

The Obstacles Facing Taiwan's Universities with regard to Internet Courses

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Abstract—*The purpose of this paper is to identify the obstacles to Internet education in Taiwan's private technological universities which are introducing e-learning and to analyze statutes from national educational policy concerning Internet courses in higher education. The desires of students and faculty members should be considered as formative for future institutional strategies. The research design combines a literature review with a survey. Survey participants include 567 students whose majors are related to business fields and fifteen leading faculty members who are on the committee for academic strategies in the studied university. The literature review provides an understanding of national higher educational policy and the circumstances that private technological universities are facing. Data from the surveys offer opinions of students and faculty. The results show that Taiwan's society has adequate and convenient configurations to develop e-learning via the Internet. However, language is a big barrier to the development of Internet courses and of interdisciplinary cooperation globally with either higher education institutions or industries. Internet education is prevalent around the world. However, it may be not appropriate for some of Taiwan's higher education institutions.*

Index Terms—*e-learning, faculty governance, higher education, Internet courses*

1. INTRODUCTION

CONTRASTING with the vibrancy and effectiveness associated with institutional diversity in the market-oriented higher education systems of North America and other western countries, higher education systems in Taiwan are presently emphasizing national quality standards. However, facing global and marketing challenges, Taiwan's higher education institutions must reform their institutional strategies for the sake of survival and development in the future.

From the social side, economic change and an increasing number of universities in Taiwan impact on the university's future survival and development. From the technological side, technology innovations in the workplace influence

people to seek training or skills upgrades at universities. Technological advances in communication and transportation bring the growth of foreign trade. Facing global economic competition, more businesses are looking for people with an understanding of international issues. Higher education institutions are looking for a way to deal with these issues in order to attract more potential students.

In recent years, technology diffusion has facilitated globalization in most industries. The higher education industry cannot ignore this trend. Internet courses, for example, are rapidly emerging in the education industry. Although e-learning⁸ issues are still in an evolutionary mode, e-learning methodologies seem assured in future education and training [2]. There are some successful, ongoing examples to be found in western countries. The Swedish government currently supports e-learning based higher education [3]. Walden University in the U.S., founded in 1970, provides bachelor's degrees, master's degrees and doctoral degrees through distance learning. It now has nearly 11,000 students and is still growing [4].

Interdisciplinary cooperation between the publishing and education industries has emerged in recent years. For example, Pearson publishers and an American virtual university have formed an e-learning group in the United Kingdom [5]. Another example is the collaboration of Henley Management College with the accounting firm of Ernst & Young, to build a virtual university in the United Kingdom [6]. Internet courses have not only provided interdisciplinary learning between universities and industries, but they have also expanded the financial base of universities. University of Phoenix in the U.S. accounted for 95.5 percent of \$1.68 billion in net tuition revenue from online and distance learning courses for the year ending August 31, 2004. University of Phoenix owns 55 campuses, offers associates degrees, bachelor's degrees, master's degrees, and doctoral degrees through distance learning, and had 227,800 students enrolled in 2004 [7]. The Sloan Consortium reports over 1.9 million students enrolled in online courses in the fall of 2003 and the number of online students was projected to

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1. Kekkonen-Moneta and Moneta [1] suggest that e-learning can be defined as using the Internet and Internet-related technologies in instructional development and distribution of educational resources.

grow to over 2.6 million by the fall of 2004 [8]. These examples show us that e-learning education has grown phenomenally in the past years, has expanded the financial base of universities, and is a significant future trend.

2. PROBLEM STATEMENT

For the survival and development of institutional businesses, Taiwan's higher education institutions may add e-learning methodologies to their institutional strategies. However, Taiwan's University Law does not allow for providing degree programs through Internet courses.

E-learning, in this paper, is defined as using the Internet and Internet-related technologies in instructional development and distribution of educational resources [1]. The other problem, therefore, is concerned with the convenience of learning and breadth of educational resources.

3. BACKGROUND OF PROBLEM

3.1 Higher Education System in Taiwan

Under national educational policy, there are presently two types of higher education institution: academic universities and technological institutions (Table 1). Academic universities provide a broad range of fields of study including arts, agriculture, architecture, commerce, engineering, law, mathematics, medicine, natural sciences, social sciences, and veterinary science that are similar to those provided by universities in the U.S. Technological institutions emphasize applied science and vocational skills for industry, and are different from academic universities that focus on knowledge-teaching and academic research. Currently, there are 70 academic universities/colleges [9]. Technological institutions provide opportunities for vocational school graduates to pursue further study up to and including doctoral work [10], [11], [12]. For the purpose of providing equality of educational opportunity for those students within the vocational system, Taiwan's government established a complete system of vocational education, including vocational high schools, junior colleges, and institutes of technology/technological universities. In other words, Taiwan's students are channeled into one of the following two tracks: general education (the path for those wanting to attend an academic university) and vocational training (for those wishing to continue their education and acquire technical skills) [13], [11]. Currently, there are 89 technological institutions [9]. As of 2004, there were 105 private higher education institutions in Taiwan [9]. Facing an increasing number of higher education institutions and a decline in the number of students, perhaps partially because of

a declining birth rate, recruiting more students and expanding the financial base have become critical issues for private technological institutions.

Doctoral Program			
Master Program			
University & College	Technological University /Institute of Technology (4yrs)	Technical College (2yrs)	
		Junior College (2yrs)	Junior College (5yrs)
Senior High School	Senior Vocational School		
Junior High School			
Elementary School			
Kindergarten			

Table 1: The Current School System

3.2 The Present Environment for Internet Courses

Internet User Statistics [14], which were updated on March 23, 2005, show the top seven nations in the world, in terms of numbers of Internet users, are: the United States (200.9 million); China (94.0 million); Japan (67.6 million); Germany (46.3 million); India (39.2 million); the United Kingdom (35.1 million); and South Korea (31.6 million). Although the population of Taiwan is only around 23 million, the number of Internet users had reached over 12.2 million by the end of 2004. Taiwan is ranked number 17 on Internet User Statistics [14]. Taiwan also is able to provide reliable Internet availability for its people.

To start Internet courses, students are required to have minimum hardware and software capability and the ability to use the student system of 'bulletin' messaging, otherwise known as 'BBS' [15]. In Taiwan, high school students sit tests for the use of hardware, software, and issues related Internet access before they graduate [16], [17], [18]. Adults can find computer courses at community colleges, which offer free or low-fee training for citizens [18].

3.3 National Educational Policy

Corporations, dot.coms, and publishing companies are getting more and more involved in the education and training business worldwide. Some are even granting degrees [19]. For example, World Alliance on Distance Education (WADE) is a collaboration between four leading distance universities: Deakin University in Australia, the Hong Kong Open University, the Open University in the United Kingdom, and Canada's Athabasca University to offer a global business school post-MBA International Business Program via the Internet [20]. From fiscal year 2001, a bachelor's degree, requiring 124 credits, could be earned from a correspondence university via the Internet in Japan [21].

According to Taiwan's University Law [12], a student cannot earn more than one third of total required credits via distance learning for a degree program. Under this Law, universities that wish to provide Internet courses to develop new educational ranges must consider alternative ways to implement these strategies for the development of Internet courses and interdisciplinary cooperation.

Chinese Culture University, a private academic university, provides various non-credit courses through distance learning for working adults in its continuing education department [22] [23]. National Taiwan University has launched collaboration with other two public universities, Chian Tung University and Tsing Hua University, in providing ten courses each semester through distance learning [24]. In the 1997 and 1998 school years, Chaoyang University, a private technological university, cooperated with other two public universities, two private universities, and one private technological institute in providing a movie art course through distance learning [25]. Most of these universities offered course materials in Chinese.

3.4 The Issue of E-learning

The latest technological innovations and the Internet present a challenge to traditional lecture-based learning. E-learning is considered the most effective tool for acquisition of knowledge and the most effective part of a systematic approach involving use of classroom with appropriate support [26], [27]. The advantages of e-learning are clear in the area of timely delivery of training materials, increased convenience, and increased learning effectiveness [28], [29]. English is the *de facto* language of the Internet as of September 2003 (Table 10). In other words, web sites written in English are in a large majority on the Internet.

Online Languages As of September 2003	English	35.6%
	Japanese	9.5%
	Chinese	12.2%
	German	7.0%
	Spanish	8.0%
	Korean	4.0%
	French	3.7%
	Italian	3.3%
	Portuguese	2.6%
	Russian	2.5%
Source: Global Reach http://global-reach.biz/globstats/index.php3		

Table 10: Online Languages

All students in Taiwan must take English courses from seventh grade to twelfth grade at least. For convenience of learning, broadening of educational resources, and development of students with an understanding of international issues, to use the Internet, to conduct Internet

searches, and to read online journals and documents in English is the optimum approach to achieve these goals for Taiwanese students.

4. METHOD

A technological institute in Taiwan was chosen for this survey. The institute has nearly 10,000 students and around 300 full-time faculty members. The committee for academic strategies consists of fifteen members, including the Principal, the Dean of Academic Affairs, 11 heads of departments, and the head of the graduate school. This study was confined to surveying these fifteen faculty members and 567 students who had experiences using the Internet in their courses.

Because of the particular suitability of online material for use in business-related studies, the student survey was focused on business-related departments at this institute. First, the investigators carried out the surveys and interviews with senior students in three business-related departments namely International Trade, Tourism Management, and Applied Foreign Languages. These students take computer courses during the first and second years of study. They also take English classes during their whole time at the institute. These students are divided into Group A and B. Group A has 311 students who are full-time students and take all their classes during the day. The members of Group B number 256, who work during the day and take continuing education classes in the evening. Second, the investigators conducted surveys and interviews with those fifteen leading faculty members.

To assure the validity and reliability of the questionnaire, before distributing the surveys to both student groups and the leading faculty members, the author identified possible questions by means of a review of literature in the field as well as firsthand knowledge from the real world concerning issues in applying e-learning. At the first stage, the author collected data by using open-ended questions to ascertain the concerns of most faculty members in applying Internet use in their teaching. Using data produced from this first stage, the author then designed the questionnaire. The items in the questionnaire were rated on a Likert scale of "strongly agree", "agree", "no opinion", "disagree", "strongly disagree."

The final questionnaire was produced after pre-testing a small group from the institute where it was planned to give the survey to and then made some minor changes. Then, the author conducted the survey to the fifteen faculty members and two student groups at this institute.

The mean and standard deviation score for the rating of each item in the questionnaires from faculty members were calculated. The number

and percentage of agreement for the rating of each item in the questionnaires from two student groups were also calculated.

5. RESULTS AND DISCUSSION

This paper attempts to understand possible obstacles in developing Internet courses through the use of surveys on both faculty member and student sides.

Table 2 shows that most faculty members realized that correct computer configurations are required for developing Internet courses and believed that the institute fulfilled these requirements adequately (M=4.00, SD=1.21 in statement 1). Both Group A and B were unanimous on the computer configuration issue. Most of them agreed that the institute has sufficient equipment to start e-learning programs.

Opinions from faculty members	M	SD
1. Internet requirements, such as software and internal and external hardware components of a computer net system, for students' learning are met adequately in your institute.	4.00	1.21

Opinions from Percent students.	No.	agree
1. Group A	293	94%
2. Group B	211	82%

Table 2: Internet Requirements

Table 3 shows that most faculty members also strongly supported the training programs for teaching Internet courses at their own institute (M>4.00, SD>0.93 in statement 2 and 3). Group A and Group B show very high percentage (Group A= 80%; Group B= 75%) in taking Internet courses that are offered by their local faculty members.

Opinions from faculty members	M	SD
2. It is important to have adequate qualified faculty to teach Internet courses in your institute.	4.00	1.11
3. It is important to provide training to faculty to do the Internet courses in your institute.	4.36	0.93

Students prefer to take Internet courses that are offered by their own institutes.	No.	agree	Percent
3. Group A	249		80%
4. Group B	193		75%

Table 3: Qualified Faculty

In Table 4, not only did students in both Group A and B believe that English ability is a strong requirement for learning via the Internet, but the faculty members also judged that English ability is a key point for effective e-learning (M=4.50, SD=0.65 in statement 4).

Opinions from faculty members	M	SD
4. It is important in developing e-learning that students have adequate English ability to use resources from the Internet, to conduct Internet searches, and read online journals and documents.	4.50	0.65

Opinions from Percent students.	No.	agree
5. Group A	301	97%
6. Group B	240	94%

Table 4: Students' English Ability

Although learning via the Internet is becoming a worldwide trend, the results from Table 5 show us that Internet courses which use English information do not benefit the students in both Group A and B (M<3.64, SD<1.17 in statement 5 and 6). These results conform to the thoughts of students as shown in the student surveys. Most of them have problems understanding information in English on the Internet. Both Group A and B think translating software does not help in understanding English information.

Opinions from faculty members	M	SD
5. Internet courses that use English information benefit the learning for regular students in your institute.	3.29	1.17
6. Internet courses that use English information benefit the learning of students in continuing education in your institute.	3.64	1.15

Internet courses that use English information benefit your learning in some ways.	No.	agree
7. Group A	31	10%
8. Group B	47	18%

Translating software helps in understanding English information	No.	agree
9. Group A	25	8%
10. Group B	29	11%

Table 5: The Benefit derived from Using English

Materials

The institute cooperated with other domestic universities on distance learning programs. However, only a few students took them because they lacked self-learning skills and self-control in study. Table 6 shows that most faculty members also consider that providing e-learning programs designed by other universities or online providers is not worth doing because the level of assistance to students is low (M=3.64, SD=1.01 in statement 7).

Opinions from faculty members	M	SD
7. It is important to offer e-learning from other higher education institutions or online providers that will assist current students' learning in your institute.	3.64	1.01

Table 6: Online Courses from Outside Campus

Recently, many foreign universities have recruited new students in Taiwan. The language turns out to be a barrier whether students choose degree programs from either traditional educational modes, or via the Internet. Therefore, most faculty members did not consider that recruitment by foreign universities would threaten the institute's business (M=2.57, SD=1.64 in statement 8; M=3.36, SD=0.84 in statement 9 of Table 7). Considering language barriers, culture background, and job markets, students in both Group A and B are more interested in doing further study in Mainland China than in other foreign countries.

Opinions from faculty members	M	SD
8. It is a matter of concern to your institute that foreign universities offer their degree programs to Taiwan's market via the Internet, thus competing for students.	2.57	1.65
9. It is important to cooperate with other higher education institutions or online providers in order to attract potential students to your institute.	3.36	0.84

Students prefer to	No.	agree
Percent		
study at foreign universities via Internet courses.		
11. Group A	0	0%
12. Group B	7	3%

Students prefer to	No.	agree
Percent		

study at foreign universities via traditional courses.

13. Group A	28	9%
14. Group B	13	5%

Students prefer to study
Percent

in Mainland China via traditional courses.

15. Group A	131	42%
16. Group B	196	76%

Table 7: Competitors from Foreign Universities or Online Providers

In Taiwan, degrees are required for many jobs in both public and private industries. In addition, passing the examinations is the only way to earn a license. In order to qualify to sit those examinations, one must first earn some accredited degree. Thus, the institute considers that finding a solution to the issue of accreditation before developing the Internet courses extremely important, rather than 'importing' non-accredited interdisciplinary degree-granting programs from international institutions or industries via the Internet (M=4.57, SD=0.65 in statement 10 of Table 8).

Opinions from faculty members	M	SD
10. It is important to address the issue of non-accreditation of degrees via the Internet under Taiwan's University Law.	4.57	0.65

Table 8: Non-accreditation of Degrees

Statement 11 (M=4.29, SD=0.83) in Table 9 provides significant information for Taiwan's universities that are highly interested in developing courses via the Internet. Both students and faculty members judged that e-learning materials in their native language/mandarin could assist students in achieving better and more effective learning.

Opinions from faculty members	M	SD
11. It is important to create e-learning materials in your native language/mandarin to assist students' learning in your institute.	4.29	0.83

E-learning materials in	No.	agree
Percent		
mandarin can assist your learning.		
17. Group A	201	65%
18. Group B	213	83%

Table 9: E-learning Materials in Native Language

6. CONCLUSIONS AND SUGGESTIONS

Although Internet education is so prevalent around the world and apparently expands the financial base of universities, the views of students and faculty members must be considered when introducing Internet courses for future institutional strategies. Given the lack of Chinese web sites on the Internet and the lack of ability to understand English materials, faculty members, who desire to offer courses through Internet, must provide adequate educational resources in breadth and materials with understanding of international issues for students in Chinese.

Some universities, which recruit students with ability to understand English information, may be adapted for offering and using Internet courses. Others may not be so suitable for the provision and use of Internet courses.

The other obstacle comes from national statutes. Under Taiwan's University Law, non-accredited certificates and degree programs do not attract students from either regular or continuing education. Universities worldwide are consolidating and enhancing their commitments to various models of e-learning. Universities in Taiwan may consider offering non-credit courses for working adults through e-learning or providing degree programs with blended learning, traditional face-to-face teaching plus e-learning.

The surveys were limited by the type of higher education institution, we chose to study, and the corresponding population. Additional studies in other universities are needed in order to extend the research. For further research, if a higher education institution needs Internet education, then what is best way to do it?

REFERENCES

- [1] Kekkonen-Moneta, S., Moneta, G. B., "E-Learning in Hong Kong: comparing learning outcomes in online multimedia and lecture versions of an introductory computing course," *British Journal of Educational Technology* 33(4), September 2002, pp. 423-433.
- [2] Charp, S, "Administrative and Instructional Portals," *T.H.E. Journal* 30(2), September 2002, pp. 12-13.
- [3] Fransson, A, "Scope and trends of e-learning in higher education in Sweden," Prepared for the OECD/Japan Seminar on E-Learning in Post-Secondary Education, June 1st 2001.
- [4] Bishop, T, "Baltimore-based higher education provider acquires Internet college," *Knight Ridder Tribune Business News*, Washington, September 18, 2004, pp. 1.
- [5] Editorial, "For the record," *Times Higher Education Supplement*, January 21, 2002, pp. 2.
- [6] White, D, "A studied approach to 'virtual' learning," *Telegraph Appointments*, December 12 1999, pp. i.
- [7] Jones, A, "Phoenix university scouts offices to open Triangle branch," *Triangle Business Journal* 20(14), Raleigh: December 10, 2004, pp. 7.
- [8] Allen, I. E, Seaman, J, "Entering the Mainstream: The Quality and Extent of Online Education in the United States, 2003 and 2004" *The Sloan Consortium*, November 2004.
- [9] Summary of Statistics 2003-2004, *Statistics & Research*, Ministry of Education, Republic of China, http://www.edu.tw/EDU_WEB/EDU_MGT/STATISTICS/E
- [10] Liu, H. H, "China (Taiwan). Handbook of World Education: A comparative Guide to Higher Education & Educational Systems of the World," *American Collegiate Service*, 1992.
- [11] Lin, H, "Current Research in Organizational Systems: Higher Education," *Futurics* 26(1&2), 2002, pp. 11-19.
- [12] University Law, *Legislative Yuan in Taiwan*, http://info.ntu.edu.tw/sec/All_Law/1/1-01.html, 25 November 2003.
- [13] Pan, H. L, Yu, C, "Educational Reforms with Their Impacts on School Effectiveness and School Improvement in Taiwan, R.O.C.," *School Effectiveness and School Improvement* 10(1), 1999, pp. 72-85.
- [14] Miniwatts International, Inc, "Top 20 countries with the highest number of Internet users," *Internet World Stats*, <http://www.internetworldstats.com/top20.htm>, 23 April 2005.
- [15] Husson, W. J, Waterman, E. K, "Quality Measures in Distance Learning," *Higher Education in Europe* 27(3), October 2002, pp. 253-260.
- [16] Curricula Fundamentals for Elementary Schools and Middle Schools, *Ministry of Education, Taiwan*, <http://www.google.com.tw/search?q=cache:uaNPkrAB1cJ:teach.eje.edu.tw/data/890930%25A4E%25A6-%25A4%40%25B3e%25BA%25F5%25ADn%25A4%25BB%25A4i%25C4%25B3%25C3D%25BA%25F5%25ADn%25A4%25BA%25AEe%25A4%25BB%25A4i%25C4%25B3%25C3D-%25B8%25EA%25B0T%25B1%25D0%25A8%257C.htm+%E4%B8%AD%E5%B0%8F%E5%AD%B8%E9%9B%BB%E8%85%A6%E8%AA%B2%E7%A8%8B%E8%A6%8F%E5%8A%83&hl=zh-TW&ie=UTF-8>, 30 September 2000.
- [17] "The Tests for High School Students," *Ministry of Education, Taiwan*, <http://www.tyai.tyc.edu.tw/bcc/senexam.htm>, 7 November 2003.
- [18] Lin, H, "Decision Theory and Analysis," *Futurics* 28(1&2), 2004, pp. 27-46.
- [19] Kelly, M. F, "The Political Implications of E-Learning," *Higher Education in Europe* 27(3), October 2002, pp. 211-216.
- [20] Hodgson, V. E, "The European Union and E-Learning: An Examination of Rhetoric, Theory and Practice," *Journal of Computer Assisted Learning* 18(3), September 2002, pp. 240-252.
- [21] Sakamoto, T, "E-learning and Educational Innovation in Higher Education in Japan," *Educational Media International* 39(1), March 2002, pp. 9-16.
- [22] Microsoft News Letter, "Taiwan Microsoft Corp. cooperates with Cultural University to building e-learning environment on campus," http://www.microsoft.com/taiwan/press/2003/0513_2.htm, 25 April 2005.
- [23] Chinese Culture University Homepage: continuing education department: distance learning, <http://www.sce.pccu.edu.tw/>, 25 April 2005.
- [24] National Taiwan University Homepage: course information, http://www.ntu.edu.tw/text_chinese/Courses/index.html, 25 April 2005.
- [25] Chaoyang University: distance learning, http://www.cyut.edu.tw/dis_edu/, 25 April 2005.
- [26] Sloman, M, "The E-Learning Revolution: How Technology Is Driving a New Training Paradigm," 2002, ERIC ED471267.
- [27] Smith, D. E, Duus, H. J, "The Power of e-Learning in International Business Education," *Journal of Teaching in International Business* 13(2), 2001, pp. 55-71.
- [28] Starner, T, "Increase E-Learning Adoption," *iQ Magazine* September/October 2003, <http://business.cisco.com>, 25 February 2004.
- [29] Brown, B. L, "Web-Based Training," 2000, ERIC Digests No.218.