

E-learning Readiness of Thailand's Universities Comparing to the USA's Cases

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Abstract—in 1990, Thailand's Ministry of Education developed strategies to encourage universities to incorporate e-learning systems in their curriculum. However, the rate of adoption has been slow, largely due to the fact that many private and public universities in Thailand have no e-learning adoption readiness, such as policy, regulation, and technology. The necessary components to make e-learning accessible to learners such as connectivity, capability, contents and culture need to be well clarified and prepared. To shorten the path to success full e-learning adoption in Thailand, this paper reviews key success factors in e-learning in the United States of America (USA) and presents the results of the study compared to the Thailand's higher education. The results include the recommendations for Thailand e-learning meand most common success factors such as support resources dedicated to the online programs, creation of a clear, well-defined project plan, careful selection of the initial program offerings, and teacher training sessions to help developing effective teaching styles.

Index Terms—e-learning, Readiness, USA, Higher Education, Thailand

I. INTRODUCTION

Today, the development of the Internet into a worldwide, high-speed, multimedia communication platform has enabled the development of e-learning as an effective teaching and learning mechanism. In education, e-learning offers significant advantages to students and teachers for research, training, and online learning on par with traditional instruction. In many countries, e-learning has become a "critical" component of lifelong learning and of long-term planning strategies.

In 1990, the Thai government developed a strategic plan for the implementation of information and communication technology (ICT) in education. The strategic plan aims at using technology to enhance the quality of education and training, at increasing the effectiveness of education and training delivery systems, and at increasing the efficiency of education and training management. Regarding the plan, the Ministry of Education (MOE) has pushed forward a policy to support R&D in the use of ICT in education, including IT connectivity and high quality digital learning and teaching materials. Universities, schools, and various educational institutions will work together to strengthen innovative ways for adopting e-learning at all education levels. As a pilot project, the Commission on Higher Education (CHE) under the MOE has developed the e-learning web portal called

"Thailand Cyber University (TCU)" project. The TCU is a web portal for online courses where various universities, schools and institutions can offer their e-learning courses, can share information and can communicate with others. Currently, there are several universities and schools offering 30 comprehensive online degree courses and hundreds of training courses on the TCU.

The CHE has been attempting to encourage universities to utilize e-learning systems in their curricula. However, it seems that the number of completed e-learning courses is growing quite slowly, largely due to the fact that many private and public universities in Thailand have no e-learning adoption readiness, such as policy, regulation, and technology. The necessary components to make e-learning accessible to learners such as connectivity, capability, contents and culture need to be well clarified and prepared. Thus, a study on e-learning readiness is a key success factor and is a crucial part of e-learning development. Generally, e-learning readiness is defined as readiness for an organization intending to adopt e-learning or as the "mental or physical preparedness for that organization for some e-learning experience or action [5]."

This paper presents the status of e-learning readiness in Thailand's higher education system compared to e-learning success in the USA. Finally the paper proposes some useful recommendations for the implementation of sustainable e-learning systems in Thailand's higher education.

II. BACKGROUND

A. E-learning Readiness

Continuous learning is the most important aspect for dynamic organizations. E-learning provides the necessary environment and appropriate tools for task oriented, up to date and continuous learning. E-learning also makes organizations capable to train their geographically scattered workforce giving them current knowledge and skills, with greater efficiency but at less cost. To introduce e-learning, organizations should be prepared with proper environmental and technological aspects. Readiness for an organization intending to adopt e-learning can be defined as the "mental or physical preparedness for that organization for some e-learning experience or action". It is important to understand that readiness isn't a one-time action; rather it is a continuous process. As more and more organizations decide to join and expand e-learning interventions, it becomes critical to assess their readiness to utilize technology for a successful implementation and to match learning strategies with local needs. Moreover, in order to reduce the risk of e-learning interventions, past failures should also be analyzed [1].

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B. E-learning Readiness Components

Government, industry, education, and society are identified as the key components in the first level of e-learning readiness. In the second level, readiness is evaluated based on the connectivity, the capability – a country's ability to deliver and consume e-learning, literacy rates, and trends in training and education – content and culture [5]. Rosenberg focused on the concept of sustainability and proposed the components of business readiness, changing nature of learning and e-learning, value of instruction and information, role of change management, reinvention of training organizations to support e-learning efforts, e-learning industry, and personal commitment [6][7]. Chapnick proposed the components of psychology, sociology, environment, human resource, finance, technology, equipment, and content readiness [8]. Overall e-learning readiness is defined by seven key components.

- **Business Readiness** refers to the link between organizational business priorities and characteristics, to e-learning efforts. Organizations operate in a highly competitive environment where strategy, environment, and attention to internal problems affect their viability and profitability.
- **Technology Readiness** focuses primarily on the technical infrastructure. Content Readiness studies issues concerning e-learning content material such as interactivity, reusability, interoperability, etc.
- **Training Process Readiness** refers to the ability of organizations to organize, analyze, design, develop, implement and evaluate a concrete training program.
- **Culture Readiness** determines an organization's perceptions and cultural parameters concerning e-learning adoption and use.
- **Human Resources Readiness** refers to the availability and set-up of the human support system. In this component some parameters such as receptivity and the prerequisites of humans to learn successfully in the new environment are defined.
- **Financial Readiness** refers to the budget allocation and investment for establishing a robust e-learning setup [5].

A. Thailand's National Education Policy

Like any other country, the drive to become better as a nation is influenced by strong leadership. Thailand is no exception to this. The Thailand National Education Act was promulgated on August 1999 and promotes education to develop the full potential of the Thai people by imparting awareness and knowledge in areas such as politics, democratic governance, human rights, local wisdom, environmental preservation, self-reliance, creativity, and self-learning on a continual basis. The Act is guided by the principles of lifelong education for all, the participation of all segments of society in the provision of education, and the continuous development of the bodies of knowledge and learning processes[9]. The National Education Act was quoted to further stress Thailand's desire of lifelong education for its citizens and that this policy will also be the prelude to the IT Policy Framework up to 2010. Subsequently, Thailand will move in the direction of preparing its citizens, its human capital resources, for a knowledge-based society [10].

B. Thailand Cyber University (TCU)

According to the National Education Act B.E. 1999, providing more educational opportunities for Thai people is an important government policy, widely and equally enhancing knowledge, both in urban and rural areas, regardless of economic status. Creating more educational opportunities will reduce the difference between the knowledge levels of the population. The Office of the Commission on Higher Education has been developing and providing these opportunities as follows:

- Developing the University Network (UniNet) IT infrastructure to connect every institution of higher education to the Internet for education and research.
- Supporting the production of courseware for dissemination via UniNet.
- Developing the Learning Management System (LMS).
- Developing the e-library, e-community and the learning resource sharing centre.

With the above opportunities, TCU has been developed as a web-based learning management system since 2004. 41 universities have joined the TCU project by developing their online curricula and registering the curricula on the TCU web-based system. At present, there are 635 lessons, 17 curricula, 107,068 online students and 4,040 online lecturers [9].

C. The Case of the USA

Once access to the Internet was liberalized and the World Wide Web became ubiquitous in the mid-1990's, universities that had been offering correspondence courses via postal mail and email quickly discovered that the Web opened up new opportunities for teaching and learning remotely and asynchronously. In the U.S., professors engaged students in online discussions, universities opened up online courses and degrees, and students, eager to gain autonomy and flexibility, flocked to online courses. Some wholly online universities were opened. National Technological University (www.ntu.edu, founded in 1984 as the first accredited "virtual" university and merged with Walden University in 2005), and Western Governors' University (www.wgu.edu, chartered in 1996 with a 2010 student population over 20,000) are two of the first wholly online accredited universities in the U.S.

Initial attempts at online courses involved a lot of experimentation, some failures, and a steep learning curve for both faculty and students. Creating courses that were more than simply email correspondence courses required ingenuity, risk-taking and intense university technical and instructional development support. One of this paper's authors first taught an online course at Weber State University in Utah, U.S. from the Netherlands while on sabbatical leave, from September to December, 1996. Students and faculty alike were just learning to create web pages, to use discussion forums, and to exchange files via ftp, nascent skills for ever richer learning environments. Over 50% of the students dropped the course, but it was a first step forward in wholly online teaching and learning. Since those initial attempts at online instruction, we have seen tremendous growth in both online courses and online degrees and certificates. According to a report by the Sloan Commission on online higher education in the U.S. in 2009 [1], 4.6 million students are taking at least one online

course, and demand has increased yearly since the study began in 2002. The National Center for Education Statistics [2] reports that 89% of U.S. public institutions offer online education, in both degree and certificate programs. There is no longer any doubt that online instruction is a viable alternative to traditional classroom teaching, as many studies, such as the annual report of the Sloan Foundation, have shown.

Over the past decade, online instruction has been fertile ground for research and development in teaching and learning, and there are many studies on best practices in online instruction for higher education. Here, we present a summary of these best practices, distilled from recent literature. The summary is presented from three perspectives: best practices for instructors of online course, preparing students to succeed in wholly online courses, and requisite institutional support for online instruction. First, professors' acceptance of online instruction is growing. Initially the domain of the technically-inclined, learning management systems such as WebCT, Moodle and Sakai provide a flexible and user-friendly platform for managing a class. Graduate and certificate programs in instructional design, online instruction, and educational technologies abound. Textbook publishers provide WebCT e-packs to accompany textbooks and even offer professional certification in online instruction, such as Pearson Education's online training for instructors who want to begin teaching online [3]. Pearson's course covers fundamentals such as the necessary technology skills, instructional skills for online learning, creating learning communities, and engaging students.

An article by instructors who have been teaching online for over twelve years [7] gives useful advice for conducting an online course, with its "Top Ten List for Successful Online Courses." The asynchronous and remote nature of an online course exacerbates communication difficulties, so instructors are advised to set up the entire course before the beginning of the semester, make the syllabus and other operational parts of the course available to students before the semester begins, and to keep a checklist of activities for both students and instructors to follow. Have weekly activities so that it is easy to spot "missing" students and intervene early. And, just as instructors ask students to communicate with them when there will be delays or schedule changes, instructors are advised to keep students posted on their schedule, for example, if a day-long meeting will delay the evaluation and feedback on a homework assignment.

Professors typically view their students as being more technologically savvy than themselves. While it may be true that students are loquacious with SMS and IM, they don't necessarily have the information literacy and time management skills necessary to succeed online. Personal teaching experience as well as studies show that time management is the most critical factor in online success. Students need to create a study environment, understand their individual study style, and deliberately balance personal obligations with attention to course demands. A 2006 survey of experienced online educators [6] revealed four themes critical to online success: time, technology, initiative and competence. Time refers to timely

participation in class activities as well as personal time management. Technology factors include competence with the tools of the course (discussion, file uploads and downloads, collaboration tools) as well as use of online resources such as online library databases and Google Scholar. Initiative involves the student's personal commitment to the course, whether it is a keen interest in the topic or a dedication to completing degree requirements. Competence is a broad area that covers writing skills, reading comprehension, communication skills, awareness of the online learning experience, and organizational skills.

III. METHODOLOGY

In this paper, we adopted the components of e-learning through the definition of seven dimensions based on Borotis's model. Figure 1 shows the e-learning readiness dimensions used in our model (adapted from Borotis and Poulymenakou).

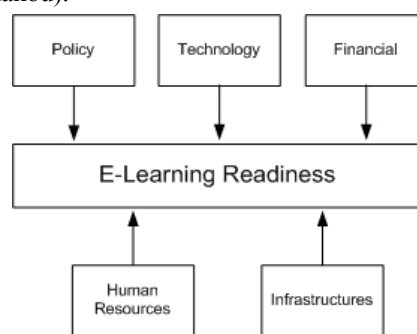


Figure 1. E-Learning Readiness Dimensions

The data collection method used for this survey is to seek input from executives, deans, and technicians who are able to judge their institutions' readiness for e-learning. The data used in the study include both primary and secondary data from Thailand and USA.

IV. RESULTS AND LESSONS LEARNED

A. Case of Thailand

Based on the survey, the 25 questions were categorized into six dimensions: five for business, nine for technology, two for content, five for culture, two for human resources and two questions for finance focusing on the e-learning readiness dimensions depicted in Figure 1. The results of the survey are illustrated as follows:

Policy: Regarding the survey, 100% of the universities have set the adoption of e-learning as a primary goal. However, from the results of our qualitative survey, some involved in the e-learning program still need a clear indication of the university's goals. They agree that the policy also is an essential guideline for the university's development and operation plans. The lecturers want the university to have clear policies and practical plans. Also the policies need to clearly specify, for each person involved, timelines for each step of the plan for which they are responsible. Careful and continuous supervision of all steps is necessary to ensure success. The organization of e-learning can only be as successful as the policy under which it is developed. It is also important that support for e-learning at the top executive level of the university

continues after the policy, planning, initial implementation and evaluation stages. It must be seen by all concerned that the leaders consider e-learning as a major contribution to the on-going work of the university and not just a passing fad.

Technology: According to the result, 83% of the universities use leased-line telecommunications for their e-learning systems and 17% use ISDN technology. 100% of the universities use more than 2 Mbps bandwidth for Internet access. Moreover, one project that aims to eliminate the digital divide worldwide, namely, “50x15,” set as its mission “to enable affordable, accessible Internet connectivity and computing capabilities for 50 per cent of the world’s population by the year 2015” [11]. In Thailand,

The Unlined (University Network) project was established by notification of the Ministry of University in 1996. In 2011, the project has been operating for ten years, serving universities and institutions. UniNet has provided a hi-speed information network linked to universities, institutes, and campuses at more than 200 sites throughout the country. Also, linking with foreign countries’ research networks enables Thai universities/institutes to manage virtual classrooms in collaboration with universities/institutes abroad. This project helps to bring Thai education on par with other countries. Apart from developing knowledge resources, UniNet also helps universities and institutes to utilize the Electronic Library Network and research networks like Access Grid, Multicast, IPv6, VCS and Self-Study Center. Moreover there are training opportunities for universities/institutes’ staff on how to apply information technology for education. Currently, UniNet is developing a search network to enable members to more effectively acquire information resources.

Finance: The survey shows that 100% of the universities have never received any financial support from government but 67% of them have collaborative projects with government agencies. They agree that the universities should provide adequate and timely financial support at each stage of e-learning development and implementation. The initial implementation of e-learning may be expensive because of the need to prepare the Internet infrastructure, hardware, software and other tools as well as human resources such as lecturers, technicians, and producers. University executives must realize there is a high capital cost in setting up the system. In the long term e-learning can provide saving through cost-effective course delivery. It can also enhance the reputation of the university through increased enrolments and greater student satisfaction. After the initial set-up costs, the main e-learning expenses are on-going course development, lecturer and support staff salaries and equipment maintenance costs.

Human Resources: Lecturers have the important role of transferring knowledge to students via e-learning. The study found that some administrators who responded to the survey stated that one factor which delayed the e-learning development was that some lecturers did not realize the importance and the need for e-learning. Not many lecturers were interested in e-learning. Therefore, the first priority should be to prepare the lecturers by building their understanding of e-learning and developing their enthusiasm to be involved. Technicians should be ready and able to work with lecturers. The study found that the lecturers felt

there were not enough technicians available to help develop e-learning courses. This caused some delays in launching e-learning courses. Around 60% of the lecturers claimed that there was a lack of cooperation from the staff. The technicians complained that they experienced problems with cooperation from lecturers who provided the contents. More than 40% of the technicians commented that the lecturers did not have time to prepare the contents and were afraid that e-learning would replace their teaching. Therefore, the university should organize seminars to enable the lecturers and the technicians to understand each other’s needs and develop the cooperative working relationships that are essential for the success of e-learning.

Infrastructure: E-learning is dependent on basic infrastructure which includes the Internet, computers, software and a responsible administrative unit. About 60% of the lecturers mentioned that the most common problem that occurred was that students could not access the system from outside the campus. The second most common problem was that the Internet bandwidth was not fast enough to handle the extra load generated by e-learning. There was also a shortage of computers and related equipment for lecturers. The foundation infrastructure (hardware, software and Internet) were considered inadequate by 59.3% of technicians. About 50% of students found that they did not have convenient access to e-learning.

E-learning in the USA

According to a report by the Sloan Commission on online higher education in the U.S. in 2009 [1], 4.6 million students are taking at least one online course, and demand has increased yearly since the study began in 2002. The National Center for Education Statistics [2] reports that 89% of U.S. public institutions offer online education, both degree and certificate programs. There is no longer any doubt that online instruction is a viable alternative to traditional classroom teaching, as many studies have shown, such as the annual report of the Sloan Foundation. The National Center for Education Statistics [1] reports that 90% of U.S. public institutions offer at least one online course and 56 % of private universities do.

Policy: A study by the Alliance for Higher Education Competitiveness of 21 U.S. institutions had higher leaderships identify the causes of e-learning success [2]. 15% of respondents ranked executive leadership as most important, 15% ranked faculty and academic leadership commitment as most important, and 12% ranked technology infrastructure as most important. Among the leadership elements were:

- a long-term commitment to the online initiative
- **investment** of significant financial and other resources
- choosing pilot programs with the most impact potential
- a clear understanding on the part of the faculty as to why the institution is implementing online learning

Technology: Many U.S. universities have separated the functions of pedagogical support for technologies (how to develop online instruction) from technology support (how to use a particular application). These instructional development service departments are responsible for teaching faculty effective teaching techniques for the various tools. Many universities also require teacher

training for the learning management systems and for online instructional techniques before they can be assigned to teach online.

Finance: In a study of 364 U.S. institutions of higher education [3], EDUCAUSE researchers asked survey respondents to rank aspects of university support for online instruction. The result shows that in terms of tools and training for developing and teaching online classes, the respondents reported less than satisfactory support.

Human Resources: The EDUCAUSE study in [3] also asked respondents about university recognition of faculty who developed and taught online courses. Non-monetary rewards are more typical in U.S. higher education, and universities use incentives such as annual awards events, mentoring opportunities, and professional development opportunities to increase the level of attention and interest in taking on new challenges. The survey showed that online faculty is not generally compensated at a higher rate, and other incentives are used. In addition, while there is accumulating evidence that online instruction can deliver a rich learning experience employing a wide variety of pedagogies and learning tools, faculty opinions seem to be mixed as to their embrace of e-learning. As content area experts, faculty seems to be content with their traditional "sage on the stage" role and are resistant to online education, according to a study by [5]. In their study of 121 faculty members employed at a large, public, open-enrolment U.S. University, 95% of faculty members surveyed believe that the traditional lecture is the most effective way to achieve learning outcomes. Other factors they cite that are related to faculty resistance include perceived incompatibility with online pedagogies, compensation issues, inadequate training, the time required to create online courses, and lack of administrative support. Regarding students' perception of e-learning advantages, convenience to students and improved access to higher education rank as major e-learning strengths, according to an EDUCAUSE survey [3].

Infrastructure: In a 2010 technology infrastructure survey by EDUCAUSE [8] of CIO's at their member institutions, teaching and learning with technology was the fourth-ranked concern behind funding, administrative information systems and security. CIO's are concerned with meeting the needs of academics and the decision process for assessing proposed instructional technologies. With the maturing of cloud computing offerings (office productivity software and email are examples), campus network infrastructure as well as fast and reliable Internet access is essential for many campus needs.

V. COMPARISON OF E-LEARNING READINESS BETWEEN THAILAND AND USA

Table I shows a comparison of e-learning readiness between Thailand and USA.

TABLE I. A SUMMARY OF E-LEARNING READINESS WITH RECOMMENDATIONS FOR THAILAND

Dimensions	Country		Recommendations for Thailand E-learning
	Thailand	USA	
Policy	Lack of strong support from the top executive level in many universities	Well supported with a clear policy of e-learning adoption in most universities.	Need strong and consistent support for e-learning from the top executive level of the university
Technology	Lack of technical skills for online courses	Good technical skills for online courses	Provide more technical training for all stakeholders
Financial	Inconsistent financial support and lack of long-term budget planning	Need more financial support for developing e-learning tools as a long-term plan	Long-term budget planning
Human Resources	Lack of awareness of e-learning adoption	Strong awareness of e-learning adoption	Provide more incentives for online lecturers
Infrastructures	Inconvenient e-learning software and access	Good hardware, software, and network infrastructure	Provide sufficient computer hardware and software with high speed Internet access.

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Infrastructures	Inconvenient e-learning software and access	Good hardware, software, and network infrastructure	Provide sufficient computer hardware and software with high speed Internet access.

VI. CONCLUSIONS

The result of this study shows that e-learning adoption in Thailand requires support from both the public and private sectors in order to succeed. This paper concludes with useful suggestions focusing on six dimensions of the research model. For the business dimension, delivering a clear aim and direction of e-learning adoption and providing continuous support from executive level of the university are crucial. For technology, the wide-ranging network connection among all private and public universities with cost-effective bandwidth access is important. The result indicates that the content of e-learning in Thailand is not well designed and lacks cultural accessibility. This requires more professional instructional designers and lecturers to focus on developing high quality content. In addition, it is clear that Thai universities must provide adequate, effective staff for developing e-learning systems and for supporting lecturers and students. Other key success factors include such a strong financial support from the government, collaborative projects among private and public sectors for e-learning adoption, support resources dedicated to online programs, creation of a clear, well-defined project plan, careful selection of the initial program offerings, and teacher training sessions to help develop effective teaching styles. Faculty support is essential, especially in nurturing grassroots ideas from the faculty rather than imposing a top-

down pedagogical approach. Institutions must offer instructional technology support to help faculty so that they can focus on the instruction rather than the technology.

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