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E-Learning Readiness in the Academic Sector of Thailand

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As e-learning in the academic sector serves as a crucial driving force in the development of e-learning in Thailand, this article looks at e-learning readiness in Thailand with a focus on the academic sector. The article is divided into four parts: (1) a brief history of e-learning in Thailand; (2) the infrastructure related to e-learning development; (3) the readiness of educational institutions, namely schools and universities; and (4) an example of the project promoting e-learning application in Thailand namely Thailand Cyber University.

A BRIEF HISTORY OF E-LEARNING IN THAILAND

In Thailand, e-learning has been used since the beginning of the 21st century as a means of offering foreign educational content to corporate users in the form of corporate training. At the same time, some local universities began using e-learning by introducing some local contents to their students. However, due to several constraints at the time (e.g., transmission quality, Internet access limited to the residential market, and the low number of Internet users), e-learning did not gain popularity nor was it widely recognized. Hence, the development of e-learning in both private and public sectors was slow and limited.

Regarding e-learning content development, most of the content initially offered was English-based. Localized content was expensive and rare. In addition, the quality of the local content was questionable because most of it was plain, simple, unimpressive, and lacking in interaction. This was partly due to the speed and performance of the Internet connection which would not allow non-text content to be transmitted efficiently (Laohajaratsang, 2004a; Sirinaruemit, 2004). Besides, it was found that fewer than 50 com-

panies that were registered as software vendors had the intention of developing e-learning content. Finally, commercial and locally-made learning management systems (LMS) were pre-dominant, while open-source LMS were not very popular at the time.

E-LEARNING READINESS IN THAILAND

Information Technology and Communication Infrastructure

Continuous development of information technology and communication infrastructure for the general public is deemed instrumental in the establishment of Thailand as a knowledge-based economy and society. Furthermore, having adequate infrastructure can be seen as one indicator of Thailand's e-learning readiness, as electricity, telephones, computers, and the Internet provide the necessary elements for the public's increased access to information technology.

Access to electricity: Based on the National Statistical Office (NSO) under the ICT Department, in 2004 only about 1% of all households in Thailand lacked electricity, most of which were those situated in the southern part of the country.

Access to telephone: Information gathered in 2006 showed that there were 141 telephone lines per 100 people. Data in 2007 revealed that 21.7 million people owned a mobile phone, with Bangkokians being the largest percentage at 59.3% of the 8 million people owning one.

Access to computer: Data in 2005 showed that over 30% of the population in cities in all regions used a computer, with the highest percentage also in Bangkok (38.3%). The age group of the most frequent computer users was 15-24 years old and the activity for which they used a computer the most was education at nearly 60%.

Access to the Internet: Bandwidth has expanded at a very high rate since 2003. Those residing in Thailand saw a bandwidth of 41,510 Mbps during 2008, which was a significant jump from the 8,579 Mbps they had in 2006. The traffic of information sent and received within the country has shown a steady and continuous increase every month. In November 2005, the volume was 42,154 GB per day, three times the volume at the same time only a year earlier.

Number of Internet users nationwide: In 2007, more than 20% of the overall population or 13.4 million people were regular Internet users. Approximately 1.2 million were high speed Internet users (National Statistical Office, 2006). Of that number, 600,000 subscribed to broadband Internet. Although the percentage was lower than that of Malaysia (59%) or Vietnam (23.4%), the expansion has been fast and continuous (Internet Usage in Asia, 2008). This shows that access to Internet usage in Thailand has been steadily increasing and it is now readily available to a wider market than it was when it was first introduced.

Internet user behaviors: most Internet users in Thailand use it at work and at home almost equally (44.9% and 44.8%, respectively), followed by use at educational institutions (NECTEC, 2008). The survey results are in contrast with the data gathered in 2005 which showed that people used the Internet at educational institutions most, followed by home and work. The use of the Internet in all three areas has accelerated with the increased desire to search for information, play on-line games, keep up-to-date with news, and send or receive emails.

Internet connectivity: Results from a survey on Internet use in Thailand by NECTEC in 2008 shows that most respondents use ADSL or Asynchronous Digital Subscriber Line (43.5%), followed by the office or educational institution's network/LAN (25.1%). It was also found that 63.1% stated that they had never used high speed Internet. Of those high speed Internet users, 82.9% used ADSL high speed Internet, followed by cable modem (8.6%), ISDN or Integrated Services Digital Network (4.4%), and satellite (1.6%).

It can, therefore, be concluded that Thailand's information technology and communication infrastructure is growing at a steady pace. However, despite its wider popularity, it is not yet sufficient to serve the needs of the population of over 70 million.

E-LEARNING READINESS OF EDUCATIONAL INSTITUTIONS

In Thailand, educational institutions have shown keen interest in the development of e-learning as can be seen from the efforts currently underway in both schools and universities. This part of the article will present the policy for further developing ICT for education in Thailand as well as the policies of the Thai Ministry of Education. It will also discuss the development of information technology and communication infrastructure needed to cater to this development. Finally, it will detail the present status of e-learning use in Thailand's educational institutions at both school and university levels.

The Thai Ministry of Education (MOE) developed the Information and Communication Technologies (ICT) for Education Master Plan (2004-2006) to promote ICT use in education. Its vision is to ensure that learners, educational institutions, and educational offices have equal access to and derive benefits from information and communication technology for life-long learning. Its mission emphasizes developing effective management, professional development in ICT, and the expansion of ICT infrastructure for education. The Thai MOE has already developed a draft of the ICT for Education Master Plan (2007-2011). However, this MOE action plan has not been approved because the Thai government is still in the process of revising its second National IT Masterplan or IT 2010 (Laohajratsan, Iwaki, Suwannathoachote, & Krawanchid, 2007).

Despite this delay, based on the data by the MOE Office of the Permanent Secretary, in 2006 Internet connections had been set up in every school under

the Office of Basic Education Commission or OBEC (100%) (see Table 1). This increased connectivity in Thai schools has resulted in more positive attitudes of the teachers toward ICT for teaching and learning. The ratio of the number of computers to the number of students in schools under the OBEC is 1:59 as compared to the ratio of 1:62 in 2004. It is clear that Internet use for educational and administrative purposes in Thailand is on the rise, albeit at a slow pace even though access to the ICT network has reached 100% and one-third of the teachers have already been trained on the use of ICT.

Table 2 reveals the percentage of types of the Internet connections in schools under the OBEC. Based on the survey report by the MOE, half of

Table 1
Data on the Status of ICT Readiness/Usage of Schools
Under the OBEC in 2005

Status of ICT Readiness/Usage	2006
1. Number of Schools under OBEC	32,741
2. Number of Students under OBEC	8,830,000
3. Number of Computers	148,556
4. Internet Connection Status	32,741
5. Number of Computers: School	5 :1
6. Number of Computers: Students	1 :59
7. Internet Connection: School	1:1
8. Total Number of Teachers	499,697
- Have been trained on ICT skills	108,624
- No training on ICT skills	391,073

Table 2
Number and Percentage of Type of Internet Connection Classified
by School Size

Type of Internet Connection	Small Schools n=874		Medium Schools n=1,310,		Large Schools n= 1,144		Total n=3,328	
	No.	%	No.	%	No.	%	No.	%
1. Telephone Lines	339	38.79	636	48.78	642	56.12	1,724	51.80
2. Leased Lines	219	25.06	284	21.68	394	34.44	897	26.95
3. Satellite Signal	316	36.16	419	31.98	255	22.29	990	29.75

the schools connect using telephone lines, 30% connect via satellite signal, and the rest of them (26.95%) connect with the use of leased lines. However, it should be noted the author faced difficulties in obtaining more updated data for comparison due to a lack of current research and statistics on the status of ICT including overall readiness and usage in schools. The percentage of computers being used for teaching and learning in the schools under the OBEC is reported to be nearly 80%; while around 20% of the computers in schools are reported as being used for administrative work.

E-Learning in Schools (primary and secondary schools)

E-learning for schools in Thailand was officially started in 1995 by the National Electronics and Computer Technology Center (NECTEC). The NECTEC introduced an initial project named SchoolNet Thailand (<http://www.school.net.th>), with the aim of expanding teaching resources for public secondary schools nationwide. These schools can access the SchoolNet network at a low rate of charge (3 baht per minute). As of 2001, there were 4,718 schools that had joined this project. In 2003, the MOE was placed in charge, and it combined the SchoolNet project with the UniNet project and renamed it EdNet. The educational network (EdNet) was created in order to optimize network utilization and other resource allocations for both projects.

Several of the e-learning development projects for K-12 have already been implemented. Some examples of these e-learning projects for schools in Thailand include: (a) the Distance Learning Foundation (DLF) Project (<http://www.dlf.ac.th>) which provides remote education via satellite; (b) the E-Learning Courseware development projects sponsored by the Bureau of Technology for Teaching and Learning, the OBEC, and the Department of Non-Formal Education, Ministry of Education (MOE); and (c) Online Curriculum Development on Science and Mathematics by the Institute for the Promotion of Teaching Science and Technology (IPST), Ministry of Education (MOE).

In sum, Thailand now has four major implementation plans focusing on educational technology infrastructure, human resources development, provision of digital teaching and learning materials, and educational management. The current status of ICT for education has already seen progress as evidenced by the increasing level of readiness of infrastructure including electricity, telephones, Internet access, and computers. The recent plan to allocate 250,000 computers to schools nationwide, which will require a major investment by the government, will help make the ratio of computers to students not less than 1:20 in every school. Last but not least, a plan for implementing Internet connection speeds of 512kbps for each school is also underway.

E-Learning Readiness in Thai Higher Educational Institutions

E-learning development in Thailand's higher educational institutions, especially those with distance-learning services (e.g., Sukhothai Thammathirat Open University (STOU) (<http://www.stou.ac.th>) and Ramkhamhaeng University (<http://www.ru.ac.th>)), commenced approximately ten years ago (Laohajaratsang, 2004b). Since universities began preparing their infrastructure with the use of the LMS as an alternative, cost-effective way of teaching, the number of e-learning development projects in universities in Thailand has gradually been on the rise.

Based on the latest survey on e-learning development of higher educational institutions in Thailand, there are a total of 149 universities in the country (Laohajaratsang, 2008). Among them, 36 are national universities and 34 private. Moreover, 41 national regional universities (formerly known as Rajabhat Institutes) and 38 national industrial technical colleges (formerly known as Rajamangala Institutes) have been upgraded from teacher training schools and industrial technical colleges to universities. With a growing number of students continuing on to university, the number of universities in Thailand, particularly the private and regional universities, has increased.

According to the same survey, most institutions (93%) that participated in this research project have started an e-learning program and have also established or assigned a department to oversee the e-learning services offered to the students and personnel. Almost 80% have stated that e-learning has become one of their missions. Furthermore, over three-quarters of the institutions have shown readiness to accommodate the intermediate or higher e-learning systems. Moreover, according to the research findings, most of the educational institutions have a plan to allocate a suitable amount of their budgets for the development of e-learning programs in the future.

Regarding the diverse problems concerning the development of e-learning, most of the participating institutions indicated that they still have problems with instructors, students, and technical staffs. In effect, quite a number of instances were found in terms of instructors and students being reluctant to use e-Learning. Also, there were insufficient technical staffs to facilitate instructors when integrating e-Learning into their teaching. At the same time, a low number of instances were found regarding problems with infrastructure, hardware, and software related to e-learning development.

In most of Thailand's educational institutions, a leased line with 2 Mbps or higher is employed to provide services to different departments within the institutions. According to the survey results, some educational institutions use Asynchronous Transfer Mode (ATM) and ISDN technology for their network connection. Survey findings also indicated that computer network technology of participating educational institutions is readily available and suitable for servicing their faculty staff and students.

With regard to the Learning Management System (LMS), the research findings showed that the most popular platform among the higher educational institutions is open source, followed by the use of commercial systems or an internally developed LMS. The most popular open source software programs among educational institutions in Thailand are the Moodle System and the A-tutor System. The trend toward these two open source systems might have resulted from lower expenses and production cost with open source software as well as the ease with which they can be adapted to a system infrastructure. In addition, open source adaption by one organization often results in success stories and the spreading of it to others. Communities often spring up to support such use and to share best practices. For instance, there are local communities for Moodle and A-tutor systems in Thailand which make installation manuals and user guides available. In addition, such communities have modified these systems for the Thai language. For this reason, system developers, in higher educational institutions, private universities, and high schools, often further develop the open source software for use in their own institutions. The most popular programming languages used in developing LMS are PHP, HTML, and ASP, respectively. Furthermore, the most frequently used databases and technologies are MySQL, SQL Server, Oracle and Java Script, Dynamic HTML, and XML Web Service.

According to an earlier study, 66% of universities in Thailand have targeted the bachelor's degree and college level students to have their supplementary classes conducted via e-learning, whereas the general public and the master's degree students are typically their second and third targets, respectively (Prapinmongkolkarn, Nilubon, & Tangsangiumvisai, 2004).

As is evident, the development of e-learning in Thai higher educational institutions has been on the rise. Most universities have responded at a moderate to good level to e-learning as a new alternative to traditional instructional methods. This is evidenced by data regarding technological readiness to support e-learning, operational data, and provision of services, as well as supporting data in terms of readiness of personnel and facilitating factors for future operation (Laohajaratsang, 2007, 2008). However, in order to ensure the continued development of e-learning, clearer policies at the undergraduate and college levels in terms of a certified and high quality online curriculum need to be established. In addition, IT laws (Regulatory and Legislative Framework) for proper modernization (e.g., Accreditation, Intellectual Property Law, Copyright Law, etc.) have to be enforced.

THAILAND CYBER UNIVERSITY

There are several on-going projects that help support the development of e-learning in Thailand. One of the most prominent projects under the Commission on Higher Education, Ministry of Education is the Thailand Cyber

University (TCU) project which was first established in 2005. The TCU has the role of acting as a central body to initiate, cooperate with, and support e-learning management in higher educational institutions.

Cooperating with local and international universities, TCU has attempted to implement high quality and standard e-learning to expand educational opportunities to all Thai people without the limit of time and place. Presently, there are 32 local educational member institutions. TCU now offers 16 bachelor's degree programs and one certificate degree program. TCU also provides 430 self-learning courses (see <http://www.thaicyberu.go.th>). More than 50,000 students have registered for these courses, while over 800,000 people have utilized the contents retrieved from the TCU website (Sombuntham, 2008). In addition, as one of TCU's major strategies is to help support faculty and teacher training and professional development using ICT in Thailand, more than 10,000 faculty members, teachers, and students so far, especially those living in the rural areas, have been trained on how to use ICT under the support of TCU.

SUMMARY

Despite the fact that Thailand has been facing internal political turmoil since 2005, this article reflects the steadily growing readiness status of e-learning development in Thailand, especially in the academic sector. The reviewed data reveal an increasing demand for e-learning, particularly among higher educational institutions. Still, data on related infrastructure show an insufficiency of budget allocation to improve technological readiness in accordance with the increasing demand.

The limited financial resources for e-learning in Thailand may be a result of the shift of national budget allocation priorities to address and tackle corruption as well as support the necessary funding allocations and associated programs for the poor. It is hoped that as more successful e-learning projects in the Thai academic sector are observed, e-learning development in Thailand will receive increased government attention and consequently more funding. The country seems ready for explosive growth in e-learning across all sectors of education. If increased government support is offered as well as effective leadership, millions more people could be learning content in 5 or 10 years that today is currently out of reach for them. Let's hope.

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innovative pedagogies, the integration of ICT in educational system, and the design of future learning environments.

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