

## **Learning E-Learning Strategy as a Form of Higher Education in the Implementation of Digital**

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### **Abstract**

*Abstract. The purpose of this paper is showing that the development of Higher Education management through a management software information systems able to provide added value in the advancement of education. Method of approach by collecting data such as some of concepts dan case studies on implementation if management software information systems in several universities. The results of the analysis turned out to higher educations in the digital era need to implement learning strategies by leveraging existing technology. Learning strategies to prepare the lecturers who understand e-learning strategies are effective, the concept of e-learning activities, the provision of technologies that support the smooth process of e-learning. Development of the digital era give higher educations the opportunity to anticipate the impact of globalization which will be towards the direction of internationalization. This could allow higher education to implement distance education.*

**Keywords :** *learning strategies, e-learning, digital era, higher education*

## **1.0 Introduction**

Decree of the Minister of National Education No. 107/U/2001 provide an opportunity for organizations and institutions of education in Indonesia to conduct distance education. Higher education should have the ability to national competitiveness in accordance with the Higher Education Long Term Strategy (HELTS) 2003-2010, and one of the determinants of competitive advantage is the use of information technology is used as a learning tool. E-learning brings a huge influence on the education transformation process which was originally given in conventional, switched to using digital means, both in content and systems. According to Harley & Knight (1996), e-learning is a learning conditions that allow students receive instructional materials by using the internet, intranet or other computer networks.

Currently, the application of e-learning helps to know how students learn, how quickly the mastery of skills, as far as the material is easy to learn, and how much students enjoy the learning process. The importance of e-learning makes education institution immediately to transform education, one with optimizing the use of technology to meet the demands and the phenomenon of globalization that prioritizes competition in most industry sectors, including education. The consequences of the use of information technology in educational institutions, particularly in higher education, not just concentrate on the preparation of infrastructure, not less important is the management in using the appropriate organizational strategy (McPherson, 2003).

Self-directed learning refers to the intrinsic motivation tends to find its own knowledge needed (Merriam, 2001:5), the learning process is not necessarily done in the classroom with the classical model of lecture or discussion. One innovation that is currently learning more and more is done by using online-based learning or e-learning.

Telecommunications infrastructure to support the implementation of e-learning is no longer just a monopoly of the big cities, but gradually has begun to be enjoyed by those in the towns in the district. That is, people who are in the district has been able to use internet facility.

## **Definition of Management Information Systems**

Management Information Systems (MIS) is a series of sub-systems and comprehensive information rationally integrated and coordinated to present information to support the functions of operations, management and decision making in an organization. The system uses hardware and software computer, procedure guidance, management and decision models, and a "data base". In other words, MIS is a computer-based system that provides information for multiple users with similar needs. Users typically establish a formal organizational entity, company or sub-unit down.

This information describes the organization or one of its main systems related to what happened in the past, what is happening now and what may happen in the future. The information is available in the form of periodic reports, special reports and output of the mathematical model. Several information systems functions such as :

1. Increasing the accessibility of data are presented in a timely and accurate information to users, without requiring any intermediate information systems.
2. Ensure the availability of quality and skill in using information systems critically.

3. Developing an effective planning process.
4. Identify the needs for information systems support skills.
5. Establish investment will be directed to the information system.
6. Anticipate and understand the economic consequences of information systems and technologies.
7. Improving productivity in application development and system maintenance.

## **E-Learning as a Form of Management Information System Implementation in Higher Education**

E-learning is a generic term for all technologically supported learning using an array of teaching and learning tools as phone bridging, audio and videotapes, teleconferencing, satellite transmissions, and the more web-based training or computer aided instruction also commonly referred to as online courses (Soekartawi, Haryono and Librero, 2002). Rosenberg (2001) emphasized that e-learning refers to the use of Internet technology to deliver a series of solutions that can improve their knowledge and skills.

E-Learning is a learning process that uses information and communication technology (ICT) by systematically integrating all the components of learning, including learning interactions over space and time, with guaranteed quality backed by the implementation of technology services such as telephone, audio, vidiotape, satellite transmission or computer. E-learning systematics allows students to contact with other students, faculty, various materials (in the form of materials, material assignments, exam / test and form linkages) and learning resources in electronic form. Provisions in the implementation of e-learning is committed leadership, institutional policies (including policies in the implementation of e-learning, accessibility, intellectual property rights), users (students, faculty, technical and administrative support staff), e-learning design documentation, information and communication technology. Rosenberg (2001) categorizes three basic criteria that exist in e-learning :

- (a) E-learning is the network, which makes it able to fix it quickly, store or retrieve, distribute, and learning and information sharing. This requirement is essential in e-learning, so that Rosenberg called it an absolute requirement.
- (b) E-learning is delivered to the user via a computer using standard Internet technology. CD ROM, Web TV, Web Cell Phones, pagers, and other personal digital aids can even prepare the learning message but can not be classed as e-learning.
- (c) E-learning focuses on the broadest view of learning, learning solutions that outperform traditional paradigm in training.

The advantages of e-learning:

1. shorten the learning time,
2. study costs more economical,
3. increase student interaction with each other and with faculty so that formation of learning communities that interact, take and give, and not limited to one location,
4. availability of learning resources that are not restricted,

5. teachers / lecturers / instructors will be easier to control the activities of learners and updating learning materials,
6. improve the quality of teachers as possible to gather information more widely and even unlimited,
7. role of the teacher is replaced computers and electronics guidelines designed by the "contents writer", e-learning designers and computer programmers,
8. e-learning developed properly to be effective in improving the quality of college graduates and quality,

Various critics (Bullen, 2001, Beam, 1997), lack of implementation of e-learning:

1. lack of interaction between teachers and students or among the students themselves in the process of learning and teaching,
2. tendency to ignore aspects of academic or social aspects and instead encourage the growth aspects of the business / commercial,
3. learning and teaching processes tend toward training than education,
4. the changing role of the teacher from the original master conventional learning techniques, has also demanded to know the technique of learning using ICT,
5. students who do not have high motivation to learn are likely to fail,
6. not all of the available Internet facilities (related to the question of access to electricity, telephone or computer),
7. lack of a knowing and skilled internet problems,
8. lack of mastery of computer languages.

### **E-Learning Model in Education**

According Budi Rahardjo (2002), the benefits of the internet for access to education can be a source of information (online library, the source literature, the results of research, course material), access to the informant, and as a medium of cooperation (or research papers together). According Koswara (2006) there are some teaching strategies that can be applied by using the technology of e-learning are as follows:

- (a) Learning by doing, simulation learning by doing what he wanted to learn.
- (b) Incidental learning, learn something indirectly.
- (c) Learning by reflection, learn something by developing ideas on subjects who want to learn.
- (d) Case-based learning, learn something based on cases that have taken place on the subject who want to learn.
- (e) Learning by exploring, learn something by exploring the subject who want to learn.

Profile of participants of e-Learning is one who (1) have a high self-motivation and commitment to study seriously the responsibility entirely on the self-study participants learning itself (Loftus, 2001), (2) glad to learn and conduct studies, enjoy reading for the sake of self-improvement continuously, and who enjoying

freedom, (3) a failure in a particular subject in a conventional school and need a replacement, or requiring a certain subject matter that is not served by conventional schools locally and who want to accelerate their graduation so take some other subjects through e-Learning, and were not allowed to leave the house due to various considerations (Tucker, 2000).

According Haughey (1998), there are three possibilities in the development of Internet-based learning system, which is "web course, course web-centric, and web-enhanced course".

- (a) "Web course" is the use of the internet for educational purposes, learners and teachers are not fully separated and needed a face-to-face (using the remote system).
- (b) "Web centric course" is the use of the internet that combines learning with no face-to-face (long distance) and face-to-face (conventional), some of the material delivered via the internet, and some of them face to face.
- (c) "Web enhanced course" is the use of the internet to support improving the quality of learning in the classroom (providing enrichment and communication between learners with teachers, fellow students, members of the group, or the students with another resource).

Onno W. Purbo (2002) requires three things that must be met in designing e-learning, which is "a simple, personal, and fast". Simple system will allow students to utilize existing technologies and menus so that participants can learn a streamlined. Personal terms means the teacher can interact with both like a teacher to communicate with students in the classroom so that the approach and a more personal interaction, learners progress note, and assisted all the problems it faces. Then the service is supported by speed, quick response to the complaints and needs of other learners so that learning can be improved as soon as possible by a teacher or administrator.

The importance of the Roll statement (1997) is "High technology should be to reach the unreachable, and the precision of high technology is an infrastructure used wisely. Thus, distance learning and open learning / distance will be the pioneers entered the new decade".

## **Findings**

In 2006, 3.5 million students participate in online learning in higher education institutions in the United States. According to the Sloan Foundation reports, there has been increasing approximately 12-14% per year on average in enrollments for fully online learning over the five years 2004-2009 in the U.S. post-secondary system, compared with an average of around 2% increase per year in overall enrollment.

Allen and Seamen (2009) claims that almost a quarter of all students in post-secondary education were taking fully online courses in 2008, and a report by Ambient Insight Research shows that in 2009, 44% of post-secondary school students in the United States to take some or all of their courses online, and projected that this figure will rise to 81% in 2014. Thus it can be seen that e-learning is moving rapidly from the margins to become the dominant form of post-secondary education, at least in the United States.

Colleges in Indonesia that have implemented e-learning is good and oriented implementation of digital campus is the University of Bina Nusantara (UBINUS). The system developed is called the Multi Channel Learning (MCL), and e-learning is one of the channel. MCL at Bina Nusantara University is a model of information technology-based learning system that consists of three main activities : (1) the

activity in the classroom, (2) self-learning activities, and (3) e-learning activities. Currently, all courses have been using MCL with a composition classroom activities and e-learning continues to be regulated lead on e-learning. To support the operation of MCL, UBINUS use homemade Learning Management System that can be accessed through the address <http://www.ubinus.ac.id>.

Another example is the UIN Sunan Kalijaga, the college is implementing active learning using books and instructional CDs. The selection process for the course conducted online using the internet that focus on the management of the development of e-learning programs in accordance with the Islamic University in establishing the conditions to be able to compete nationally and internationally.

According Koswara (2006), the skills required for e-learning faculty, among others, need to :

- (a) Understanding about e-learning,
- (b) Identify the characteristics of students,
- (c) Design and develop an interactive course material in accordance with the development of new technologies,
- (d) Adapting teaching strategies to deliver material electronically,
- (e) Organizing the material in a format that is easy to learn,
- (f) Conducting training and practice electronically,
- (g) Involved in the planning, development, and decision making,
- (h) Evaluating the success of learning, attitude and perception of students.

According Moore (1996), e-learning with interactive videos can be an efficient and interactive classes, produce a significant advantage as a learning space. To avoid the failure of e-learning, programs need to be developed related to the needs of users, especially students, among others:

- In relation to information about the units associated with the learning process: goals and objectives, syllabus, teaching methods, class schedules, assignments, schedules lecturer, a reference list or reading materials and teacher contact.
- Easy access to the reference source: textbook and lecture notes, presentation materials, sample tests ago, FAQ (frequently ask question), reference sources for work assignments, useful websites and articles in online journals.
- Communication in the classroom: an online discussion forum, mailing list discussions, bulletin boards that provide information (changes in class schedules, assignments and deadline information was collected).

A web-based distance education, among others should have the following elements :

1. Student activities center; as a means to increase the ability of students, reading course material, looking for information, and so on.
2. Interaction in the group;
3. Student administration system;
4. Deepening materials and exams;
5. Digital libraries;
6. Online material beyond the course material.

**Table 1:** E-Learning Quality Standards

Component	Quality Standards	Indicator
A. Planning	<ol style="list-style-type: none"> <li>1. Lectures are held to be approved / ratified the Faculty / University</li> <li>2. Lecturers and students should have access to the intranet and internet</li> <li>3. Lecturers should have access to facilities-based teaching development of e-Learning</li> <li>4. Design Books Available Teaching (BPR) and Student Manual labor (BKPM)</li> <li>5. There is access to training facilities implementation of e-Learning</li> </ol>	<p>Course design document which was approved by the Faculty / University</p> <p>Providing access to intranet or Internet with easy, affordable, adequate speed</p> <p>Providing adequate access and facilities for the development of e-Learning lessons</p> <p>Availability of BRP, BKPM and analytical competencies that can be accessed by students</p> <p>Providing access to and implementation of the training facilities of e-learning Availability of and access to technical support and administrative facilities for the implementation of e-Learning lessons</p>
B. Planning and Preparation Materials	<ol style="list-style-type: none"> <li>1. Materials must be in accordance with the curriculum and the electronic media are available</li> <li>2. Material prepared by experts in the field of science related</li> <li>3. The design and manufacture of materials shall be in accordance with the characteristics of e-learning lessons</li> <li>4. Materials should be available and accessible to students without a place and time bound</li> <li>5. Running the implementation of e-learning in accordance with the code of conduct, rules and regulations</li> </ol>	<p>Compatibility between the material and curriculum</p> <p>The document has been approved materials experts in related disciplines</p> <p>Compatibility between the design and manufacturing of materials with the learning characteristics of e-Learning</p> <p>Availability of material that can be accessed by students with no time-bound and place</p> <p>The suitability of the process of e-Learning with the code of conduct, rules and regulations</p>

<p><b>C. Delivery</b></p>	<ol style="list-style-type: none"> <li>1. Minimum material available in an electronic presentation (eg power point)</li> <li>2. Submission materials should be appropriate to the specified mapping program</li> <li>3. The material should be attractive in terms of content and layout, current and free from errors</li> <li>4. Facilities should be available face-to-face</li> <li>5. Support facilities must be available that allows students to do access the parts of matter, such as navigation in electronic presentations</li> </ol>	<p>The diversity and different forms of electronic presentation is used in e-Learning</p> <p>Coompatibility between means or methods of delivery of material with the specified mapping program</p> <ul style="list-style-type: none"> <li>• The material is available and can be easily updated and up to date</li> <li>• The material displayed interesting, easy to understand and free of errors</li> </ul> <p>Rate limited facilities face to face</p> <ul style="list-style-type: none"> <li>• Monitoring of student access</li> <li>• Comply with the code of conduct, rules, regulations and copyright</li> </ul>
<p><b>D. Interaction</b></p>	<ol style="list-style-type: none"> <li>1. Learning is designed to ensure interaction between students, faculty-student and student-matter</li> <li>2. Interaction should be done either synchronous or asynchronous</li> </ol>	<p>Available design interactions students between themselves, teachers, and learning materials</p> <p>Interactions occurred with both synchronous and asynchronous</p>
<p><b>E. Evaluation</b></p>	<ol style="list-style-type: none"> <li>1. There should be an evaluation of             <ul style="list-style-type: none"> <li>• Lecturer,</li> <li>• Student,</li> <li>• Fill (assignments, quizzes, mid-test, final-test)</li> <li>• Process (activity, peer assessment)</li> <li>• University (regulations, registration procedures)</li> <li>• Implementation (facilities and technical support for the implementation of e-Learning)</li> <li>• Content (conformity with the syllabus, easy to understand, easy access)</li> </ul> </li> </ol>	<ul style="list-style-type: none"> <li>• Do an evaluation of the faculty through e-learning instruments</li> <li>• Do an evaluation of the student: quizzes, assignments, mid-test, final-test and active in the learning process</li> <li>• Do an evaluation of the university :             <ul style="list-style-type: none"> <li>– Availability of rules</li> <li>– Registration procedures</li> </ul> </li> <li>• Do an evaluation of the implementation: e-Learning process runs smoothly</li> <li>• Do an evaluation of the material: the present, compliance with the syllabus, easily understood</li> </ul>

	<ol style="list-style-type: none"> <li>2. There should be a mechanism of identification physical</li> <li>3. Assessment should be recorded in the information systems academic</li> <li>4. Need to evaluate result of student learning</li> </ol>	All data recorded in the information systems academic
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**Table 2 :** Policy Proposal of E-learning in Higher Education Future use framework of the Gellman-Danley and Fetzner (1998)

Policy Area	Key Issues
Academic	Calendar, Course integrity, Transferability, Transcripts, Student/Course evaluation, Admission standards, Curriculum/Course approval, Accreditation, Class cancellations, Course/Program/Degree availability, Recruiting/Marketing
Governance/Administration/ Fiscal	Tuition rate, Technology fee, FTE's, Administration cost, State fiscal regulations, Tuition disbursement, Space, Single versus multiple board oversight, Staffing
Faculty	Compensation and workload, Development incentives, Faculty training, Congruence with existing union contracts, Class monitoring, Faculty support, Faculty evaluation
Legal	Intellectual property, Faculty, Student and institutional liability
Student Support Services	Advisement, Counseling, Library access, Materials delivery, Student training, Test proctoring, Videotaping, Computer accounts, Registration, Financial aid, Labs
Technical	Systems reliability, Connectivity/access, Hardware/software, Setup concerns, Infrastructure, Technical support (staffing), Scheduling, Costs
Cultural	Adoption of innovations, Acceptance of on-line/distance teaching, Understanding of distance education (what works at a distance), Organizational values

**Table 3** : Policy Analysis Framework

Policy Area	Description
Faculty (including Continuing Education and Cooperative Extension)	Rewards (e.g., stipends, promotion and tenure, merit increases, etc.); Support (e.g., student help, technical assistance, training, etc.); Opportunities to learn about technology and new applications (e.g., release time, training, etc.); Intellectual property (e.g. ownership of materials, copyright, etc.)
Students/Participants	Support (e.g., access to technology, library resources, registration, advising, financial aid, etc.); Requirements and records (e.g., residency requirements, acceptance of courses from other places, transfer of credit, continuing education, etc.)
Management and Organization	Tuition and fee structure; Funding formula; Collaboration (e.g., with other Departments, units, institutions, consortia, intra-and inter-institutional, service areas, etc.); Resources (e.g., financial resources to support distance education, equipment, new technologies, etc.); Curricula/individual courses (e.g., delivery modes, course/program selection, plans to develop, individual sequences, course development, entire program delivery, interactivity requirements, test requirements, contact hour definitions, etc.)

## Conclusion

Implementation of an e-learning is based on the development and needs of the academic community in the modern era that telekomunikatif e-learning quality standards and mechanisms for quality assurance in e-Learning implementation requires attention to achieve the success that make students fit for purpose competence. Involvement manager at the university, the faculty and students held a very important role to achieve success with respect to the code of ethics and rules of law relating to the implementation of e-Learning.

The key to an effective e-learning is to focus on student needs, material needs and barriers faced by teachers before using information technology equipment and the maximum supported by the interaction between professors and students, between students with different educational facilities, between students and each other, and the patterns in the interaction of the active learning.

Information technology and telecommunications are cheap and easy will eliminate the limitation of space and time that had been limiting the world of education. Some logical consequences that occur include:

- (1) Students can easily take courses without being confined within the boundaries of the institution and the state;
- (2) Students can easily discuss with experts or experts in the field of their interest;

- (3) Study material can be easily taken in various parts of the world irrespective of the college where students learn. Various opportunities mentioned above are still facing challenges from both cost, infrastructure readiness information technology, society, and regulations that support the sustainability of e-learning.

E-Learning will be used or not depends on government policies in education and how users view or evaluate the e-learning. But the general use of this technology depends on: (1). Is the technology was already a requirement (2). Is adequate support facilities, (3). Is supported by adequate funding, and (4). Is there support from policy makers.

One thing that should be emphasized and understood is that e-learning can not completely replace conventional learning activities in the classroom but complementary with conventional learning in the classroom and still requires an adequate interaction in an effort to maintain quality.

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