to the learner's autonomous participation. One of the important prerequisites to successful self-directed learning is the appropriate choice of curriculum. The web-based method is suitable for subjects which requires learner-centered and creative problem solving activities. It can also work well for the subject of technological curricula involving drill and practice. Curricula that demand simulation, discovery learning or the delivery of diverse forms of information are also fitting for e-Learning. It is of utmost importance that the curriculum meets the learner's needs and has clear and achievable objectives. The content should be accurate, objective and relevant to the aims of each curriculum. It should be composed of the most up-to-date information, and should include extensive as well as in-depth information in case there is demand for

more. The curriculum should be designed so that it is easy for the learner to locate where to pick up the information and the title of the web page should succinctly reflect what is to be delivered.

Another critical pre-condition is an instructional strategy that is appropriate for the e-Learning. Because e-Learning is carried out voluntarily by the learner, each program needs to be strategically managed so as not to diminish the learner's motivation. To meet this requirement, the web-page should be designed to support the effective use of multimedia material and easy printing and downloading. The help function should serve as convenient guide for learners who face difficulty in using the web-page. The web-content should also foster each learner to progress at his/her own pace. It should thus have the capacity to assess the learner's prior learning, and to enable each one to freely choose the amount, frequency, pace, level, time and place of learning. It is especially important that the instructor provide aid when there is demand. Other significant considerations include frame design and composition, more specifically: spelling, letter type and font, amount of information displayed, appropriate placing of emphasis, clarity and legibility of display, performance of special functions of graphics, appropriate help key advice, convenience of re-checking content, impact of visible effects, and attractiveness of design, etc.

No less important is the prerequisite of proper evaluation on two points, the criteria and method of learning activity. To accurately and reasonably evaluate learner's performance, it is essential that students are closely monitored in their participation and achievement as a result.

Last but not least, convenience of data collection and use is a key to successful self-directed learning. The web page should provide tools, in the form of databases, search function, hypertexts, etc. that help learners to access information quickly and easily. The design of the web page

should facilitate menu selection and make it speedy as well as easy to change and return to a screen. The icons should be functional and links need to be placed accurately on the point. For handy use by learners, the file size of multimedia data should be adequate.

D. Cost-effectiveness

The cost-effectiveness of e-Learning is a crucial issue in mainly two aspects: (1)the reasonableness of fee charged to the learner. (2)its cost advantage over other forms of education and training.

Among the plausible standards for estimating the cost-effectiveness of e-Learning, the most fundamental rule is perhaps to consider the level of total customer satisfaction measured against the cost of providing the service. In this case, the customer is the learner who participates in the e-Learning program - or in some cases the employer of the learner. It thus seems that evaluating the cost-effectiveness of e-Learning is basically not different from evaluating that of other forms of education and training. However, the cost of providing e-Learning requires a different system of calculation, and compared to the traditional education and training system, is more seriously affected by the number of program participants. Some scholars explain this as a proof that the e-Learning is relatively low-cost compared to the traditional education and training system in the classroom. According to them, e-Learning is more economical than the traditional in terms of direct expenses and opportunity cost (Oliveira & Rumble, 1992: 18-20). From the economic perspective, e-Learning is an educational alternative to save on direct expenses and to reduce opportunity costs, such as time input.

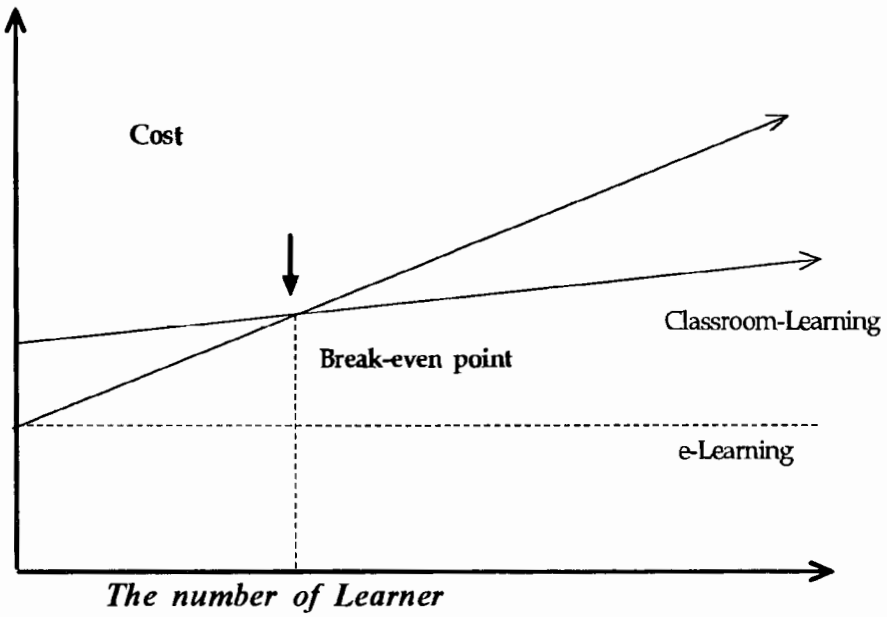
E-Learning allows financial investment and capital for infrastructure, to substitute for the traditional labor-intensive teaching methods. This has

the long-term effect of saving on the expenses of acquiring the necessary personnel and facilities, including classrooms and labs (Oliveira & Rumble, 1992). Substantial costs of education is the sum of fixed cost, which includes the costs of curriculum development, facility development, and management, and marginal cost (the cost increased by the addition of a learner). An e-Learning system requires greater investment in facilities compared to the traditional system, but the cost-effectiveness of the e-Learning system dramatically increases as the number of students rises. The size of the learner group is thus a significant factor determining cost-effectiveness (Oliveira & Rumble, 1992). In other words, the economics of size is more important in the web-based than in the conventional system of education and training. Philips (1999) compared the costs of the web-based and classroom-based training for groups of different sizes in <Table II-1>. This table was meant to show that web-based system requires a substantial amount of initial capital investment in facilities compared to the classroom learning, but as the number of learners increase, the former can benefit from dramatic reduction in training cost per learner. J. I. Kim (1999) also shows a similar cost comparison (see Figure II-1). He noted that although e-Learning costs a lot more in the early stages than does the traditional time and place-bound learning, its maintenance becomes more economic as the number of learners increases.

Table II-1. e-Learning Cost vs. Classroom-Learning Cost

		Classroom-Learning Cost	e-Learning Cost
Cost of course development		$ 50,000	$ 150,000
Traffic & lodging charge		1,000	0
Textbook cost per person		50	0
Instructor fee per course		2,000	0
Total training cost	20(명)	63,000	150,000
	40	76,000	
	60	99,000	
	...	...	↓
	140	151,000	
	500	375,000	
	1,000	700,000	150,000

Source: Philips, J. J. (1999). HRD Trends Worldwide. Houston: Gulf Publishing.



Source: Kim, J. I. (1998). Economic analysis of e-Learning provided by the enterprises. M. A. Thesis. Yonsei U. p.29.

Figure II-1. Cost comparison between e-Learning and traditional education

Because of this distinct characteristic of e-Learning, it is difficult to use the number of learners as a rule for evaluating the cost-effectiveness of a program in its early stages. It is also as difficult to set a standard on facility development that is applicable to all types of e-Learning providing organizations, which may be enterprises or institutions specializing in vocational education and training. Even among enterprises, there is the variation of large corporations and small-and-medium enterprises.

It is also claimed that e-Learning is cost-effective because it reduces opportunity cost, which is especially important for training in the enterprises. Opportunity cost refers to the material and time input such as transportation, accommodation and meals, etc., which accompany the costs purely pertaining to the provision of education and training itself.

It is related to the maintenance of flexibility of the education and training system. In other words, e-Learning, prized for its flexibility, can reduce the burden and loss of the learners about vacuum of their duties at work for education and training. Accordingly, both employers and employees praise e-Learning for a cost-effective training system in terms of opportunity expenses. The traditional time- and place-bound education and training, on the contrary, usually takes place in a training facility away from the learner's workplace. For this kind of training, much of the training costs were often used to cover the charge for transportation, board and lodging. However, e-Learning allows the learners to save on the opportunity costs by reducing time spent on moving from work place to the training facility. This also guarantees workers adequate time for economic activities. Such as a saving on financial and time input can ultimately reduce opportunity cost.

As mentioned previously, cost-effectiveness of education training is determined by the customer's total satisfaction of quality, and the same

is true of e-Learning. The quality of education and training services can be assessed by completion rate, national recognition, external assessment by authoritative institution, and internal assessment, but the most decisive standard is customer satisfaction. To accurately appraise and to enhance the effectiveness of e-Learning, it is essential to gather the opinions of the learners who participate in the programs. The crucial thing to remember in assessing vocational training is that the program's objective is not to enable the participant to achieve a level of academic excellence but to help that person acquire a certain skill or vocational competency. Whether or not that goal has been accomplished will decide customer satisfaction of the program (Oliveira & Rumble, 1992). If the vocational education and training was carried out online, the quality of course material and support system will be one of the central considerations.

In conclusion, there are mainly two considerations that need to be made to estimate the cost-effectiveness of e-Learning. First, one must look at how economical were the direct expenses of education and opportunity cost. Second, one must fathom to what degree learners are satisfied with the quality of educational service provided.

As demands escalate for the development of vocational competency through education and training, e-Learning appears to be a promising way of expanding learning opportunities for workers who need to maintain a working life while learning, on the one hand, and a tool for providing vocational education and training for job-seeking adults.

Ⅲ. e-Learning in Korea

E-Learning in Korea revolves around mainly two poles. One pole is the 'cyber universities' supported by the MOEHRD and the other is the institutions operating e-Learning programs sponsored by the MOL. These two poles have something in common; that is, they contribute to expand educational opportunities beyond the limitation of time and space in terms of the life long education.

1. e-Learning in Cyber University

The pilot cyber university project initiated by the MOEHRD in 1998 led to the creation of the first generation of cyber universities, among which 9 were approved by the ministry in March 2000 under the Lifelong Education Act legislated in August 1999. The cyber university is already a great influence on the lifelong education for adults, and the MOEHRD will continue to implement policies that will have significant impact on all aspects of e-Learning.

A. Institutions

After the pilot project on cyber universities ended in February 2000, MOEHRD approved the establishment of 9 cyber universities on December 1, 2000. These schools opened in March, 2001. <Table III-1> has the basic information on these universities. With the opening of cyber universities, Korea has fully entered the era of the web-based distance education, which allows disadvantaged groups to get more opportunity for good quality of education.

Table III-1. Cyber Universities in Korea (18, 19)

	Legal status	Name of Cyber University	Departments	Quota	
Bachelor's Degree Course	Juridical Foundation (consortium)	Open Cyber University (OCU) (14 colleges)	· Internet Contents · Internet Business Administration · Computer Design · Internet Linguistics (4 departments)	800	Open Cyber University Consortium Chairman of the Board : The President of Sungkyunkwan U SungkyunKwan U, Kangnung U, Kongju U, Dongduk U, Pukyong National U, Pusan University of Foreign Studies, Sungshin U, Soonchunhyang U, Youngin U, Inje U, Inha U, Cheju U, Chung-ang U, Chungbuk U,Youngsan Info-Comunication Co. Ltd, Joong-ang Daily newspaper
		Korea Cyber University (KCU) (36 colleges)	· On-Line Practical English · Venture Business · Law · Information & Telecommunications · Digital Media Design (5 departments)	900	Consortium University Cyber Education of Korea Chairman of the Board: The President of Yonsei U Yonsei U, Kwangwon U, Kyungnam U, Konkuk U, Kyonggi U, Gyeongsang U, Kyongju U, Keimyung U, Kwandong U, Kwangwoon U, Catholic University of Daegu, Hanbat National U, Daejin U, Dongduk U, Dongyang U, Myungji U, Mokwon U, Paichai U, Pusan National U, Sham-yook U, Sangmyung U, Sejoung U, Ajou U, Yonsei U, Youngnam U, Wooksuk U, Ulsan U, Wonkwang U, Inha U, Chonbuk U Jeonju U, Chosun U, Changwon U, Hannam U, Hanyang U, Honam U, and Boryung Pharm, Digital-Chosun Newspaper etc.
	Juridical Foundation (consortium)	Korea Digital University (KDU) (7 colleges)	· Digital Business Administration · Digital Information Studies · Digital Media · Culture & Arts · Digital Education · Social Welfare · Applied Linguistics (7 departments)	900	KDU Education Foundation Chairman of the Board: the President of Dong-a Daily Korea U, Soongsil U, Hongik U, Duksung women's U, Kwangju U, Hallym U, Andong U, and Dong-A Daily, Samsung SDS, IBM Korea etc
		Seoul Digital University (SDU) (22 college)	· Law · Business Administration · Information Studies · International Area Studies (4 departments)	800	Digital School Foundation Chairman of the board : President of Dong-a U Dong-A U, Taegu U, Hanbat U, Duksung Women's U, Dongsea U, Dongeui U, Miryang U, Catholic University of Pusan, Pusan National University of Education, Samchok U, Sunmoon U, Silla U, Youngsan U, Ulsan U, Wankwang U, Cheju National University of Education, Cheju U, Changwon U, Korea Polytechnic U, Korea Maritime U , Handong U, Halla U, and MK Husdaq

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	Legal Status	Name of Cyber University	Departments	Quota	
Bachelor's Degree Course	School Foundation	Kyunghee Cyber University	· Media Creative Wrting · E-Business · Cyber NGO Studies · Digital Media (4 departments)	800	Kowhang School Foundation (Kyunghee University)
		Sejong Cyber University	· Hotel & Tourism Management · E-Business · Game PD · Cartoon & Animation · Internet (5 departments)	500	Daeyang School Foundation (Sejong University)
	Juridical Foundation	Seoul Cyber University	· School of Social Policy · School of Economy, Commerce & Computer · School of Information and Telecommunications (3 schools)	900	Dong-Oh Foundation Chairman of the Board: Kim Sun Hwa (Representative Director of Woongjin Development)
	School Foundation	Semin Digital College	· English Interpretation & Translation · Hotel & Tourism Management · Digital Media (3 departments)	120	Kyungbuk School Founadation (Kyungbuk Foreign Language Techno College)
		World Cyber University	· Social Welfare Studies · Applied Music · Internet Business · Medicinal/Health Food Studies · Tourism, Hotel & Restaurant Business	500	Sung Ryoung School Foundation (Seminary-Hansung)

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Seven of the nine cyber universities have bachelor's degree programs and the remaining two offer associate degree program. In terms of the formation, four cyber universities have been established by consortia of universities. Another four cyber universities have been founded by school foundations and one by a private foundation. It is notable that in the formation of these schools, joint management is preferred over independent one. It appears that these cyber universities have chosen collaboration as a way to increase exchange among universities with different specialization on the one hand, and to minimize the costs curriculum development on the other. Some cyber universities have joined hands with enterprises that have experience in cyber education system and e-Learning, or even with media corporations in management. Cyber universities formed by consortia of universities have set up credit exchange programs that recognize credits earned by students in the universities they are enrolled in. They also offer curricula developed jointly by their professors.

As of July 2001, the MOEHRD has passed the application of five cyber universities among 16 universities in the first screening. Two other cyber universities that had filed for government recognition have been granted approval (Digital Times, July 5, 2000). These cyber universities plan to recruit 4,800 students in 34 programs, and the final approval will be issued in October 2001. When these 7 cyber universities open next year, the total number of cyber universities will be 16 which are plan to recruit approximately 10,000 students.

B. Educational courses

Cyber universities are presently offering both academic courses and applied courses to meet the demands of adults for re-education and

continuing education. Examples of applied programs include Colloquial English, Game Producing, Cartoon & Animation, Digital Multimedia Designing, etc. Some cyber universities have developed courses to help students understand the characteristics of the cyberspace where teaching and learning take place, such as 'Cyber Ethics' course or 'Introduction to Cyberspace.' These classes are usually mandatory. Considering that one of features of `cyber education is the interaction among unknown and invisible participants, these courses are meaningful. It is recommended that other cyber universities follow suit in these efforts.

C. Students

Students are recruited through regular screening. The applicant's high school record is one of the critical factors deciding the result. Special screening focusing on the applicant's work experience accounts for a smaller portion of the student recruitment. If cyber universities are to further expand opportunities for lifelong education, more students should be accepted through special screening and the standards of application screening should place greater weight on work experience.

Table III-2. Distribution of freshmen in cyber universities by age, educational achievement, and occupational characteristics

(Unit: %)

Groups		Percentage
By age	teens	5.8
	20s	46.3 (early 20s : 19.1) (late 20s: 27.2)
	30s	32.0
	40s	13.5
	50s	2.3
	60s	0.1
	Total	100.0
By education completed	high school	81.5
	2-year (junior/tech.) college	8.9
	4-year college/university	5.0
	graduate school	0.9
	passed high school equivalency diploma exam	3.8
	Total	100.0
By type of occupation/ industry of employment	public organizations	5.3
	office administration	28.6
	manufacturing	6.6
	distribution	2.3
	service	7.6
	finance & insurance	3.2
	military	1.1
	others	20.8
	unemployed	24.5
	Total	100.0

Source: Statistics on Cyber Universities. Lifelong Education Policy Division, Ministry of Education and Human Resources Development. 2001.

In 2001, statistics on student recruitment show that cyber universities were not so different from the traditional universities which is campus-based in terms of standards for applicant selection. The distribution of students by age shows that young people in their 20s made up 46.3% of the total freshmen body. However, the 30s group rose as the largest age group accounting for 32% of the freshmen body, followed by the late-20s group with 27.2% and the early-20s group with 19.1% (see <Table III-2>). Distribution of freshmen by prior academic achievement showed an absolute majority of 81.5% taken up by high school graduates, followed by 8.9% of 2-year junior/technical college graduates, 5.0% of 4-year college/university graduates, and 3.8% of people who passed high school equivalency diploma test. A very small minority of 0.9% consists of Master's degree holders. Categorized by the status of employment, 28.6% of the freshmen in cyber universities were found in office jobs, while 24.5% were unemployed. 20.8% of the first-semester students were employed in jobs other than office work.

In sum, the student body of cyber universities was concentrated in the 20s and 30s age group, who have completed up to high school education and the majority of working students among them hold office jobs. The characteristics in the composition freshmen in cyber universities are not so distinct from those in the campus-based universities. If the future of cyber universities is to become established lifelong education institutions, the applicant screening process should be modified to allow greater diversity in age, educational achievement, social strata, and jobs in their choice of students.

D. Professors

Professors are appointed and assessed by standards similar to those in

the traditional campus-based universities. It appears that attention and effort has mostly been lacking in this regard, as cyber universities are still in their beginning stages. Despite the distinct characteristics of the cyber university, such as greater ratio of lecture in curriculum composition and dependence on communication media, the instructors are screened based on their scholarly achievement, much in the same way that traditional universities are selecting their professors. Among scholars who have beeb employed as professor in cyber universities are many who have excellent scholastic achievement. But these competent researchers often find themselves caught in a conflict between their administrative and teaching tasks and their desire to continue research. As a solution of this dilemma, it is necessary to clear qualifications and roles of professors fitting the reality of cyber university as institutions unfit for research orientation.

Most cyber universities do not have a set of clear standards for evaluating the performance of their professors. Many are now in the process of developing these standards, while others have settled for adopting the standards used in traditional universities. In the cyber universities there is a lack of agreed understanding on the range and amount of tasks that can be assigned to professors, which is a prerequisite to setting the performance evaluation guidelines. Cyber universities need to develop criteria and standards for performance assessment as soon as possible. This effort will make the education standard for the professor distinct from those used in the traditional universities where the professors' accomplishment in research work is usually emphasized. Each cyber university should define the requirements for professors in its own way and then develop a model regarding the employment and management of these professors.

In regard to the training programs of instructors, cyber universities in

general offer one or more programs on instructional design and media production. These programs usually take place before the semester starts or just after it has begun. Some cyber universities provide these training programs several times during the year when professors demand them.

An examination into the composition of faculty in cyber universities shows that these schools are highly dependent on adjunct professors and part-time lecturers. The number of professors with tenure is about five per cyber university. This shows that most cyber universities has not yet a long-term plan on employment, and are thus unable to appoint tenure professors and part-time lecturers in connection with the master plan on curriculum management. Cyber universities are supplying their personnel demands in the way traditional universities employ part-time lecturers, and the side effects of this policy shown. Many of the instructors in cyber universities lack understanding of their work responsibilities, which are different from the traditional institutions, and have trouble adjusting to the new tasks that are added on to their workload as each semester progresses. Discontent with the conditions of their contract, misunderstanding and conflict often press these professors to resign, even during the semester.

E. Enrollment

The 9 cyber universities in operation had the capacity to accept 6,220 new students each year, but actual enrollment was 5,217 students, or 83.9% of their full capacity. Enrollment rates varied as some cyber universities record more than 90% in enrollment while others a meager 50%. Tuition in each school approximated on a 15-credit program basis, ranged between 830,000 to 1,500,000 Korean won, showing substantial variation. Most schools have adopted the policy of calculating tuition by the number of credits the student has signed up for.

F. Administration and management

1) Course management

Most cyber universities keep a record of student participation by automatically checking when students log in. Some schools, in addition, follow up on the student progress by checking for the amount that the student has learned and recognize his/her participation only when the student has completed the class 100%. In general, students who have attended less than 2/3 of the sessions are given a failing grade. The majority of the cyber universities monitor both the performance of the students and the teaching activities of the instructor. Via e-mail, the schools encourage students to participate in the lecture sessions, and some professors even make telephone calls to encourage as well as counsel students. Professors, on the other hand, are urged to make prompt responses to questions posted by the students when there is a lack of feedback.

Discussion rooms and Q&A rooms on the website are common

features in most of the cyber universities. In the discussion rooms, the instructor introduces a topic to leading students to present their own ideas and to discuss among themselves. In Q&A rooms, all the questions from students are answered by professor or the teaching assistants.

In about half of the cyber universities, the programs involve some off-line class activities. These off-line classes take place once a month, or during the off-line lecture week in the semester. In some cases off-line classes are organized for presentation of student's assignments or for final exams. Even when off-line classes are not part of the official policy, some cyber universities allow off-line lectures by professors when there is student's demand and provide audiovisual recording of the session for students who could not attend in person. Off-line classes are also offered in cases where the curriculum required practice or experimentation. In some cases, the professor organizes local off-line meetings to promote friendship and cooperation among students.

To facilitate the smooth management of curriculum, most schools employ additional personnel, such as teaching assistants. The teaching assistants help professors give lectures, organizes and disseminates data needed for the curriculum, answers questions posted by students, makes announcements, manages the bulletin board, and carries out other miscellaneous tasks.

2) Evaluation

In general, the cyber universities do not have an overarching policy on student evaluation. Setting the standards for assessing the learner's performance is almost entirely entrusted to the professor. At most, the schools have a set of recommendations encouraging professors to take into consideration student's participation in the discussion rooms and Q&A rooms, and the assignments he/she has submitted.

Professors base their evaluation of student's performance on attendance, mid-term and final exams, quizzes, assignments, participation in the discussion room and/or Q&A room, etc. Tests are usually conducted on-line, but some cyber universities carry out off-line tests as well.

3) School year

The school year in the 9 cyber universities is either double-semester (7 cyber universities) or tri-semester (2 cyber universities). Four cyber universities run both the regular semesters and summer winter sessions during the break. Under the tri-semester system, the first semester is from March to June, the second semester from July to October and the third semester from November to February of the next year. The tri-semester system limits students to sign up for up to 20 credits in the first and third semesters, and no more than 10 credits in the second semester.

G. Course Contents

The development of course contents in the cyber universities was analyzed by examining the following aspects: 'existence of an independent instructional design team,' 'method of contents development, management and lecturing,' 'promotion of interactivity via bulletin boards,' 'provision of feedback on assignments.'

It was found that in most of the cyber universities there is no separate team with an exclusive task of instructional design. Schools, however, showed a general intention to form such team in the future.

Steps taken for the provision of on-line lectures generally consisted of four components: (1)writing of the material to be delivered, (2)

instructional design, (3)instructional media production and (4)course management. The professors author the material while the instructional design team or the contents development team takes on the instructional design. This is carried out by experts based on the material written by professors, and revised through negotiation of authors and the instructional design experts. Instructional media production is in some cases done by the media production team or commissioned to another company. Professors and their assistants run courses, the one taking care of the administrative work and the other the educational substance of the curriculum. Most cyber universities have Q&A boards, which enhance interactivity. Feedback systems for effectively responding to the student's progress in learning are operated in 1/3 of the cyber universities.

H. Hardware and platform

Cyber universities were screened by the MOEHRD before approval, which was focused on the hardware and software that these institutions have. There is no significant gap between cyber universities in the level of hardware and software they have, which are in general adequate.

In terms of the functionality of the platform, the instructor module, learner module, and administration module in these institutions were up to a certain level of quality, but there was the problem of a personnel shortage. The instructor module consists of several menus, which include: professor's curriculum vitae, syllabus, demonstration lecture, main lecture, curriculum announcement board, bulletin board, paper, quiz, exam, discussion, attendance, grades, student information, teaching assistant management, and information forum etc. In the learner module there are: curriculum announcement, professor's curriculum vitae, syllabus, main lecture, paper, quiz, exam, discussion, bulletin board, information forum

and student information, etc. Administration module is composed of functions of managing matters of school administration, such as: student recruitment, school administration services, curricula, class registration, bulletin board, cyber classrooms, and computer system, etc.

I. Promotion and advertisement

Cyber universities try to advertise their programs by using multimedia, such as the Internet and the press or, more actively, by visiting schools and enterprises. Cyber universities affiliated with businesses also run banner ads in their websites.

J. Quality control

Maintaining a certain level of quality in education is one of the primary factors determining the success of cyber education. As a way of quality control, thc majority of cyber universities conduct course evaluation surveys on students taking the courses during or at the end of the semester. Evaluation surveys allow schools to find out the demands and suggestions of students for improvement. At times, the outcome of these surveys is used as a basis for the evaluation of professors' performance and salary negotiation. As another way of promoting quality management, three of the 9 cyber universities give incentives to professors who are in charge of curricula that are rated as being excellent.

2. e-Learning in Enterprise

In 1998, Ministry of Labor launched the pilot e-Learning project in which, MOL focused on supporting e-Learning targeting workers for developing their vocational abilities potentials. Since 1999, the number of enterprises and workers who participated in e-Learning has steadily increased.[1]

The number of enterprises that operated e-Learning programs dramatically increased from 7 in 1998 to 33 in 1999, and nearly doubled in 2000 to 60.

A. Institutions

There are a total of 60 institutions that operate e-Learning programs. The majority of these institutions, namely 44 of them, are situated in Seoul and 8 in the nearby Seoul. it shows that 52 institutions have clustered around the metropolitan and surrounding areas. The remaining 8 are in Chungchong Province (5 institutions) and Kyongsang Province (3 institutions).

Institutions providing e-Learning can also be largely categorized into three groups by their size; (a)the large enterprises with more than 300 employees, (b)the undersized enterprises with 20 workers or less, and (3)the small-and-medium enterprises ,in-between the two categories. The number of large enterprises are thirty-six while small-and-medium

1) The number of e-Learning institutions recognized by MOL dramatically increased from 7 in 1998 to 40 in 1999. Among them 33 institutions actually provided e-Learning programs. In 2000, 133 institutions were approved by MOL and 60 institutions, or 45% actually operated e-Learning programs. From 1999 to 2000, the number of institutions approved by MOL multiplied by 3.3 times and the number of institutions that actually executed e-Learning programs by 1.8 times.

enterprises nine and undersized businesses six. This means that about 71% of the e-Learning are manage and operated in the type of large corporations. Consequently, e-Learning is found to be more active in the large corporations which is similar to the case of training in the classroom setting. The systematic approach and strategies need to be taken to expand e-Learning opportunities for workers in the size of small and medium corporations.

B. Courses

This study examined e-Learning courses in therms of the number of e-Learning courses, the area of the courses and the frequency of the courses. In 2000, there were a total of 2,696 e-Learning courses offered by the enterprises and the average number of courses per institution was 57.4.

When these courses are categorized into the content area, the greatest number of courses was offered in 'the information and telecommunication' sector, followed by 'the office administration' (35.9%), and 'the finance and insurance' sector (6.9%). Courses were also offered in the areas of 'electricity,' 'machine and equipment,' etc. but only in a few instances.

More specifically, courses in the area of information and telecom are mostly related to the applied studies for information and telecom, application, programming, and database. In the area of office administration, courses were often concerned with 'financing and management' and 'administrative support.' Without considering the area of the courses provided in corporations, the most frequently found course titles were: Comprehensive Management and Administration, Database, Internet, and Excel (Microsoft). The ten most popular courses account

for 39.2% of all courses provided in corporations.

The above finding signifies that curriculum development has been mostly focusing on these two areas of 'information, telecom,' and 'office administration.' Moreover, theory-oriented and general courses are more highlighted simply because these courses can be more easily developed. Accordingly, investment at present is being made redundantly on the development of similar programs. Therefore, efforts are required to be made to diversify curricula and courses according to the needs of the corporations.

Nearly all of the e-Learning courses in the enterprises, or 92.1% are adjusted to the basic level for training. Only 7.9% of all courses are dealing with advanced level. This means that there is a substantial lack of e-Learning programs for workers with experience and expertise. Likewise, most of e-Learning courses can be characterized as general and basic for job training, not practical or applied. Therefore, innovative plans are required to solve the problems mentioned above.

C. Learners

The expected average number of learners for each e-Learning course in the enterprises was 204.5, but in actuality only 52.0 learners on average participated. In percentage points, the actual participated number of learners was a meager 25.4% of what was planned. These figures showed that institutions carrying out e-Learning for workers were facing difficulty in recruiting participants.

In the general level of e-Learning courses, the average number of students enrolled was 53.6, which is only 25.7% of the expected average number of students, 208.5. In the expert courses, the average enrollment was 32.7 learners, or 20.8% of the planned average of 157.1. From

these results it can be inferred that expert level courses were having greater difficulty in recruiting students than do general level courses.

D. Instructors

The factor of instructor in e-Learning is examined in the type of employment and the number of students per instructor. Among instructors of e-Learning in enterprises, 27.5% were employed full-time, while 72.5% were part-timers. General level courses were more frequently taught by part-time instructors (72.8%) than by full-time instructors (27.2%), which was similar for expert level courses, 67.7% and 32.3% respectively. In case of the number of students per instructor there were 22.7 and 22.3 learners respectively for general and expert level courses.

E. Completion rate

The rate of completion for expert level courses was 83.4%, slightly higher than 77.8% in general level courses.

F. Course management

e-Learning courses in enterprises have set standards to certify successful completion of learners. On a scale of 100, the average score that the learner has to earn to be certified was 66.9, and the most frequent score for certification by institutions was found to be 70 in a range from 60 at the low and up to 85.

Common evaluation tools for learner achievements and performance include learning progress, attendance, test results, assignments and

participation rate. The use of these tools and how much each criterion is weighed in grading learners is shown in <Table III-3>.

Table III-3. Learner evaluation criteria and information

	Number of Institutions		Grading				
	reflected	mandatory	average	standard deviation	mode	maximum	minimum
Learning progress/ attendance	49	27	40.6	13.8	50	70	5
Exam (evaluation)	49	18	44.3	17.6	30	90	10
Assignment (papers)	33	10	24.0	10.8	20	60	5
Participation in activity	18	4	15.6	9.5	10	30	5
Others	4	0	15.0	7.1	10	20	10

On the whole, attendance, learning progress, and tests were the top criteria for assessing learner's performance in most institutions. These criteria are weighed as double as the value of other criteria. More than half of the institutions also require assignments as an important tool to evaluating the learner's performance. On the other hand, learner's participation in learning activities is not frequently used as a criterion. An effective way of motivating learners to be more active in participation and interaction could be to use the learner's participation as one of the significant evaluation tool in e-Learning courses.

G. Contents

The factors of contents are analyzed into three categories; the method,

the type and the instructional design of the content. Contents for e-Learning courses are mostly developed internally by the institutions providing the programs or externally through outsourcing. The former case accounted for as much as 76.9% of contents development, while the latter case accounted for only 23.1%. These figures indicate that most of e-Learning-providing enterprises develops contents in their own way. When categorized into program levels, the contents of expert level programs were more developed within the enterprises (89.2%) than in the case of general level programs (75.8%).

Most of the contents (88%) were developed in the HTML format. White Board format took up 7.2% and VOD format 4.8%. In the expert level courses, the proportion of VOD format contents was greater than those in the general level courses. In enterprises that independently provide and manage e-Learning programs to their employees, 54.6% of their expert level curricula were developed in VOD format. On the contrary, in expert level courses provided by institutions commissioned by enterprises, 82.2% of the instructional contents were in HTML format. When comparing the different level courses in commissioned institutions, the expert level courses in VOD format was 15.3%, that is 6.1 times greater than that of general level courses (2.5%). This may be explained by the fact that VOD format is more convenient tool for delivering technical and practical contents of the expert level courses,

than in delivering the theoretical and basic contents of the general level courses.

In terms of instructional design, it was examined whether or not simulation and game were part of the contents design. At the general level, 84.3% of the courses did not have simulation or game in their contents, while only 15.7% included simulation. Courses that included not simulation but game in the contents were only 0.4%, and only one

course incorporated both elements in the content. Similarly, in the case of expert level courses, as much as 87.3% of the courses had neither simulation nor game in their contents, while 12.7% had simulation only, and none had both elements. On the whole, the contents of these programs have not yet been designed according to the characteristics of levels and participants. Therefore, many point out non-diversification of contents in the education/training field.

H. Hardware and system

The factors of hardware and systems are examined as follows. 87.2% of the e-Learning institutions possess their own computer hardware systems. In other words, 41 of 51 institutions that responded to this question have their own computer hardware, including server. 12.8% or 6 institutions had leased these equipments.

As for learning management system(LMS), 37 institutions or 80.4% were using a system that they have developed on their own. Nine institutions or 19.6% had purchased management systems from outside.

I. Promotion and advertisement

Internet was found to be the most popular medium of promoting e-Learning programs sponsored by enterprises. Forty institutions out of the 51 institutions responded that Internet was used as the advertisement tools. The number of institutions employing other medium of promotion was much lower. Twenty-one institutions were using paper-based publications, followed by 8 institutions that resorted to making promotional visits, 4 used mass media, 2 exhibitions or fairs. Only 1

institution held promotional seminars and special lectures, and likewise only 1 institution used telemarketing as a promotional tool.(Institutions were allowed to check more than one item in their response.)

The fact that e-Learning programs are advertised almost exclusively through the Internet, suggests that the disadvantaged groups that have relatively lower access to the Internet are not adequately informed of e-Learning opportunities. Consequently, the government should enforce their support for these disadvantaged groups by devising and activating more effective promotion/ads to them.

3. Findings

Based on analysis of e-Learning in practice in Korea, the following three problems were mainly found in both the cyber universities and the enterprises.

First, e-Learning programs are designed and provided for a limited target group. Despite the original intention of promoting e-Learning as a system of lifelong learning, the actual target group of the existing e-Learning programs is not much different from the target group of conventional classroom-based education and training.

Secondly, there is insufficient and inefficient quality control of the contents and methods of instruction. Web-based programs in Korea need to go beyond transplanting the conventional method of education and training right on to the web medium, and should take greater advantage of the special merits of e-Learning.

Finally, the roles of different actors involved in e-Learning provision, such as instructors, program managers, and public administrators, need to be better clarified. Furthermore, these actors should be encouraged to increase their expertise in respect to their roles.

Ⅵ. Public perception and demands of e-Learning

1. Public opinion on e-Learning

A. Characteristics of sample group

The group of respondents to the survey can be described by the following characteristics: gender, age, residential area, occupation and educational achievement. <Table VI-1> is a layout of all these characteristics defining the respondent group.

Table VI-1. Characteristics of the sample group

Characteristic	Categories	Number of respondents	Percentage (%)
Gender	male	520	51.8
	female	485	48.2
Age	20 ~ 30	295	29.4
	30 ~ 40	316	31.4
	40 ~ 50	265	26.4
	50 ~ 60	129	12.8
Administrative district of residence	large cities	503	50.1
	small and medium cities	373	37.1
	provincial counties, towns, and villages	129	12.8
Occupation	entrepreneurs	76	7.6
	office administration workers	114	11.3
	technical workers	369	36.7
	housewives	126	12.5
	students	170	16.9
	workers in agriculture/forestry/ fisheries/etc.	150	14.9
Education completed	junior high school or less	46	4.6
	high school	249	24.8
	college/university	635	63.2
	graduate school or higher	75	7.5
Total		1,005	100

In terms of gender, 51.8% of the respondents were male, and the remaining 48.2% female. The 30 to 40 age was the largest age group composing 31.4% of the respondents, while groups of people from ages '20 to 30' and from '40 to 50' made up 29.4% and 26.4%, respectively. Much smaller was the proportion, of 12.8%, of respondents in the 50 to 60 age group.

In areas of residence, the sample group can be categorized into the majority group of residents of large cities (50.1%), residents of small and medium sized cities (37.1%), and residents of smaller villages and towns (12.8%).

The sample group can also be classified by occupation. The greatest number of respondents were workers in production lines or in technical occupations (36.7%), followed by white collars and self-employed businessmen, who composed 11.3% and 7.6% of the group respectively. Housewives made up 12.5% of the sample group, students 16.9% and workers in agriculture/forestry/fishery/others 14.9% of the sample.

4.6% of the respondents had completed up to junior high school education or less, while 24.8% had high school diplomas. 63.2% had received higher education up to the college/university level, and 7.5% of the sample had pursued an even higher education in the graduate schools. On the whole, the sample group adequately reflects the demographic characteristics of Korea's population.

B. Awareness of e-Learning

In analyzing the public's awareness of e-Learning, two different approaches were taken: (1)to determine level of awareness of e-Learning in general, and (2)to estimate level of awareness of policies on e-Learning. The policy aspect of e-Learning was further broken down

into policies on cyber universities and on enterprises operating e-Learning.

1) Awareness of e-Learning in general

To the question: "Are you aware of the fact that diverse education and training programs are being conducted through the medium of the Internet?" 93.2% of the sample, or 937 respondents answered 'yes.' This shows that awareness of e-Learning at a general level is very high among Korean adults. There was little variation in the degree of awareness among different groups of the sample, all of them high aware of e-Learning in Korea. From the result it can be inferred that e-Learning is becoming more common for all the different groups defined by age, gender and residential area. Meaningful variance was found among groups of varying levels of educational achievement, which showed that people who had received higher level of education were more likely to be aware of e-Learning. Notably, the group of respondents who had received up to junior high school education or less showed considerably lower level of awareness. It appears that special support should be given to promote participation in e-Learning in this less-educated group.

2) Awareness of e-Learning universities

Sample group was asked if they knew that they could earn degrees in cyber universities. More than half, or 57.9% to be more precise, replied positively, which indicated that the public was relatively well aware of the existence of cyber universities. On the contrary, as much as 42.1% of the sample responded negatively to the question. The result shows that cyber universities should exert greater and more strategic effort to promote their programs to the public.

3) Awareness of e-Learning provided by enterprises

The sample group was asked: "Did you know that the government provides financial support to cover the costs of e-Learning for workers?" As much as 70% of the sample replied that they had never heard of it, while only 30% replied that they were aware of the scheme. Compared to the cyber universities, the e-Learning support policy in enterprises is less known to the general public. The government should try harder to inform the public of the policy on supporting e-Learning for workers.

C. On-Line vs. Off-Line Learning

1) Effectiveness of learning

The survey results showed that adults in Korea tended to think traditional off-line learning (in the classroom, for example) more effective than on-line learning based on the Internet. When asked about the effectiveness of the e-Learning versus conventional learning, 50.5% of the respondents answered that face-to-face education in the classroom was expected to be more effective. Some replied that there would be little difference in effectiveness between the two forms of learning (28.8%). Only 21.3% of the respondents believed that web-based learning would be more effective. The survey thus showed that the public in general saw limitations in e-Learning, and believed that this relatively new form of learning would not be able to substitute completely for education in the classroom. It appeared that e-Learning should be reformed and improved in a way that it may produce educational outcomes equal to or distinct from the traditional off-line learning.

2) Tuition

When asked to place the traditional off-line and the on-line learning on a relative price scale, there was a general agreement on setting the tuition for e-Learning lower than for the traditional face-to-face learning. This opinion was held by as much as 85.1% of the respondents, while 7.2% suggested that off-line learning in the classroom should be less costly, and 7.8% that the tuition for the two types of education should be similar. The general perception of e-Learning that is cheaper than the traditional off-line education can lead to the blurring of borderline between 'educational contents' specifically designed and produced for e-Learning, and 'information contents' generally accessible on the internet. To avoid this confusion, the e-Learning contents should be upgraded, refined and differentiated from the information contents. Moreover, various strategies need to be developed to effectively control the quality of e-Learning.

3) Recognition of educational achievement of graduates

Regarding social recognition of graduates of cyber universities, 66.1% of the respondents replied that the graduates should be recognized for their educational achievement on par with those of campus-based universities. From the results, it can be inferred that the majority of the public have high expectations for cyber universities. On the other hand, there was found to be a significant variation of opinion according to an academic background. It was found that respondents who had lower level of academic background was more likely to assert equal recognition for graduates and degrees of cyber universities. Especially, in the group of respondents who had completed junior high school education or less, 84.8% answered that a degree earned in cyber university is comparable to that earned in the campus-based university. The result was quite

different in the group of respondents who had received higher education in the graduate school. Only 53.3% of this elite group agreed to recognize cyber university education as being equivalent to education in the campus-based universities.

D. Rate of participation

1) Willingness to participate in e-Learning

The sample group was asked whether or not they would be willing to participate in e-Learning programs in the future. 90.8% of the respondents replied in the affirmative, while 9.2% answered to the contrary. The figures are an evidence of the great interest in e-Learning.

2) Motivations to participate in e-Learning

Following the question on willingness to participate, the respondents were asked why they would like to try e-Learning. The motivation for 69.4% of the respondents was the fact that e-Learning makes it possible for them to participate in learning at their own convenient time. The next most popular answer gaining the support of 22.3% of the respondents was that e-Learning enabled them to participate in learning at the place of their choice. A small number of people (5.3%) cited affordable tuition as a motivation for them, and even fewer people (3.0%) replied they would try e-Learning out of curiosity (3.0%)

The finding signifies that freedom from the limitation of time and place through the Internet functions to incite people to participate in e-Learning. Tuition, on the other hand, was a relatively minor issue that had little influence on potential e-Learning participants.

3) Discouragements to participating in WBET

Respondents who had replied that they had no intention of participating in e-Learning in the future were subsequently asked what would discourage them from participating in e-Learning. A substantial portion (40.2%) of the people felt that e-Learning would not be so helpful in their learning, while others noted that they were uncomfortable and unused to the new method of learning (37%). Some respondents were reluctant because they felt they lacked sufficient computer skills and were unfamiliar with how they can sign up and participate in an online program. These findings showed that two strategies were required to promote e-learning. One is to enhance the effectiveness of on-line education while the other is to provide basic computer skills and internet literacy training for potential learners.

E. Needs and expectations

1) Needs of learners

To identify the learners' needs for e-Learning, the sample group was asked which area of learning or curriculum they would most prefer if they were to choose an e-Learning program. The top two in the list of choices were foreign languages (28.3%) nd information and tele-communications (27.3%). Other choices included skills training for their occupations (10.5%), contents in current affairs and culture (9.8%), and degree-granting programs (7.1%). There were significant variations in the needs by gender and occupation. Women, in general, showed a higher preference for foreign language courses as compared to men. The needs for foreign language education was also high among office workers, while technical and production workers most preferred IT programs.

2) Expectations

An absolute majority of 95% forecast further expansion of e-Learning in the future. Only 1% anticipated a diminishing of e-Learning. 4% of the respondents expected e-Learning to maintain its current level of activity and scope. No significant variation was evident among respondents grouped by different variables.

The survey showed that the public, in general, had positive expectations for the future of e-Learning. However, these expectations for online education cannot be realized unless further development and improvement takes place to make the outcomes of e-Learning more substantial. For this, the public, the e-Learning providers and the government have their roles to play: (1)the public should maintain a close interest in e-Learning, keeping an eye on how it is developing, (2)the providers of e-Learning should continue their effort for effective quality contro,. (3)lastly, the government needs to develop and implement policies that support the growth of e-Learning.

F. Findings

The survey on the public awareness and opinion of e-Learning led to the following findings:

First, the Korean adults generally have high expectations and are well aware of e-Learning. They are willing to participate in this new form of learning. The majority has a positive outlook on the future of e-Learning as an educational trend that will expand and grow.

Second, the Korean adults are relatively uninformed about the various support system and policies measures that are being implemented by the government for the promotion of e-Learning. A more systematic effort is

necessary on the part of the government to make these initiatives well known to the public.

Third, most adults in Korea perceive e-Learning as a learning method that is lower in cost and effectiveness compared to the traditional off-line learning. Effort should be made to re-establish e-Learning as an educational alternative that produces substantial and effective outcome.

Ultimately, for the future of e-Learning, efforts for effective quality control and curriculum development should be made to realize the public's anticipation and to meet increasingly diversified learners' needs. To help more people benefit from e-Learning, it is also important to enhance accessibility through strengthening and expanding the institutional, educational and hardware infrastructure supporting e-Learning.

2. Learners' needs on e-Learning

A. Characteristics of sample group

A survey was conducted on a sample of learners who were participating in one or more e-Learning courses. The aim of the survey was to assess the learners' needs for e-Learning. The sample group that participated in the survey was further broken down into sub-groups by four variables, including gender, age, and occupation for a more in-depth analysis. The characteristics of the sample group can be seen in <Table VI-2>.

In terms of gender, the sample group of e-Learning participants was composed mostly of males (79.6%), whose number was 3.9 times greater than females (20.4%). The largest age group in the sample was from

age 30 to 40, which made up 50.7% of the whole. The second largest age group was from age 20 to 30 composing as much as 35.7%, followed by the over-40 group with 12.8% share. The less-than-20 age group was the smallest, consisting only 0.8% of the whole sample. The analysis of age distribution of sample showed that people in their 30s were currently the most active participants in e-Learning.

Classification of respondents by their occupation showed that more than half of the participants in e-Learning, namely 55.6%, are in office work. The second largest occupational group was technical experts representing 24.8% of the sample, followed by workers in sales, composing 12.1%.

Among employed workers who participated in the survey, 92.6% were working in large corporations. Only 7.4% of the respondents in employment were employed in small-and-medium enterprises. From the figures it may be inferred that most of the participants in e-Learning are employees of large corporations. This result is very different from the case of distance learning by mail correspondence. A survey on a random sample of participants in mail correspondence courses showed that workers in small-and-medium enterprises made up the largest group, or 38% of the whole (Oh, Y. H. et al., 2001). In sum, the group of employed workers enrolled in e-Learning programs were mostly males between ages 30 and 40, who were working in the offices of large corporations.

Table VI-2. Characteristics of the sample group

(Unit: people, %)

Characteristic	Categories	Number of respondents	Percentage
Gender	male	1,799	79.6
	female	461	20.4
	missing value	1	0.0
Age	below 20	19	0.8
	20 ~ 30	806	35.6
	30 ~ 40	1,147	50.7
	40 and over	289	12.8
Type of occupation	office administration workers	1,256	55.6
	salespersons	274	12.1
	production workers	74	3.3
	technical specialists	561	24.8
	others	93	4.1
	missing value	3	0.1
Type of employing organization	large corporation	2,092	92.5
	SME	167	7.4
	missing value	2	0.1
Total		2,261	100

B. Results of analysis

1) Participation in e-Learning

a. Learning place

When asked to name the place where one participates in e-Learning, 74.3% of the respondents answered that they do so at the workplace. Only 24.5% chose their own home as the site of learning online. According to these figures, e-Learning is mostly taking place in the enterprises where respondents work. Only a very small percentage of the

sample cited Internet cafes and educational facilities, 0.8% and 0.4% respectively, as the place where they accessed e-Learning.

The survey results were considerably different from the results of a similar survey conducted in 1999. In the earlier survey of 1999, 86.9% and 8.4% of the learners, respectively, chose their workplace and their home as the place they accessed e-Learning (Lee, S. K. et al., 1999). Comparing the figures, it may be noted that there is significant rise in the ratio of people accessing e-Learning at home from 8.4% to 24.5%. On the contrary, the percentage of participation in e-Learning at the workplace decreased slightly from 86.9% to 74.3%. The increased Internet access in the homes appears to be the primary cause of this shift. The figures can also be interpreted as a sign of increase in learning at home after work is finished. More people, in other words, are coming to view learning as one's own task and responsibility to develop oneself.

b. Motivation to learning

When asked about motivations to participating in e-Learning programs, 55.1% of the sample replied that it was a voluntary choice to develop oneself. Slightly lower was the percentage (44.9%) of respondents who took on e-Learning because it was a required training program provided by the employer. Although the percentage gap between the two choices was not much, it may nevertheless be understood as a sign that individuals were slowly breaking out of receiving education as an obligation and responsibility, and shifting towards making a voluntary choice and effort to learn. This meaningful trend necessitates an institutional and cultural environment that supports the individual's voluntary initiative in learning

The sample group was also asked why they chose e-Learning. Most

of the respondents liked the fact that e-Learning gave them control over time use in learning (60.5%). Another popular reason was that e-Learning made it possible for the learner to participate in learning without moving out of the workplace (21.5%).

The survey thus showed that the biggest reason why learners were led to choose e-Learning was the guarantee of control and choice over conditions of time and place for learning.

c. The number of courses taken

According to the survey, most participants in e-Learning have, during the past two years, taken at least two courses. 44.4% of the respondents replied that they had taken 2 to 3 courses, while 23% answered 4 to 5 courses. 19.5% replied that they were currently taking their first e-Learning program in two years. Less but still significant was the percentage of respondents who took 6 e-Learning courses or more in the past two years, which was 12.9%.

When the results were analyzed by sub-categories of sample group, in other words, by age, gender, occupation and size of organization employing the respondent, significant correlation was found between the four variables and the number of courses taken by the respondents.

There was, for example, a general tendency for men to take greater number of courses than women. The type of occupation also seemed to be a meaningful variable. Respondents employed in office work and sales were likely to take more courses than those in technical and production work. Moreover, employees of large corporations tended to take larger number of courses than did employees of small and medium enterprises. In sum, participation in e-Learning is lower among women, technical and production workers, and employees of small and medium enterprises than is among men, workers in office work and sales, and

employees of large corporations. To foster diversity and balance in the composition of learners in e-Learning in the future, it would be necessary to create an environment and institutional infrastructure more favorable for encouraging participation of all, regardless of age, gender and occupation.

C. Degree of satisfaction and willingness on e-Learning

1) Degree of satisfaction

Most learners were found to be relatively content with their experience of e-Learning. 63.1% expressed satisfaction (56.9% rated their experience 'relatively satisfactory' and 6.6% said that it was 'very satisfactory.'). Discontentment was found in 6.2% of the sample (4.8% rating their experience 'relatively unsatisfactory' while 1.4% said it was 'very unsatisfactory.').

2) Problems

In the survey, the participants were asked to identify problems or difficulties they faced during the course of their e-Learning. 33% pointed out that their responsibilities at work made it hard for them to concentrate on their learning. It appeared that the organizational culture at work in Korea functioned to wither workers' enthusiasm to develop their vocational competency. The second on the list was awkwardness in the instructional method, noted by 26.2% of the learners. Nearly the same number, or 23.4% of the sample, complained about poor Internet connection. The results of the survey were similar to an earlier survey conducted in 1999. On the same question, 35.2% of respondents in the 1999 survey had identified organizational culture, including pressure of

work responsibilities, as a hindrance to learning and 26.1% complained of poor Internet connection and other problems in facilities. This indicates that the problems that existed in 1999 have not been effectively dealt with. One notable difference is the increase in the percentage of respondents pointing out poor instructional method as a problem, from 19.5% in 1999 to 26.2% in 2001. This can be interpreted as a sign that people are becoming increasingly sensitized to the issue of instructional method and process.

The responses were also analyzed to find out which occupational group suffers most from which problem. Mainly people in administrative jobs, salespersons, and technical specialists expressed the difficulty of learning and working at the same time. Meanwhile, technical and production workers cited inadequate facilities as the major obstacle to learning. As mentioned previously, technical and production workers are more likely to learn at home than do workers in other occupations. It is possible that those who had accessed e-Learning programs at home found their learning environment lacking in terms of facilities and equipment, which may have caused their responses to differ from other occupational groups, responses. From the results of the survey, it may be concluded that the keys to enhancing the quality and effectiveness of e-Learning are reforming the organizational culture of the workplace, innovative instructional methods of e-Learning, and upgrading facilities and equipment.

3) Willingness to participate in e-Learning in future

Respondents were asked whether or not they would like to take other e-Learning courses in the future. As much as 96% of respondents answered in the affirmative. This enthusiasm for future participation in e-Learning was shared among participants of programs provided

independently by the enterprises as well as those commissioned to institutions outside the employing organization. In case of the mail correspondence, only 70% of participants expressed their willingness to participate again in a mail correspondence program (Oh, Y. H. et al., 2001). This showed that there was greater enthusiasm among learners for e-Learning programs.

D. Learners' Needs for curriculum

The respondents were asked which courses should be added in the next to identify their educational needs. The top two answers were expert-level work training programs, which teach skills that are directly related to one's work responsibilities (26.9%) and qualification training courses (26.4%). Other answers included; foreign language courses (18.1%), basic work skills training programs (12%), and information and telecommunications courses (7.8%). 8.8% of the respondents also requested general education courses that could help them become more culturally refined. The survey results show that learners are hoping for the development of a variety of specialized programs. In addition, it should be noted with special care that there is considerable demand for e-Learning programs that can lead participants to earn qualifications.

These results are significantly different from the results of survey conducted on a sample of adults in general discussed in the previous chapter. When the same question on needs for curriculum development was posed to the sample of general public, foreign language courses (28.3%) and information and telecommunications courses (27.3%) were the courses in most demand. It can be inferred that while the general public what little or no experience in e-Learning prefer the general courses, workers with experience in e-Learning demand more specialized

programs relevant to their work.

E. Recognition of learner's achievement in e-Learning

Participants in e-Learning programs were asked how their employers were utilizing the learning outcomes. 45.1% of the respondents replied that the employers were using e-Learning as only a way to provide learning opportunity for their employees. 26.7% said that the results were reflected in worker's performance evaluation, and 25.3% answered that outcomes were used to foster an atmosphere of education and training in the workplace. The survey thus found that the primary significance of e-Learning and its outcome was that the workers were given the opportunity for more education and training.

To activate e-Learning, it is required to build a system where outcomes of e-Learning program should be utilized for various purposes according to job position. Especially, in the angle of an enterprise, learning outcomes can contribute to provide information useful to quality control, such as upgrading curriculum. It would thus be wise for enterprises to build a systematic database of learning outcomes for future use.

F. Promotion and advertisement - the channels of exchanging information on e-Learning

The internal information network(ex. ethernet) in each enterprise often serves as the main channel for the dissemination of information on e-Learning. The majority of the participants in e-Learning programs was found to get the information on e-Learning through the internal

network(72.7%). Others acquired the information from the Internet (15.2%) or heard about it from co-workers, superiors, or friends (10.9%). Only 1.2% of the respondents accessed the information via mass media.

The results were similar to those found in the survey in 1999. If the figures were compared, the ratio of respondents who gathered information about their e-Learning program from the intra-net at work had risen from 66.4% in 1999 to 72.7% in 2001. On the contrary, there was a slight drop in the percentage of respondents who were informed by their co-worker, superior, or friend - from 13.1% in 1999 to 10.9% in 2001. Likewise, the figure has decreased for instances where participants initially acquired the information from the multimedia sources, although only to a slight degree from 2.0% in 1999 to 1.2% in 2001. These figures show a growing dependency on the cutting edge information and telecommunications technology and network. The contribution of traditional multimedia sources, on the other hand, is gradually decreasing.

The predominant use of high-tech information networks such as the intra-net and the Internet for advertising e-Learning programs has a growing dependency. Workers employed in small and medium enterprises or in regions outside of large cities like Seoul are likely to have limited access to high-tech telecommunications facilities. This seriously diminishes their chances of acquiring information about the various e-Learning. The channel or the medium of advertisement should be diversified to reach a greater number of people in different environments, which will help extend the educational and training opportunities for a wider group of potential participants. Especially greater use of the mass media for publicizing these programs is expected to be an effective solution to this problem, of course, for which there should be institutional and policy support.

G. e-Learning vs. the traditional learning

1) Effectiveness

Compared to the traditional off-line learning, e-Learning was considered by 58.1% of the sample as being more effective. 25.8%, on the contrary, responded that there was little difference in effectiveness between the two forms of learning, while 16.1% replied that the traditional produced greater outcomes.

These results are considerably different from the results of survey on a group of adults in general public. In the other survey discussed in the previous chapter, more than half of the respondents felt that conventional learning was more effective while only 21.3% thought e-Learning as being more effective. The difference of results may have two explanations. First, it is possible that in the survey of participants in e-Learning programs, the initial anticipation of e-Learning as an effective ways of learning may have been reflected in their responses. It is likely that members of this sample group had enrolled in e-Learning programs on their own choice, which may mean that these people have high expectations for the effectiveness of e-Learning. Secondly, participants of e-Learning programs may have had positive experience and outcomes from e-Learning, which may have enhanced their positive opinions of e-Learning.

2) Tuition

Regarding tuition, participants in e-Learning felt that their programs were too costly when considering the tuition for traditional education. This view was held by 49.3% of the sample, while 33% felt that the tuition for the two learning forms were on similar levels. Only 17.5%

replied that tuition for e-Learning was low compared to that of conventional learning.

Assessing the respondents' perception of tuition cannot be done by a simple comparison with that of classroom-based education. It should involve the factor of learning effectiveness/outcome. If the perception of e-Learning as being more expensive than off-line face-to-face learning can be interpreted in the connection with the factor of educational outcome, then this would lead to demands for substantial improvement in the quality of e-Learning.

H. Findings

The assessment of learners' needs conducted on a sample group of participants in e-Learning programs found that most learners were satisfied with e-Learning and were aware of its many advantages. Nevertheless, a number of problems were found in e-Learning.

First, there is a lack of active promotion and advertisement of e-Learning programs to inform potential learners. The main source of information on e-Learning that learners can access is the internal information network operated by the enterprises. As this medium can reach only a limited group of learners, it is necessary to diversify the methods and means of publicizing e-Learning opportunities. In an environment where information on e-Learning is disseminated primarily via high-tech information and communications network, such as the Internet, groups who have limited access to these channels can easily be excluded from the opportunities of e-Learning.

Advertisement of e-Learning programs should aim for a wider audience, including workers in SMEs, in regions outside large cities, and in production work, who cannot easily access the Internet. Through a

more aggressive and far-reaching efforts for promotion, e-Learning providers should inform and encourage diverse groups of learners to try e-Learning.

Second, there is a lack of contents that are appropriately designed to meet the learners' educational needs. The results of the survey shows that more contents should be developed and designed on the basis of accurate assessment of the learners' needs. When the employing organization commission an outside institution to provide training for the employees, the participants are likely to learn at home rather than to learn in the workplace via the intra-net. In such cases, learners are often troubled by slow Internet connection and downloading, which lower efficiency of learning. e-Learning providers should make close observation of the learning environment and reflect those conditions and limitations in contents and development and design.

Finally, there is a concentration of e-Learning courses for general work skills training. The survey found that learners wanted expert-level training on work skills relevant to their job, or courses that can lead to qualifications after completion. The commonly provided e-Learning programs for work skills training deal with only the general skills that are often irrelevant to developing one's vocational competency. Moreover, many of the general skills taught in these programs can be learned, if necessary, on one's own. Policies should be implemented to encourage qualifications courses and expert-level courses to meet the real demands of the learners of workplace.

V. Policy directions and strategies on e-Learning

Currently in Korea, the potential of e-Learning is being explored as one of the many efforts made at the national level for the development of human resources. At the threshold of the information society, turning this potential into reality is a key to successfully accomplishing the goals of the national policy on human resources development. If e-Learning is to become an established system for human resources development, in which all Koreans can develop their vocational competencies throughout their lives, the e-Learning in its present form needs to be thoroughly analyzed. Based on such an analysis and existing conditions in Korea, an effective and workable plan should be drafted for systematic development of the e-Learning sector. This is the aim of this research, for which the previous chapters have examined e-Learning in Korea today, assessed people's opinions of e-Learning, and identified their needs and demands for e-Learning. This final chapter intends to present a direction and plan for the development of e-Learning built on the findings of previous chapters.

1. The direction on e-Learning

Efforts to establish e-Learning as a system of lifelong education for all should be directed towards the following aims.

First, the identity of e-Learning should be firmly established, and in accordance with this identity the opportunities for e-Learning need to be

expanded. One of the current problems of e-Learning is that it has no target group of its own, distinct from that of traditional learning. To realize the lifelong learning by e-Learning necessitates a reorganization of systems and policies at the state level as well as in each institution to expand opportunities for participation in e-Learning. The first step in this endeavor is to re-define the target group of e-Learning, which should be followed by the next step of developing curricula suitable for this group. Then, e-Learning programs should be managed flexibly. In addition, a system of promotion and advertisement capable of reaching out to diverse groups in society need to be built to promote participation of these groups.

Second, efforts should be made to enhance the quality of e-Learning. At present in Korea, the e-Learning sector is achieving dramatic growth in size, with support from both the government and the private sector. It is now time to make that growing sector more substantial. The government should shift its role from supervisor to the consultant or supporter. For this the government must first make an effort to enhance its expertise in e-Learning. Moreover, the government should revise policies and laws in terms of the system, contents and structure to accommodate the special characteristics and diversity of e-Learning. In addition, a system needs to be created for assessing, recognizing, and giving appropriate incentives to institutions to promote internal quality control.

Third, an effective system should be built to maximize the potentials of e-Learning. Such a system can be built, through network, information, and standardization of e-Learning components. For example, an organic and collaborative network must be created among the government, education and institutions, businesses, and the academia. In addition, an information system needs to be established for effectively managing

human, material and information resources. Lastly, the efficiency of e-Learning system needs to be enhanced through efforts for standardization.

2. Strategies

A. Foster participation: expanding and diversifying the base of e-Learning participation

To expand the opportunities for e-Learning participation, it is first necessary to re-define the target learner group and to re-organize, accordingly, the policies and systems at the national level and of each institution. The cyber universities, for example, should raise the ratio of recruitment through special screening and amend the selection criteria, so that special consideration is given with job experience. The existing practice of student recruitment in cyber universities is centered on the regular screening in which high school record is a key determinant of the selection results. For the aim that cyber universities are to become true lifelong learning institutions, the student selection criteria need to be revised to accept more adult learners of various ages, work experience, and occupations, residing in different regions of the country.

The government policy needs to expand and diversify the target beneficiaries of e-Learning opportunities. At present, the support for e-Learning in the enterprises is limited to workers. The government needs to assist a wider group of potential learners, especially among the unemployed who can benefit from e-Learning. The unemployed are suffering from a lack of confidence and pride in their relationship with others, which has a negative influence on their participation in training.

The special features of e-Learning which is based on non-facial interaction, can help learners, including the unemployed, overcome such psychological and emotional obstacles to learning. Moreover, e-Learning is an alternative to education which minimizes opportunity costs for the learners.

Another imperative to enhance the rate of participation is to conduct a regular and systematic needs assessment and based on the results, to develop and manage curriculum customized to the learners' needs. The schools and enterprises at present lack a system for identifying the learners' needs for e-Learning. For this reason the actual needs of the learners are not adequately reflected in the curriculum development and the program management. It is especially important to include the disadvantaged groups, for example production workers in SMEs, who could easily be excluded in the 'needs' assessment conducted on private sector initiative. The government should thus make a continued effort to keep track of the e-Learning needs of the disadvantaged. The result of needs assessment can serve as a useful guide for cyber universities enterprises in setting the direction and objectives of e-Learning. It can also be utilized by policymakers as a source of data for effectively monitoring the implementation of policies.

The national effort to expand opportunities for e-Learning to a wider group of learners should also involve making and implementing strategies for inclusion of disadvantaged groups, such as employees of SMEs and production line workers in the factories. The government should support the establishment of information and communications infrastructure for the disadvantaged groups, as well as encourage the development of curricula specially designed for these groups. At the same time, the disadvantaged groups should be given education to enhance their computer literacy so that they are prepared to participate in e-Learning

when the appropriate programs are available.

Finally, a system for the promotion and advertisement of e-Learning opportunities need to be set up at the national level. Such a system should take advantage of the mass media that can be easily accessed by the public in general. Information about e-Learning, at present, is disseminated mostly via the Internet. As a result, groups with limited Internet access are often excluded from information on e-Learning policies and programs. The government should work to reach out to the disadvantaged groups by using the means of the more mass media.

B. Enhance the quality of e-Learning: pursuing development of e-Learning in quality

There are many ways to promote the enhancement of quality of e-Learning. First, the autonomy and accountability of institutions should be strengthened. By doing so, these institutions can be encouraged to introduce an internal system of quality control. The government could encourage autonomous quality control by redefining its own role in promoting e-Learning. In other words, the government should break out of its past role as supervisor and manager of the e-Learning sector, and move onto a consulting and supporting role to guide and present the visions for e-Learning. For this, the government needs first to achieve a level of expertise to appropriately guide and lead the e-Learning sector. This can be accomplished by employing the support of experts on e-Learning when new policies and initiatives are developed. The government should also establish a flexible system, which can accommodate and implement innovative policies that are created as a result.

Secondly, the institutions and laws, in their system, content and structure, should be reorganized so that the special features and diversity of e-Learning can be accommodated flexibly. The flexible application of policies and laws can ultimately prevent inflexibility in e-Learning and foster diversity and specialization in its sector. Unfortunately, the e-Learning-related institutions and laws are no different from those supported on the conventional classroom education. This discourages diversity in e-Learning. Promoting the e-Learning sector cannot be successful without recognizing the prerogatives of diversity and differentiation, which requires modification in the legal system on which education stands. More specifically, the legislations should be revised to allow diversity in the type and services of education, in application of technology, and in the group of learners. For this, the MOEHRD should set standards for taking special account of the quality of contents in the process of approving the establishment of cyber universities. This means that assessment of institutions should focus more on whether the instructional contents have been designed and operated based on a sound educational philosophy and model, rather than on the simple number of courses that have been developed. Moreover, the MOEHRD should operate a system that can monitor whether cyber universities in operation or prior to being approved have completed more than 50% of the contents development before the semester begins. Screening in this way can help prevent unexpected problems that arise during the course of the semester, which may seriously downgrade the quality of educational services.

The same is true for MOL in approving e-training institutions. MOL should also discard the simple assessment based on quantity and size, to take into various aspects, such as the contents, target group and program level, into consideration to encourage diversity in e-Learning. The MOL,

in fact, is in the process of reforming its system of evaluating e-Learning programs. The ministry has also engaged a pool of experts in the e-Learning review committee to upgrade the quality of course contents.

Third, the government needs to establish a system to assess, recognize, and give incentives to institutions to promote voluntary quality control. Giving incentives to institutions that set an example for others is an effective way to maintain a certain level of quality in e-Learning. Such an incentive policy can lead to education programs.

Considering the Korean e-Learning market, there are a number of ways in which incentives can be given to institutions. The government could, for example, give administrative and financial incentives to exemplary programs. The government could also promote and advertise excellent programs to the public. Introducing a quality recognition system could be another way to encourage exemplary practices in e-Learning. Finally, an annual exhibition can be organized inviting good practice institutions and their programs to be on display. These incentives can encourage e-Learning providers to develop and strengthen the merits of their programs as well as foster free competition among institutions. Selection of good programs on an annual basis, in areas of contents development, contents management, outcome management, etc. can not only foster quality control but also serve as a way to promote the development of new models for e-Learning.

Fourth, the government should provide support for research on e-Learning. To establish e-Learning as a system for human resources development in the enterprises, it is necessary to foster continued research on this area. In Korea, research on e-Learning is taking place on a limited scale, and existing work on this subject are mostly theoretical and foundational. This means that there is need for more

field-oriented research, which the government actively work to foster. Future research on e-Learning should explore the various types and target groups of e-Learning. Researchers should also attempt to examine the various aspects of e-Learning in the field where it is being practiced. These include: curriculum development, management, assessment, quality control, copyright, role of instructors, structure of e-Learning institutions (administration, faculty responsibilities, and management, etc.) and educational outcomes. Researchers should not only examine these aspects but also try to come up with solutions to problems that have been identified in their investigation. The role of the government is to support these efforts by providing administrative assistance as well as the raw data that researchers might find useful.

C. Network, informalization, and standardization: maximizing the potential of e-Learning

Several strategies will be suggested to efficiently manage e-Learning. First, it is the concerted effort of the government, businesses, industries and the academia in close network of cooperation. The components of e-Learning sector at present are in dispersed and disconnected systems, which makes it difficult to enhance the overall efficiency. The different actors in the sector, namely the government, enterprises, industries, and the academia need to come together to form a collaborative network. Such a network will make it possible to collect the opinions of stakeholders in e-Learning and enable them to participate in policy-making for human resources development. This would effectively establish e-Learning as part of a more comprehensive system of human resources development. From a microscopic perspective, vigorous

networking among e-Learning components can help make e-Learning more substantial. The government can benefit from network with the academia by gaining access to data and experts' opinions needed in policy monitoring. This would also help the government set more practical and forward-looking visions for the development of the e-Learning sector. The academia on the other hand can receive from the government raw data and infrastructure in support of their research. Additionally, the enterprises can benefit from the wealth of expertise in theoretical background, educational principles and models made available by the networking with the academia.

The second strategy is to construct an information system that can link human, material and information resources in the sector. The enterprises, for example, are suffering from a lack of network among the human, material, information, and program resources, which in turn leads to inefficiency. An information system should connect the dispersed sources of information on e-Learning to facilitate information exchange. Such an information network will enable the creation of a systematic network linking demanders, suppliers, and developers of e-Learning, and a database of quick and accurate information on e-Learning market size, growth rate, and trends. The information network will (1)facilitate the dissemination of information on e-Learning institutions and programs, (2)collect opinions from the field, (3)provide authoritative consultancy by the government to educational institutions, and (4)promote institutions of excellent practice. Ultimately, the e-Learning will be strengthened in substance and activity.

Establishing a comprehensive, and effective, information system should be attempted in observance of the following principles:

* An institutional infrastructure must be established at the state level for the comprehensive and systematic collection of data on e-Learning.

* A comprehensive approach needs to be taken to establish links among various groups and actors in the sector, including the demanders, providers, program and system developers, and government ministries, etc.

* Information provided in the system should be diversified and substantial to satisfy the needs of learners, and for this an in-depth approach to the content, scope and structure of information is necessary.

* A system should be developed to store information on the unit of individual users so that data can be customized to the users' needs rather than disseminated indiscriminately to a large and diverse group of users. This would necessitate a system and infrastructure that can protect the users' private information.

To upgrade Korea's e-Learning sector to internationally competitive level and to invigorate the domestic market for e-Learning, it is essential to discover contents, experts, and institutions that meet a certain standard of excellence. Competitions can be a convenient way to make this effort and try. These competitive events can be organized to award students, adults, and experts who have made exemplary achievement in various areas of e-Learning, for example in contents development/management or system/software development. Competition could bring out the outstanding practices and competent human resources that can make further contributions to the e-Learning sector. The selected and the awarded can be invited for presentation at exhibitions open to the general public, so that participants and educators in the field are informed about the innovations taking place. These events can be used as the official channel of promotion. They can also provide the opportunity for exchange and comparison of pioneering knowledge, technology, tools, solutions, and platforms of e-Learning. Turning these exhibitions into international conventions could promote the domestic good practices and

technology in e-Learning to foreign participants. At the same time, the Korean e-Learning sector can learn from the pioneering practices from other countries. When competitions for the purpose of discovering examples of good e-Learning and exhibitions for disseminating these examples are held as organically linked, the final result could lead to effective networking of government, industries and the academia on the one hand, and of human, material and information resources on the other.

Third, augmenting efficiency in management of e-Learning systems can also be achieved through standardization of e-Learning. A precondition for efficiency is interchangeability of contents and platform, which necessitates standardization in contents development and management. Countries with more experience in e-Learning have already begun standardization, and Korea has just entered into more serious discussion and activities for standardization. Especially important is the standardization of web-based solutions as a way of enhancing educational quality, reducing cost, and sharing and recycling contents. Standardization is a formidable task that cannot be accomplished by the independent efforts of the firms. Rather, it should involve research and consultancy of experts and the enthusiastic support of the government in policy and in subsidy.

Fourth, efficiency can also be increased, by re-defining the various roles of experts in the e-Learning sector. Ultimately, it should lead to the establishment of a training system for specialists in e-Learning. For this, a systematic analysis must be conducted to identify the various work responsibilities of specialists in e-Learning. New occupations are appearing in the e-Learning sector, but little investigation has been made to identify what roles people in these occupations must perform. Most of the e-Learning institutions adopt the way in which traditional

education providers recruit and use human resources. Therefore, people working for e-Learning tend to experience maladjustment to their roles and even misunderstanding among group members. To solve this problem, accurate and clear definition about their roles is necessary. MOL annually carries out job analysis on new occupations or those that have gone through significant change of tasks. The results are disseminated to schools and training institutions so that they may be reflected in the educational programs. A similar effort at the state level should be made in regard to occupations in the e-Learning sector.

In addition, introducing the training system can be another way to develop vocational competency of people in the e-Learning sector. The training program should be developed based on the need analysis on experts in e-Learning sector. The target training group should include not only e-Learning experts but also public officials in related ministries. Training of government employees is important as the shift in the role of government as consultant and supporter for e-Learning institutions is gaining more emphasis. This change of government's role is obligating administrators and policymakers in the ministries to upgrade their expertise on e-Learning, for which more training programs need to be developed and provided.

Furthermore, serious consideration should be given to introducing a qualification system for recognizing the skills and expertise of personnel in e-Learning. Qualifications may be issued to competent program developers, instructors and administrators in the sector. Examples of possible qualifications include licenses to work as e-learning instructors, e-learning instructional designers, and e-learning administrators. A well-organized qualification system can foster training of experts in the sector as well as enhance effectiveness of e-Learning. In the Korean qualification system there are national qualifications, private qualifications

and nationally recognized private qualifications. New private qualifications are continually developed in connection with programs aimed at the training of experts. Academic circles and relevant associations are running these programs by linking theories and actual practices in the workplace. The private qualifications can apply for recognition by the government, and if successful, it acquires the same authority and value, as do the national qualifications. To establish a system of raising experts in e-Learning and managing the quality of these human resources, it is necessary to consider the establishment of a qualifications system in the e-Learning sector.

Finally, there is need for effective models for e-Learning management. Employed workers and adult learners have characteristics and lifestyles that must be taken into account in creating these models. It is especially important to modify the current model for administration and program management to fit the specific characteristics of e-Learning system. In present, the system for the management of e-Learning in Korea seems to be similar to those in traditional institutions of education. It is therefore ineffective in accommodating the learners of needs of e-Learning participants, which are different from those in conventional off-line education. Under such an inadequate system, adult learners in e-Learning programs feel pressured as their program progresses and often face difficulty in concentrating on the course. For the effectiveness on e-Learning, the cyber universities, for example, can break the conventions of the credit system and school year system of campus-based universities. Enterprises can also creatively experiment with individualized teaching, individualized model of instruction, model of multi-perspective evaluation among other unlimited possibilities. These innovations are only possible when e-Learning liberates itself from the traditional paradigm of face-to-face education in the classroom. Therefore, efficient provision of

e-Learning demands a new model specially designed for the web-based system. At the same time, the success of this new model requires the support of government ministries and e-Learning experts with an open and progressive mind to flexibly accommodate its implementation.

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