

Educational Innovation through ICT Use in the Large Knowledge Resources Learning Community

Takashi Sakamoto, Prof. Dr.

Chairperson, AEN Promotion committee
President, Japan Association for Promotion of Educational Technology
Professor emeritus, Tokyo Institute of Technology and
National Institute of Multimedia Education
sakamoto@japet.or.jp

Abstract

The main activities of the AEN include interoperability of technology, international standards and certification, e-learning professional development, quality assurance, management, validation, portal site development and research trends analysis. A survey was conducted on the present state of e-learning in ASEAN+3 countries. In Japan, e-Japan Strategy Statement I & II, e-Japan Priority Policy Program 2003&2004, and IT Policy Package 2005 also promote IT use in education intensively.

In the background of these trends, changes have occurred in the use of ICT and the large knowledge resources in education and e-learning: changes of human resources requested, need for expertise to deal with the solutions for the sustainable development for saving the environment and the human race, cultivating employment, emphasis on active self-learning in the networked environment, expansion of learning activities in the social context, advances of learning technologies, emphasis on cost-effectiveness and the wide introduction of quality assurance of all kinds of educational components with national and international standards.

Following these recent changes in the learning environment, the conceptual framework for dealing with teaching and learning in the networked learning community

should be re-constructed. The new paradigm is that teaching and learning in the wired environment represents the true nature of education, but traditional face-to-face lessons in universities and schools are conceptually considered as just one set of all kinds of educational components. Any educational provider can freely participate in the learning community.

In this context, the important issues seem to be quality assurance of educational systems, tools and contents, setting up national and international standards, copyrights, user protection, and blended learning. There is also a global need for collaboration within each sector as well as across different sectors such as academia, industry, government, culture, languages, countries, and ethnic groups. Advances of recent learning technologies could solve some of these problems.

1. Structure of Asia E-Learning Network (AEN)

METI, Japan proposed an Asia e-Learning Initiative at the AEM + 3 meeting in Siem Reap, Cambodia in May 2001 and the proposal was approved as an AEM + 3 project by many countries at the meeting in Hanoi, Viet Nam in August. In FY 2002 Asia e-Learning Network was established and the first international conference was held in Tokyo.



Then AEN Experimental Projects with 6 countries started. In FY 2003 when Second international conference was also held in Tokyo, AEN four working groups were organized and ALIVE (AEN LMS & contents Interoperability Validation Experiment) started. In 2004 the outcomes of the 4 working groups, results of ALIVE Experiment, and present state of Asian countries were reported in the third international conference in Singapore in December 2004.

The aim of the Asia e-Learning Initiative is to promote Asian collaboration to facilitate the enhancement of e-Learning through improving access to high-quality education / training, standardization of e-learning system and technologies, and knowledge sharing among member countries, and also to establish the Asia e-Learning Network. The member countries are ASEAN +3 countries. These 13 countries selected respectively 2 delegates representing each country. Most of the delegates belong to the related Government sections, foundations, research institutions or corporations. Many other specialists also participated the activities such as information sharing, standardization, promotion, and implementation nationally and internationally.

2. Activities of AEN in 2004 and 2005

Main activities of AEN in 2004 were to implement research and development activities of four working groups, to hold the third AEN international conference in Singapore, and to conduct the research survey on e-learning trends in Asian region.

Topics of four working groups are (1) Interoperability Technology in WG1, (2) Standards Qualification in WG2, (3)e-learning Professionals in WG3, and (4)e-Learning Quality Assurance / Management in WG4.

The tasks of the WG1 are to share technical information and issues about platform and content in terms of e-learning standards and to collaborate with US and Europe based communities by exchanging information and requirements on standards. As a standard platform for interoperability, the SCORM (Sharable Courseware Object Reference Model) was selected and promoted, and the validation experiment for LMS and content produced in participating countries was conducted twice in 2004; one in Tokyo and another in Singapore. In the ALIVE (AEN LMS and content Interoperability Validation Experiment) data was collected from 58 Japanese vendors. 21 of them were never operated with multiple LMS, but the 37 were operated with multiple LMS, among them 19 had no interoperability problems and 18 had some minor problems. 6 out of 11 contents provided by Asian countries showed some interoperability problems.

The tasks of the WG2 were to examine SCORM compliance qualification programs for maintenance of interoperability, to review SCORM ASSESSOR qualification programs and their deployment in participating countries, to share information with AEN participating countries on interoperability technologies and the qualification programs, and to find the problems in each country. The questionnaire survey on the current state of operation was carried out and the SCORM ASSESSOR training programs were reviewed. 60% of respondents answered the SCORM conformant qualification programs as effective, 32% pointed that programs were effective for early solution of problems and promotion of distribution.

The task of the WG3 was to enhance e-Learning Professionals. In this year the WG3 reconstructed instructional design process models for reflecting characteristics of e-learning approaches, defined a framework of e-Learning professional classification in Asia, including references and glossary, also defined the skill sets required for e-Learning Professionals, and conducted a questionnaire survey on the state of e-Learning Professionals in AEN countries. The results by 10 respondents from 11 AEN countries showed that instructional designers were highly evaluated, the Course Operation Supporters were also recognized as expecting high potential and having vague image, and Course Mentors were clearly needed, but unfortunately recognized as poor qualification.

Based on the survey, AEN countries were divided as four category groups as shown in the Table.

<ul style="list-style-type: none"> • Advanced <ul style="list-style-type: none"> – Specialist Diploma course in e-Learning ID by NIE (National Institute of Education) (<i>Singapore</i>) – Many ID courses in Universities (<i>Korea</i>) • Well Developed <ul style="list-style-type: none"> – Ider and other e-learning professionals are not so popular. However, visibility is increasing, and there is a certain demand (<i>Japan, Malaysia, China, Thailand</i>) • Developing <ul style="list-style-type: none"> – In many cases, teacher/trainer carry all the burden. However, there are some advanced cases like UPOU (Univ. of the Philippines Open Univ.) (<i>Philippines, Indonesia</i>) • Primary Stage <ul style="list-style-type: none"> – High demand for training course for e-learning professionals and best practices from other countries (<i>Vietnam, Cambodia, etc.</i>)

Moreover, maps of organizations were summarized related to Quality Assurance activities in AEN countries. The Quality Check Tool was also developed for e-Learning contents and service.

These outcomes of four WG are shown in the Portal Site of AEN (<http://www.asia-elearning.net/>.)

In December 2005 the final AEN conference of the 5 years project was held in Tokyo and explicit outcomes were summarized. Through main activities such as establishment of interoperability among SCORM 2004 Compliant LMS and content for e-learning, development of multilingual contents and system, enhancement of e-learning professionals, preparation of quality assurance for e-learning contents and services, preparation of portal site, significant achievement such as a formation of human network among participating countries, sharing information and knowledge among countries, survey results for e-learning in ASEAN +three countries, and so on.

In order to promote the Priority Policy Programs for enhancing e-Learning in each country, continuous collaboration within AEN will be more and more needed based upon each country's efforts.

Map of ASEAN+3 (PRC,ROK,Japan) Countries

	Advanced						Developing						
Country	Korea	Singapore	Japan	Malaysia	China	Thailand	Philippines	Indonesia	Vietnam	Myanmar	Brunei	Cambodia	Laos
Rank by Economist*	5	6	23	25	46	36	43	53	57	N/A	N/A	N/A	N/A
Related Org.	KIEC, KELIA, SCORM Certification System, Collaboration with ADL etc.	LSTC	ALIC, eLC	National	CELTS C	NECTEC	ITECC, PeLS	Pustekkom					
WG1/ WG2 Interoperability	Certification on private level	Certification on National level		Strong demand for certification system	Not chasing the US-led standards	Gradual increase of applying standards		Still in early stage				Still not in practical stage. Poor infrastructure.	
WG3 e-Learning Profes Rank	Law related to e-Learning Quality Assurance, Certification on National level, AWARD related to e-Learning		Needs survey, item and criteria for Quality Assurance	Experimental QA/QM projects	Still in early stage. Lack of QA activities	Experimental QA/QM projects	Still in early stage. Lack of QA activities	Still in early stage. Lack of QA activities	Experimental QA/QM projects	Still in early stage. Lack of QA activities		Still not in practical stage. Poor infrastructure.	

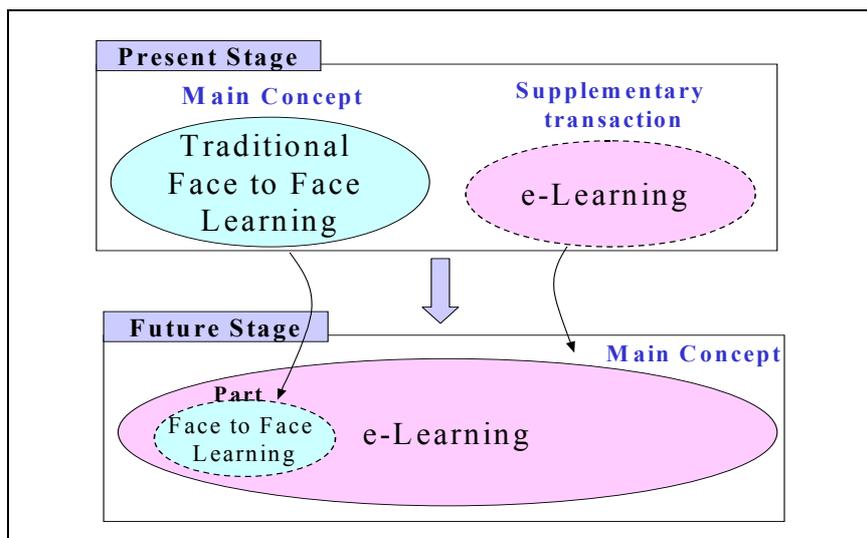
3. E-Japan Strategy

In July 2003, the Japanese Government announced its e-Japan Strategy Statement II. The IT Strategy Headquarters' e-Japan Priority Policy Program-2003 was made public in August 2003. The program is part of the Government's strategy to raise Japan into the top of group of advanced IT nations by 2005 and to foster continued innovation to sustain this status from 2006.

The program stressed the importance of "Advancement of Human Resource Development, and the Promotion of Education and Learning", the second policy area of five areas given priority. With this policy, the Government places high

value on the key word "e-Learning" along with other key concepts such as electronic government (e-Gov), electronic local government, electronic commerce, and electronic loans collection. According to e-Japan Priority Policy Program 2004 and IT Policy Package 2006, main activities such as advancement of HRD and promotion of teaching and learning in the fields of IT professionals, content creators and international standardization of IT performance skills and also promotion of e-learning were implemented.

4. Major reversal of educational philosophy due to growth of e-Learning

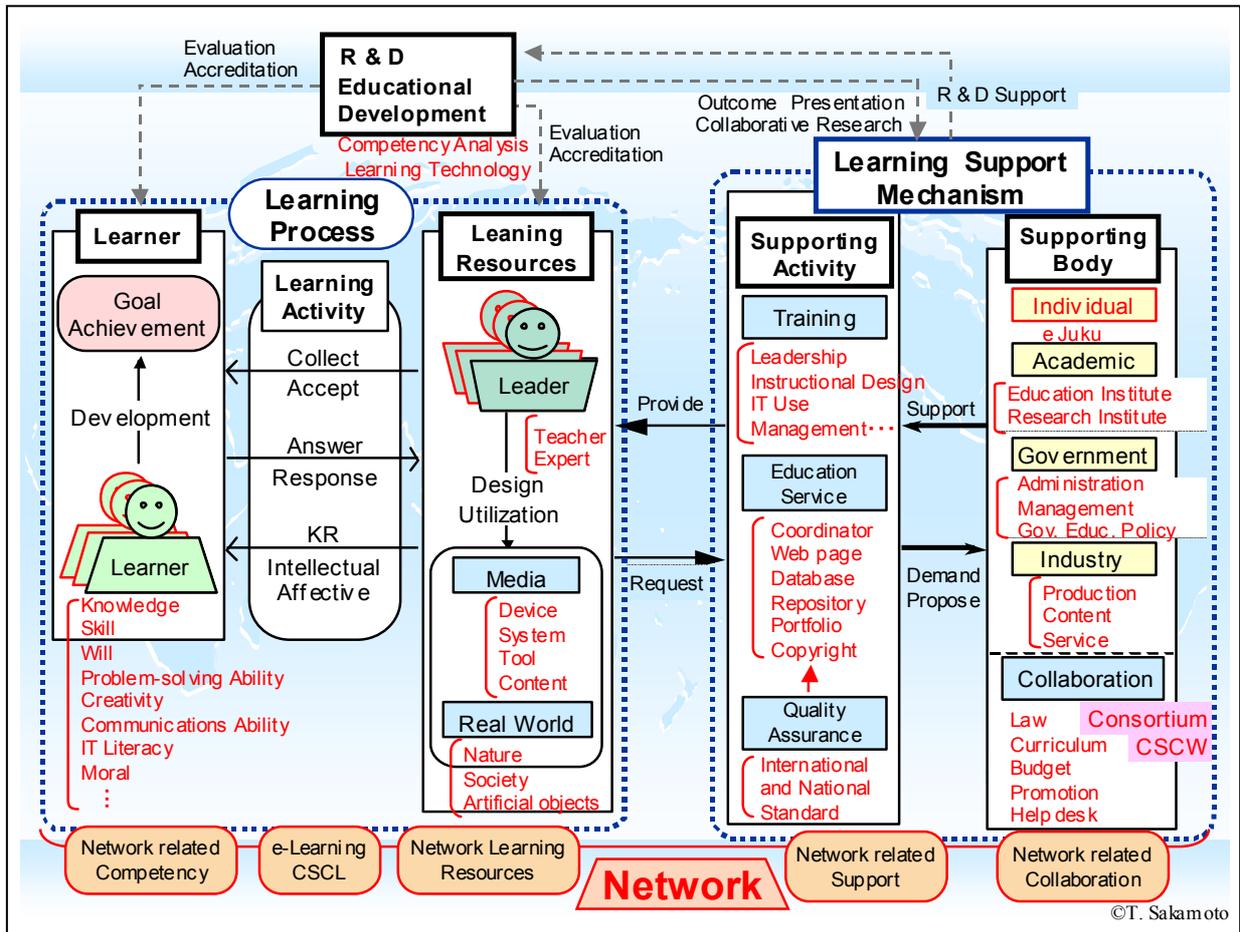


Change of Main Concept in Learning

In the background there are major changes in the use of ICT and the large knowledge resources in education and e-learning.

1. Changes of human resources required in a networked society
2. Enhancing human resources with problem solving abilities for sustainable development to save the earth and human resources

3. Changes of research focus in educational technology
4. Emphasis of education in the field closer to the real world
5. Development of advanced media
6. Introduction of cost mind into education
7. Development of education supporting technology.
8. Emphasis of evaluation, assessment, validation, and accreditation.



Corresponding to those changes the following problems should be widely and deeply investigated.

1. Analysis and enhancement of network related competency.
2. E-learning and CSCL
3. Network learning resources in the form of leader, media and real world.
4. Network related support and collaboration.
5. Research and development on e-educational methodology, e-competency analysis, advanced technology, evaluation, validation, e-assessment, accreditation, collaboration, e-portfolio and so on.

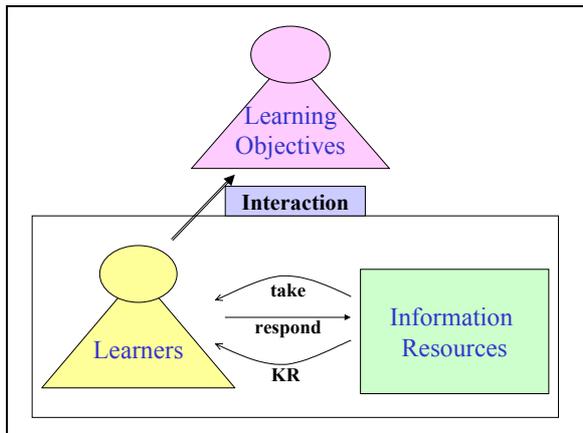
As computerization, networking, and the application of information technology have not yet been integrated into the education sector, many people concerned still believe that mainstream education must be school education based on traditional face-to-face lessons as a matter of course. In regard

to e-Learning, at most it is seen as one of many tools that support classroom lessons.

In the past, lack of advanced communication networks meant, aside from distance education by post, traditional face-to-face lessons were the only learning method available. For this reason, the traditional face-to-face lesson was considered the bedrock of education, a belief which has now been rocked by the advent of e-Learning.

The new paradigm is that e-Learning represents the true nature of education and traditional face-to-face lessons in universities and schools are, so to speak, exceptional practices. Put simply, the spread of e-Learning is causing a major, if somewhat belated, shift in educational philosophy. However, adopting this new paradigm will take considerable time as there is a great deal of inertia in educational communities that have always practiced traditional face-to-face education.

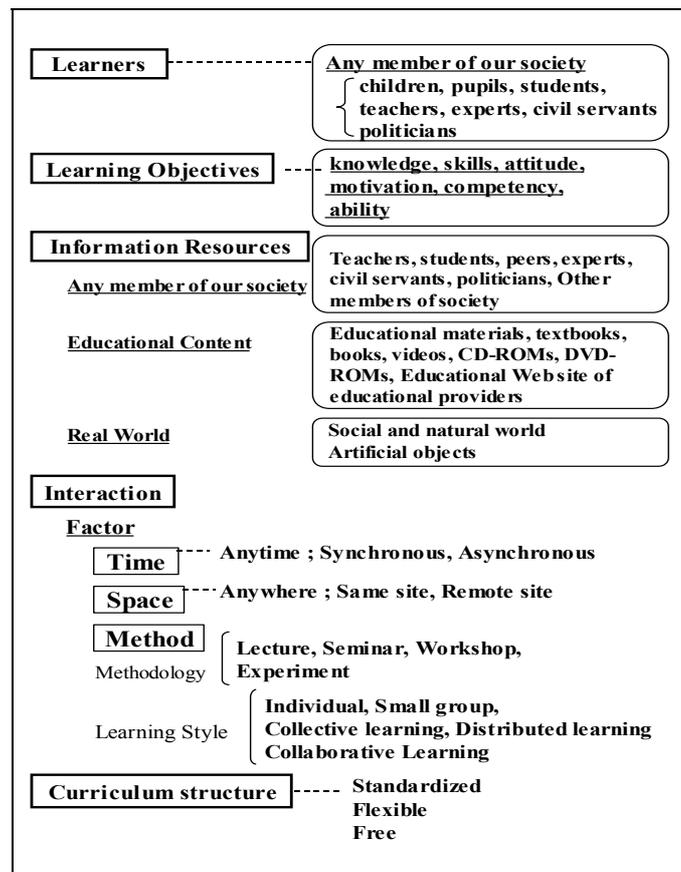
5. Structure of e-Learning



Mechanism of Education

Education consists of interaction between learners and information sources. Information sources for learning include not only teachers, students, peers, experts, civil servants, politicians, and other members of society, but also sources such as educational materials, textbooks, other books, videos, TV, CD-ROMs, DVD-ROMs, educational Web sites, as well as the social and natural worlds. Anything can be a source for learning. Additionally, anybody can be a learner. Learning is

not restricted to children or students; Teachers, experts, civil servants, politicians, indeed, all members of society can be learners. The relationship between learners and sources should allow for synchronous and asynchronous learning in terms of time; a multiplicity of environments in terms of place; and a variety of methods, encompassing lectures, drills, experiments, observation, individual practices, small-group activities, and distributed and collaborative activities. Education is the state of affairs where learning objectives are achieved through learning, pursued in a variety of conditions yet always aimed at these objectives, and realized in the interaction between learners and learning information sources. Therefore the collective learning which takes place between teachers and students in traditional face-to-face education at universities and schools can be considered a special or exceptional situation. Previously, due to the late introduction of information technology into education, other learning methods other than traditional face-to-face lessons were generally unavailable, causing educational communities to believe the traditional lesson to be the only possible learning method. On the other hand, it may be very difficult to imagine that everybody will be able to learn anyplace anytime through any means in a fully networked society. Of course, it goes without saying that traditional face-to-face education is still important at universities or other schools. The traditional method can be regarded as a kind of pure situation, and as such it offers certain advantages, including a number of principles and basic understandings it delivers which can be applied effectively to education in general.



Detail of Components

The strengths and limitations of education and the traditional face-to-face method are clarified in this context.

Information communication technologies such as OHPs, videos, projectors, and computers are the face of e-Learning in traditional face-to-face education. For distance education, e-Learning takes the form of content connected to a network. Networks make available knowledge from all over the world, enabling the learner to take the initiative in selecting and studying necessary content from anywhere at anytime

Yet while traditional face-to-face education cannot fully offer such advantages, distance education does not sufficiently enable visual communication such as facial expression, gesture, enthusiasm, and emotional contacts between teacher and student, which constitute extremely enjoyable aspects of traditional face-to-face education. In order to effectively promote education, the need to incorporate these factors as important components of education should not be underestimated. Distance education needs to show improvement in this area, for example by including bringing in mentors or actively using images and arranging off-line meetings. Teachers also need to be prepared in face-to-face lessons and should pre-download content when using the Internet in the classroom. This kind of care will effectively improve education aimed at imparting knowledge, yet education which aims to discover or create new knowledge further needs to provide occasions in which learners can gain experience and solve problems in a simulating environment, all of which are necessary for effective intellectual learning.

6. Influence of e-Learning on university education

The spread of e-Learning will significantly influence university education. In an aging society with a diminishing youth demographic, thirty percent of universities and fifty percent of junior colleges cannot meet their quotas. In addition to this severe situation, the introduction of e-Learning makes it more difficult for even prestigious schools to secure students both in Japan and abroad. A number of renowned foreign universities now confer master degrees on students who study solely via e-Learning. This matter will become more pressing as Japanese students improve their English and foreign universities offer courses in Japanese. Universities are engaged in a variety of activities in the reorganization of national universities into independent corporations. Nevertheless, major threats are on the horizon that various corporations, organizations, and education businesses are expected to offer educational courses which match those provided in universities, though some of this planning has already been implemented. These new competitors will award diplomas and qualifications that may be highly valued by society, thus conferring on their universality and legitimacy.

In such situation important problems to be solved will be quality assurance, establishment of global standards in system, platform, and content, copyright treatment, use of local languages, user protection, building portal sites, blended learning, and specially collaboration across all kinds of different sectors and among sectors.

7. Conclusion

In this context, it would become more and more important to evaluate the quality of education and training courses, contents, instruction and also related organizations. The global standard of systems, and platform also should explicitly be defined. Each database in portal sites should have its own independent and qualified characteristics for their own products, and their own culture and languages.

Specially maintaining and deepening independent characteristic of each knowledge site, multi-collaboration across different component sectors within and among universities, IHEs, companies, disciplines, specialties, countries, districts, culture, gender, age religion, ethnic groups, social position and profession.

The AEN is one of these knowledge networks and gradually will grow to construct AEEN(Asia Europe E-Learning Network), APEN(Asia Pacific E-Learning Network) and finally global world e-Learning network using large knowledge resources. Cultivating qualified leaders based on knowledge and skill standards is now urgent problem.

8. References

- Sakamoto, T., "Educational Reform Based on E-Learning: The Establishment of an International Web-Based Learning Community", *Journal of Studies in International Education*, Vol.6 No.2 15-171, 2002.
- Sakamoto, T., "Development of Information and Communication Technology use in School Education in Japan", *Information and Systems in Education*, Vol.1 No.1, 5-14, 2002.
- Sakamoto, T., "E-learning and educational innovation in higher education in Japan", *Educational Media International*, No.1, 9-16, 2002.
- Sakamoto, T., "E-Learning in Japanese Universities", *Industry and Higher Education*, December, 397-404, 2003.

Short Bio

Takashi Sakamoto, Prof. Dr.

After his retirement as a professor of Tokyo Institute of Technology, he became a Vice President of the National Center for University Entrance Examinations. He later became the Director General of the National Institute of Multimedia Education and is now the President of the Japan Association for Promotion of Educational Technology as well as the President of the Accreditation Council for Practical Abilities.

He is also the president of the Japanese Association of Educational Technology Societies and Japan Society of Media and Information Science and the chairperson of Asia E-learning Network Promotion Committee.

He has written and edited extensively over 400 books and published many academic and professional papers and articles. Dr. Sakamoto has also worked as a member on various governmental social activity committees nationally and internationally.