E-LEARNING IN JAPAN:
STEAM LOCOMOTIVE ON SHINKANSEN[i]

Ali E. Ozkul, Ph.D.
Anadolu University, Turkey
aeozkul@anadolu.edu.tr

Kumiko Aoki, Ph.D.
National Institute of Multimedia Education, Japan
kaoki@nime.ac.jp

ABSTRACT

This paper aims to share the outcomes of a qualitative survey on the status of e-learning implementation in Japanese higher education institutions. The research evidence is gathered through: 1). a literature survey related to e-learning in Japan, 2). analysis of the websites of the universities, 3). observations obtained during Tokyo e-Learning World 2005 Expo and Conference, and 4). interviews conducted with the faculty members at the working on e-learning projects in the universities visited. The survey revealed that e-learning has not been adopted by Japanese universities wholeheartedly despite the availability of a highly developed ICT infrastructure nationwide. The main reasons for such gap between technological availability and its actual implementation can be attributable to the lack of support systems to facilitate the utilization of ICT in instructional processes and the lack of long term strategic visions to utilize ICT to enhance teaching and learning in many higher education institutions in Japan. These dilemmas are evaluated from the cultural, societal and managerial perspectives. Cultural perspectives included shared values and customs among policy makers and practitioners. Societal considerations involve the university system itself, its funding structure, and the demand of e-learning among potential students. From the managerial point of view issues such as leadership of university governance and long-term strategic visions of the institution are examined. Finally future prospects of e-learning in Japan are discussed.

1. Introduction

In many parts of the world, e-learning is being embraced as the results of the shift towards a knowledge-based economy and the wide availability of new information and communication technologies (ICT). Japan, as one of the most industrialized countries in the world, is not an exception. Making "E-Japan Strategy" as a slogan to promote ICT in Japan, the Japanese government has been trying hard to promote the use of ICT in education. Unlike in the U.S., Canada and Australia where e-learning has rather emerged out of needs and necessity as an extension to distance learning, the educational use of ICT in Japan so far is something the government is trying to impose on to the institutions. Bates (2001) identified three main ways to use e-learning in universities and colleges: technology-enhanced classroom teaching, distance education, and distributed learning. In Japan, e-learning usually means only the Bates' first category, technology-enhanced classroom teaching.

In the following sections, higher education systems in Japan, the current status of technological infrastructure, and the current state of e-leaning implementation in Japanese higher education are described. Then discussions are made in terms of the gap between the technological availability and the actual implementation of such technologies in the educational contexts. The causes of the gap are discussed from the cultural, societal and managerial perspectives. Cultural perspectives included shared values and customs among policy makers and practitioners. Societal considerations involve the university system itself, its funding structure, and the demand of e-learning among potential students. From the managerial point of view issues such as leadership of university governance and long-term strategic visions of the institution are examined. Finally future prospects of e-learning in Japan are discussed.

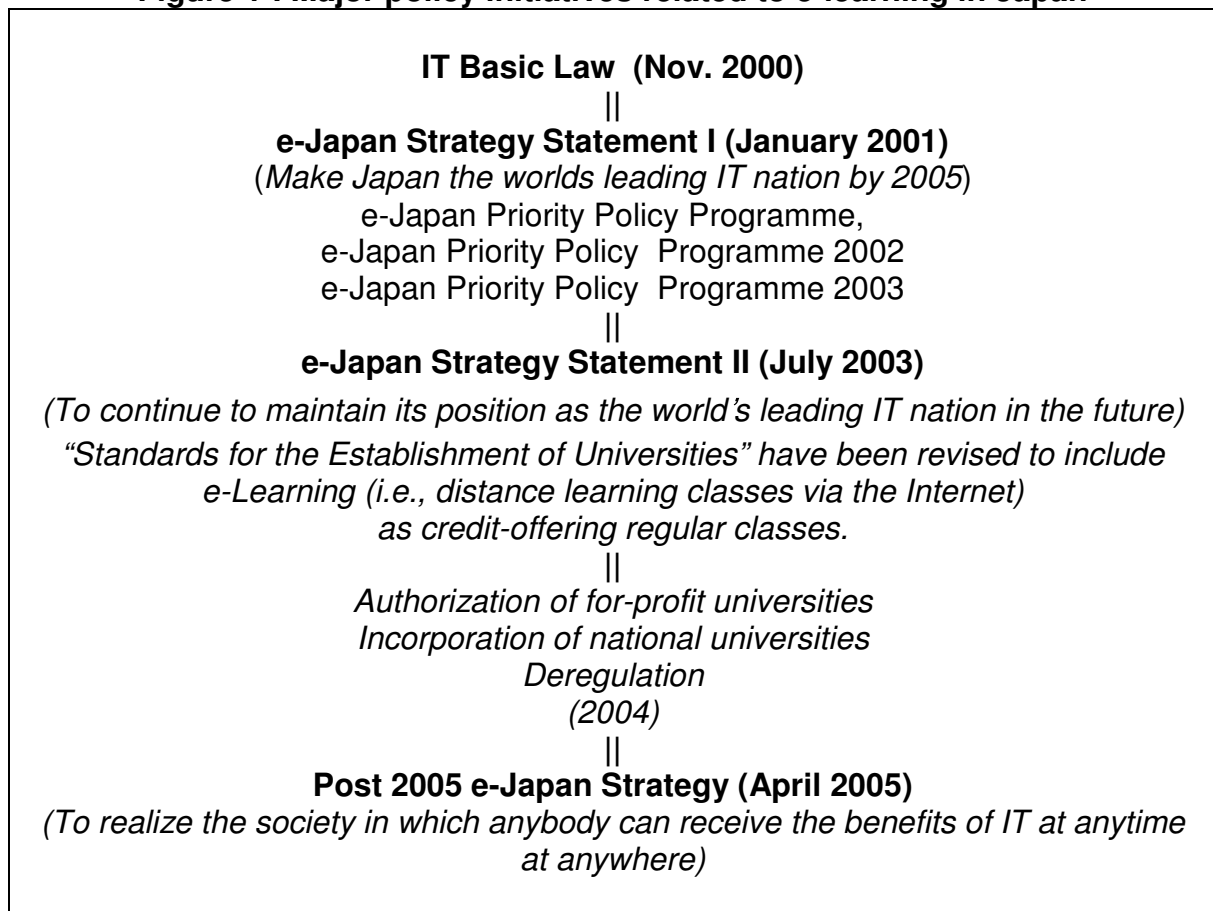## 2. Japanese Higher Education Systems

Japanese undergraduate postsecondary education system is basically composed of universities and junior colleges. As of 2005 there are 726 four-year universities and 480 junior colleges. The great majority of junior college students are women, and the number of junior colleges has been decreasing as more and more women have started to opt for four-year colleges. Seventy-five percent of all universities and 88 percent of all junior colleges are private. In 2002, 11 percent of four-year university graduates went on to graduate school.

The declining the birth rate is a serious issue among higher education institutions in Japan as soon the number of seats will equal to the number of potential students; in other words, soon everybody can enter into a college if he or she is not selective. In other parts of the world, demand for college and universities usually exceeds the supply. However, in Japan that is no longer the case and many lesser known institutions are having tremendous difficulties in recruiting new students. In fact, a few universities have been forced to merge with other universities, or in some cases be closed down due to the failure in recruiting enough students to get the subsidy from the government.

Since 2000 Japanese university system has begun to undergo an extensive series of reforms since the postwar-era reforms in the late 1940s. As part of the reorganization effort which began in fiscal 2003, the 99 national universities were reorganized into 89 institutions. In addition, the national universities were transformed into independent administrative institutions with the objective of creating a more competitive and independent environment in which the universities can introduce private sector management techniques and develop their own special strengths with respect to both education and research. In order to nurture people with the wide range of expertise needed by society, universities also established new specialized graduate school programs in both business and law. (Web-Japan, 2006).

Japan's recent reforms in higher education include the authorization of for-profit universities and the incorporation of national universities. Both initiatives are connected to the Japanese government's recent moves towards deregulation. It is expected that these changes in the education system will affect the current and prospective students as well as the administrators of the educational institutions. Those dimensions of the reforms related to e-learning are summarized in Figure 1.

Figure 1 : Major policy initiatives related to e-learning in Japan

IT Basic Law (Nov. 2000)
||
e-Japan Strategy Statement I (January 2001)
(*Make Japan the worlds leading IT nation by 2005*)
e-Japan Priority Policy Programme,
e-Japan Priority Policy Programme 2002
e-Japan Priority Policy Programme 2003
||
e-Japan Strategy Statement II (July 2003)

(To continue to maintain its position as the world's leading IT nation in the future)

"Standards for the Establishment of Universities" have been revised to include e-Learning (i.e., distance learning classes via the Internet) as credit-offering regular classes.
||
Authorization of for-profit universities
Incorporation of national universities
Deregulation
(2004)
||
Post 2005 e-Japan Strategy (April 2005)
(To realize the society in which anybody can receive the benefits of IT at anytime at anywhere)

3. The Current Status of ICT Infrastructure in Japan

Under the e-Japan Strategy, a low cost, high-speed Internet infrastructure has been created in Japan, and the ICT infrastructure in Japan is considered to be the fastest and the most cost-effective in the world. The Internet penetration rate in Japan as of the end of 2004 was 62.3%. The percentage of households who have broadband Internet access (e.g., FTTH, DSL, Cable Internet, and wireless access) out of the total number of households who have the Internet access at home was 62% as of the end of 2004 (MIC, 2005). According to a survey conducted by the Ministry of Internal Affairs and Communications (MIC) in 2004, 80% of the respondents agreed that ICT use had made a lot or some progress in the fields of information gathering, shopping, communication, entertainment, and financial transactions, but 30 to 40% of the respondents believed that ICT use had made little or no progress in the fields of administration, medical care, and education. In the field of education, only about a half of the respondents agreed that ICT use has made a lot or some progress.

In 2003, there was one computer for every 8.8 students in public schools and the Internet connection rate of public schools reached 99.8%. In a word, almost all the public schools in Japan are currently connected to the Internet. Over 70% of the public schools have the Internet access at 400 kbps or over and over one-third of the public schools have LAN installations. In the field of higher education, the ICT infrastructure has been implemented even better. By January 2000, 99% of higher education institutions in Japan had access to the Internet (Yoshida, 2001).

Looking toward the year 2010, a new national strategy called "u-Japan Initiative" was implemented in June 2004, aiming to make Japan a society in which "anytime, any place, by anything, and anyone" is linked to networks. The u-Japan Initiative has four principles of "u": ubiquitous, universal, user-oriented, and unique, and it expects to solve many current social problems by implementing ubiquitous networks. In the initiative statement by the Ministry of Internal Affairs and Communications (MIC), there is no specific mentioning of its relationships to education except that promoting life-long learning is mentioned as an issue they have to deal with towards the year 2010. Though it is stated that the use of ICT in the areas of administration, medical care, and education is lagging behind of other areas, but no specific measure to promote the use of ICT in education is mentioned in the policy statement.

4. The Current State of e-Learning in Japan

E-Learning in Japan has a strong political connotation as the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) has been promoting the development of e-learning in higher education institutions in Japan as part of the e-Japan Initiative described above. The initiative set specific goals such as the tripling of the number of Japanese universities using advanced e-learning technologies by 2005. To further facilitate the adaptation of e-learning by higher education institutions, MEXT increased the acceptance of up to 60 credits, out of 124 credits required for a four-year undergraduate degree, earned through

e-learning toward degree programs in March 2001. As for correspondence institutions[ii] in 2000 all 124 credits started to be allowed to be earned through asynchronous two-way online education.

Higher education institutions in Japan have slowly started to implement e-learning. According to the study done in 2005 by the National Institute of Multimedia Education (2006), 41.4 percent of the private institutions surveyed have offered e-learning classes while 69.3 percent of the national universities responding offered e-learning programs. In total, 36.3 percent of the universities surveyed have offered e-learning classes. As for the modes of e-learning, 31.4% of those surveyed offer e-learning as part of blended learning, and 20.8% of them offer e-learning as supplemental to classroom activities. Only 10 percent of those surveyed actually offer stand-alone e-learning courses in which students are not required to attend classes physically.

Respondents were also asked about factors that could be holding back the further development of e-learning at the university level in Japan. The most cited factor was the lack of content creation and system management skills among faculty (61.9 percent), the lack of knowledge and skills of developing e-learning systems (50 percent), the lack of understanding of educational effects among faculty (49.7 percent), doubts about the safety of intellectual property rights for contents placed on the e-learning systems (44.5 percent), and the lack of budget (42.4 percent).

In terms of the development of actual contents of e-learning, 30.8 percent of those surveyed said they develop contents at their institutions. Nearly half of the contents were developed by faculty members as their individual efforts. As far as the tools of e-learning are concerned, learning materials created by presentation software such as Microsoft PowerPoint and streaming video have been increasing over the past four years while the use of text-based interactive tools such as discussion boards and chat has been decreasing. This indicates that e-learning in Japan is moving towards the model of traditional correspondence schools where students study on their own without much interaction with teachers and other students.

In order to boost the implementation of e-learning in higher education institutions in Japan, the Ministry of Education, Culture, Sports, Sciences and Technology (MEXT) started so-called "Gendai GP" program in 2004. The aim of the program is to fund those colleges and universities who have demonstrated enough efforts and shown a clear plan to implement a program which deals with one of the six areas MEXT specifies: 1. contribution to regional activities, 2. promotion of education of intellectual property rights, 3. cultivation of Japanese who can use English in business settings, 4. strengthening of educational systems by means of collaboration with other institutions, 5. industry-academia collaboration through exchange of human resources, and 6. practical e-learning through the use of ICT. Through the Gendai GP program, 14 colleges and universities and one consortium of specialized schools were funded for the area 6 above in 2004, and 13 colleges and universities and one consortium of specialized schools were funded in 2005. The proposed programs include development of a self-learning systems based on problem-solving approaches and development of a new e-learning curriculum for astronomy.

To share the cost of starting and running e-learning courses among multiple universities, several regional consortia have been established in Japan recently: the Consortium of Universities in Kyoto, the Consortium of Universities in Osaka, the Consortium of Universities in Southern Osaka, International Network University Consortium in Gifu, the Seto Consortium of Universities, the Consortium of Universities in Tochigi, University Consortium Oita, the Consortium of Universities in Yamagata, the Consortium of Universities in Sanin, the Consortium of Universities in Okayama, the Consortium of Universities in Ishikawa, and the Setagaya Consortium of 6 Universities.

5. Cultural and Societal Considerations

In the nation where Confucian value systems have been employed and teachers are considered to be the absolute authoritative figures to whom students should show respects (at least on surface) and eschew questioning in public, the educational paradigm, "student-centered learning," is harder to be implemented than it is to be discussed among academicians. Throughout the school system which leads to higher education, students are trained to be good at taking tests by memorizing what is being taught instead of being encouraged to think critically.

Due to the above reasons, most e-learning systems developed and implemented in Japan are those which attempt to repackage the traditional mode of instruction by video recording instructors' lectures and making them available online. There has been little consideration to the pedagogy of e-learning, especially leaner-centered approach, and interactive tools such as discussion boards are rarely utilized in e-learning in Japan. Therefore, e-learning tends to be considered "boring" or "ineffective" despite the cost to create its contents.

As for another cultural consideration, Japan is considered to be a "high-context" culture where many things are understood without words and non-verbal communication is heavily valued. Though asynchronous discussion-based e-learning through text is slow to be introduced in Japan, videoconferencing systems to support inter-university synchronous distance learning especially among public universities was well implemented. Over 120 universities and other institutions are linked to the satellite-based Space Collaboration System (SCS) which the National Institute of Multimedia Education has developed and serves as its hub. Though the recent usage of SCS by universities is decreasing, videoconferencing systems are still very popular means to conduct distance learning in Japan.

Another reason why e-learning is lagging behind of other developed nations in Japan may be because of the lack of training and incentives for teachers to use ICT. Of course, there are a handful of teachers who are enthusiastic about utilizing ICT in instruction, but the majority of the teachers are not interested in making extra efforts to utilize ICT in their instruction without any tangible incentives and without any evidence of improving learning outcomes of students. Though things are changing, for most teachers in higher education institutions, teaching is something they have to do to keep their jobs, but is not something they have to make extra efforts to improve as it is not much evaluated for their promotion and tenure.

In the past, many individuals who were enthusiastic about using ICT in their instruction did so out of pure curiosity and enthusiasm. However, when their curiosity and enthusiasm wears out, there remains nothing to sustain their efforts to continue the practice as there is usually no institutional supports for them to do so. Those initiatives such as Gendai GP described previously have given good incentives to those enthusiastic individuals, but we doubt the sustainability of the programs funded by Gendai GP after the funding runs out. In order to promote e-learning beyond those technological enthusiasts to crucial mass, universities have to provide faculty members with institutional rewards and support infrastructures to adopt e-learning.

In many colleges and universities, especially those public ones in Japan, staff members other than faculty members are given different positions every 3 to 4 years, which prevents them from becoming experts in one area of school administration including technical supports. When they become knowledgeable and comfortable with their assigned duties, they have to move to new positions and start over from scratch.

Bureaucracy is another barrier to successful implementation of e-learning as it requires a tremendous amount of paperwork and negotiations to start anything anew in higher education institutions. Bachnik appropriately stated this contradictory situation in Japan, by saying "If this environment could be pictured as having hands, the right hand would be avidly promoting IT, while the left hand would be simultaneously blocking it" (Bachnick, 2003, p.2).

 In sum, though implementation of e-learning should be a paradigm shift in educational pedagogy as well as in educational administration, in Japan implementation of e-learning is promoted within the old framework of educational systems. This contradicts itself and ends up spending tremendous amount of money and resources in vain.

6. Managerial Issues

For traditional educational institutions moving towards e-learning necessitates a transformation from the traditional ways of carrying out teaching, learning and administrative activities to new ICT integtrated systems of conducting these processes. It is necessary for educational institutions to review their organizational structures and management practices in the light of the evolving technologies and make the necessary updates in the structure and functioning of their systems. Although various management issues are handled separately historically distance education practitioners are interested in management of distance education systems usually emphasizing the diversity from the management practices of traditional educational institutions.

Panda (2003) categorizes the managerial issues that are relevant in e-transformation projects as policy and planning, institutional management (leadership and management of change, management of academic development, management of research and development, and management of resources), operations management (instructional design, media development and production, material production and distribution, services to students, and student assessment) and quality assurance and accreditaion (institutional and programme evaluation,

and internatioanalization). When the management issues are examined in real contexts drawn from case studies of universities in Japan following weaknesses are observed (Ozkul, 2006):

- **Policy and planning**
  The projects are not accomplished as an extension of a institutionwide policy**.**
- **Institutional management**
  University administration does not have a direct support and resource allocation for the projects.
  An ad hoc unit which is establishing and maintaining the technical infrastructure and technical support services for online learning is rare.
  The e-learning material developed by the faculty does not have any significance for their academic promotion and advancement.
- **Operations Management**
  In general e-learning implementations are not at a level that the operational problems are critical.
  Instructional design is often neglected.
  Financial aspects are not are not evaluated
  Major barriers exist as explored by Yoshida (2001)
- **Quality assurance and accreditation**
  There is no mechanism for quality assurance and accreditaion

Human support is another important aspect of managerial issues of e-learning. Bates (2001) points that there are four levels of human support required for fully implementing e-learning: technology infrastructure support staff, educational technology support staff, instructional design staff, and subject experts. In most higher education institutions in Japan, the middle two kinds of support staff, the educational technology support staff and instructional design staff, are missing.

Funding is another issue. E-learning projects in Japan are usually initiated with some grants. Grants pay for the initial cost of physical facilities and equipment, but rarely pay for on-going operation and maintenatnce of the facilities and equipment. Most technologies have limited life span due to technological changes and the cost of human support for the facilities and equipment is often neglected in the funding. As Bates (2001, p.39) indicates, investment in technological infrastructure "should be seen as a recurrent or operational cost," but in reality it is often seen as one-time capital investment in Japanese higher education institutions.

7. Conclusion

Three primary obstacles inhibit the success of e-learning in Japan: cultural barriers, societal factors and lack of sustained management commitment and leadership. It is expected that global trends and internationalization of the education will have an impact on removing cultural barriers and society to adopt new paradigm of learning. The official website of the MEXT states that there is a growing belief, however, that the educational system needs to change in order to respond to the challenges of the 21st century. On the other hand educational

institutions can not fully exploit the opportunities provided by e-learning without making necessary changes in the structure and management practice. In addition, the quality of education cannot really be improved by e-learning if the technology is used to supplement teaching without changing the basic method of classroom organization and teaching.

As Bates (2001, p.27) noted, e-learning is revolutionary as "it requires radical changes to the organization of campus-based teaching." However, Japan fails to recognize it and treat it on the continuum of the old educational systems. Fully embracing the benefits of e-learning requires radical changes in the institutional structure, management, human resources, funding allocations, faculty development, reward structure of faculty tenure and promotion, and pedagogy. Japan is the country where the technological infrastructure is ready for e-learning, but it is slow to adopt e-learning as its education system itself is not innovated yet.

---

i The Shinkansen (新幹線) is a network of high speed rail lines in Japan on which the famous "Bullet Trains" run. (http://en.wikipedia.org/)

ii In Japan, there are two different rules applying to on-campus institutions and correspondence institutions.

References

Bachnik, J. (2003). *Roadblock on the Information Highway: The IT Revolution in Japanese Education.* New York: Lexington Books.

Bates, T. (2001). *National Strategies for e-Learning in Post-Secondary Education and Training.*   UNESCO: International Institute for Educational Planning.

Ministry of Internal Affairs and Communications, Japan (MIC). (2005). Information and Communications in Japan: Stirring of u-Japan. White Paper

National Institute of Multimedia Education (2006). E ラーニング等の IT を活用した

教育に関する調査報告書（2005 年度）[Research Report Concerning the Use of IT such as e-Learning in Higher Education].

Ozkul, A.E. (2005). Management Issues and Challenges in e-Learning Implementation: Some Observations on Japanese Colleges and Universities, Workshop Presentation, NIME (National Institute of Multimedia Education), Chiba-shi, Japan.

Panda S. (Ed.) (2003), Planning and Management in Distance Education, Kogan Page, London * Stirling (USA).

Web-Japan (2006), Gateway to all Japanese Information, http://web-japan.org/factsheet/education/reform.html

Yoshida, A. (2001). 高等教育機関におけるマルチメディア利用実態調査（1999 年

度）[A National Survey of Multimedia Utilization in Higher Education in Japan in 1999.] Chiba, Japan: National Institute of Multimedia Education (NIME) Research Report No. 19.