Motivating the University Teachers to Involve in e-Learning through Engagement in Information Technology

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***Abstract*—There is already a large body of literature on the e-learning (electronically supported learning and teaching). However, the incentive to encourage university teachers to involve in e-learning is still need to be studied earnestly. This study aims to discover the incentive problems that hinder university teachers developing and using the e-learning systems. E-learning is promoted in most countries prosperously now. However, it is still hard to find schools that can use e-learning effectively in helping their teachers uses. Therefore, there are various perspectives of incentive that need to be studied. For example, what are the motivating factors that can encourage teachers to use this new method of teaching? What techniques can help teachers develop an e-learning system? What policies can facilitate the process of e-learning? Based on a pilot study, we employ a depth interview to find out the answers of the questions mentioned above. In general, it is not easy for teachers to implement e-learning courses by themselves. School administrators and governments need to set policies, build facilities, and find motivators to help teachers use e-learning techniques to improve their teaching methods, and hence help students learn in an easy and convenient way.**

Keywords-information technology; incentive; value; e-learning

I. INTRODUCTION

The Massachusetts Institute of Technology (MIT) established the open course ware (OCW) in 2001. All the courses in MIT can be accessed on the web for the public to learn free in 2010. This new initiative reflects MIT's institutional commitment to disseminate knowledge across the globe. Nowadays, a growing number of universities promote e-learning. According to Elliott Masie's (The Masie Center) definition, e-learning is the use of information and network technology (IT) to design, deliver, select, administer, and extend learning. Furthermore, Cisco Systems defines e-learning as "internet enabled learning, components can include content delivery in multiple formats, management of the learning experience, and a networked community of learners, content developers and experts. E-learning provides faster learning at reduced costs, increases access to learning, and clear accountability for all participants in the learning process." In general, e-learning takes place over the internet rather than in a physical classroom. Moreover, some e-learning may combine a portion of traditional classroom teaching. The development of e-learning in higher education is now a hot topic for most of the universities. However, there are many problems that still hinder teachers to implement e-learning courses in their colleges.

Despite the wealth of studies on technology and education, questions about the incentives for teachers to use e-learning remain unaddressed. In one much-cited research commentary, Alavi and Leidner call for increased research on technology-mediated learning (TML). They recommend that researchers explore "the explicit relationships among technology capabilities, instructional strategy, psychological processes, and contextual factors involved in learning" [1]. How to encourage the teachers to use the e-learning smartly is an urgent question.

E-learning has also been usually included in the lists of school evaluation items. Therefore, school administrators believe that e-learning is a trend that can not be ignored. Currently, a lot of universities have distance-learning centers. However, only a few of them have successful e-learning programs. People may ask is it difficult to implement e-learning programs? We argue that it depends on how it is done. At first, let us consider the problems that hinder most colleges. Based on our pilot interview with several school administrators, e-learning is still focused on the few teachers who have the necessary computer skills to develop their own e-learning courses. For most teachers, this is a difficult process even though the IT is friendlier than ever. Secondly, although it seems

 ISBN: 978-1-61208-116-8

that colleges have already found some ways of encouraging teachers, these motivators, however, are not strong enough to motivate teachers sufficiently. For example, most colleges pay the teachers US$300 to 1,500 for each course to encourage them. For those teachers who have the ability to do so, the subsidies are not their main concern. For those teachers without the ability, they are unable to participate. Therefore, the problems that we have mentioned above are related to people's readiness and ability.

There are many problems that are related to people factors. The faith of teachers [5], the value system, achievement, self actualization, role changing, technology affordance, and even the culture are critical factors [3, 5, 9]. Especially, although most school administrators believe that e-learning is critical to their school's performance. But they do not have policies required to support their actions. Without these policies, there is no way of distinguishing the difference between teachers who have developed e-learning courses and those who have not. When this situation occurs, there will be no one who is willing to use e-learning to teach. Assuming that schools have the policies to support their actions, school administrators will find other problems are easier to counter comparatively.

The structure of this study is as follows: Section 2 briefly depicts the theories of motivation. Section 3 describes the method used. Sections 4 and 5 show the results and suggestions for involving teachers in e-learning. The conclusion is made in the last section.

II. THEORY DEVELOPMENT

Through comparing the motivation theories provides a well development of the questionnaire needed for a former pilot survey. There are three perspectives of motivation.

(1) Content perspective: Motivating people from internal motivation, such as hierarchy of needs from Maslow [8], ERG theory from Alderfer (existence, relationship, and growth) [2], theory X and theory Y [11], dual factor theory from Frederick Herzberg (hygiene factors and motivators factors) [6], and McClelland Achievement Motivation Theory (need for achievement, need for power, and need for affiliation) [9].

(2) Process perspective: Emphasize the internal reaction process or factors influence one's efforts. The alike theories are equity theory by Adams, Goal-setting theory from Edwin Locke, Expectancy theory by Victor Vroom (expectancy, instrumentality, and valence), and reinforcement theory by Skinner.

(3) Integrated perspective: Emphasize both the internal and institutional factor, also give a vivid description of the impact process and relationship of human's effort behaviors. Such theory as Porter and Lawlerthe's integrated expectancy model is depicted in Figure 1.

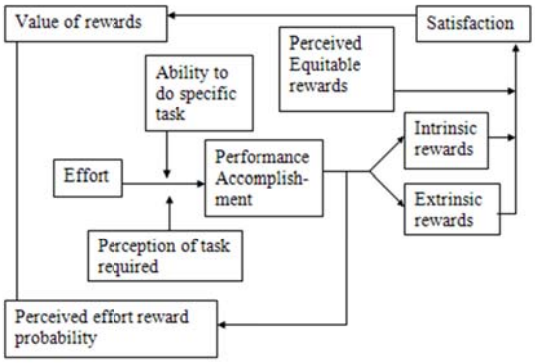

Figure 1. Integrated expectancy model developed by Porter and Lawlerthe in 1968

Moreover, as [8] depicted, the salary is not the most important incentive. The first three incentives are good job development, better opportunity for education and self development, and the witness of self achievement.

In the construction of the questionnaire, the theoretical base mainly employed is the Porter-Lawler model of motivation [7]. It assumes that behavior is directed by a conscious expectation that we have about our own behavior leading to the achievement of a desired outcome. Therefore, there is no motivation, unless both of these conditions (expectation and value) are met. This theory redefines motivation as a cognitive, decision-making process through which the individual chooses desired outcomes, and sets in motion the actions appropriate to their achievements.

To sum up, the integrated expectancy model considers both the internal and institutional factor. It can be a more complete perspective when design an incentive system in universities. The pilot survey is based on the integrated expectancy model. This study is based on the results of the pilot survey; we want to achieve a better understanding the deep motivation when the above incentives are set.

III. METHODS

After the analysis of motivation theories, we developed the questionnaire in the pilot study. The questionnaire is divided into two groups: one is for the development of e-learning materials, the other one is for the use of e-learning system. Except the demographic data, the questionnaire concludes the following: internal reward, expectation of external reward, efforts and willingness, capability, awareness of role, work performance, feeling of internal reward, actual external reward, equity, and job satisfaction.

This study aims at an in-depth understanding on the incentives in developing and using e-learning systems. We use a questionnaire survey and in-depth interview in this study. Followed the survey, we interview the teachers and administrators in depth. Through the in-depth interview, we found some valuable incentives for encouraging university teachers to engage in e-learning. The subjects and survey in the pilot study are as follows.

Subjects: In the survey, the subjects are selected from ten universities at the northern part in Taiwan. There are totally 300 subjects.

 ISBN: 978-1-61208-116-8

Survey of questionnaire: We invited several experts and designed such factors to generate motivation. We have also carried out a pilot test in a selected institute to testify its consistency and validity. However, the questionnaire response rate is only 21% in the pilot study.

We use the in-depth interview in this study. Based on the result of the pilot study, we selected dozens of teachers to our non-structured in-depth interview. Moreover, we performed a semi-structured in-depth interview of chiefs from two colleges in the northern district of Taiwan. By doing so, we have a deep understanding of the relevant problems in developing and using e-learning system,

IV. RESULTS

In the in-depth interview, we aim to compare the survey of experienced and inexperienced as depicted in Table 1. The results from the questionnaire survey are:

To those whom are experienced in e-learning, they still have doubt about the performance of e-learning. Both 'willingness' and 'role consciousness' were ranked low even though teachers are capable of developing and using e-learning systems. They expect the outer payments much, additionally, they are willing to develop and use e-learning systems due to their self expectations. So the incentives required by experienced teachers are that they are given more self-direction and enhancements.

To those whom are not experienced in e-learning, they also have doubts about its effectiveness. Due to the reason of 'willingness', 'role consciousness', and 'self-expectations' being ranked low, these results show that they are not ready to develop and use e-learning systems. So the incentive needed by inexperienced teachers is the role of "helper". That is they should be given encouragement and help but not only focusing on the financial incentives. In other words, through the various incentive mechanisms, if the teachers know their own limitations and abilities, then the development and use of e-learning systems may improve.

TABLE 1 THE COMPARISON OF EXPERIENCED AND INEXPERIENCED IN E-LEARNING

Group	**experienced**			**Inexperienced**		
Variables	Mean	Min	Max	Mean	Min	Max
internal reward (7)	27.04	0	40	22.41	0	32
expectation of external reward (7)	31.85	0	42	27.18	0	32
efforts and willingness (7)	26.77	0	36	22.35	0	30
capability (6)	31.96	21	42	25.29	0	35
awareness of role (5)	19.35	10	30	14.47	0	24
work performance (10)	36.12	7	55	17.71	0	30
feeling of internal reward (3)	13.00	0	18	10.47	0	16
actual external reward (7)	26.27	0	42	20.75	0	39
equity (4)	12.77	0	20	9.81	0	20
job satisfaction (8)	25.15	0	43	23.06	0	40

p. s. the bracket after the variable is the number of items; the number 0 in each column means that respondent has no idea.

In the in-depth interview, we discuss each factor concerning by the teachers. Here, we discuss these factors divided into the following aspects.

In policy aspect: The results show that the policy is very important in the development and use of e-learning systems. E-learning curricula can be successfully completed only with strong policy. Once the policy is determined, further coordination will become easier. Take one of the interviewed colleges for example. Its policy for the e-learning of all general curricula in the first two years of college is determined. Hence other factors like salary, work load and evaluation are also formed. The obvious effect is that almost all teachers are urged to develop and use e-learning systems. This is quite different from the past.

In quality aspect: The results show that students benefit from those aspects such as schedules, times and ways of learning. Both complementary learning and enhancement learning are benefited. One of the interviewed colleges designed a new style of instruction—either style A (1/3 traditional instruction plus 2/3 e-learning) or B (2/3 traditional instruction plus 1/3 e-learning) depending on the information literacy of the teacher.

In motivation aspect: The results show that possible incentives are as follows: (1) Salary: rewards are developing fee, bonus, or over-time pay, while penalties are in the form of over-time works. (2) Work load: the common style is to adjust the teaching style or reduce the teaching hours of those who developed the e-learning system. (3) e-learning techniques: assistants or some orientation training may aid the teachers' willingness to develop and use e-learning systems. (4) Job: the accomplishment of the development of e-learning itself is a reinforcement of teaching. Some promotion may follow. (5) Rights or honor: more using rights or granting honor for those who develop and use e-learning systems would be a great encouragement.

V. SUGGESTIONS FOR IMPLEMENTING E-LEARNING SYSTEM

Current studies noted valuable suggestions from various perspectives: student perspective in the teacher–student dynamics, teaching paradigm [10], and institutional environment [9], etc. This study echoes the

 ISBN: 978-1-61208-116-8

requirements of information literacy [2, 4]. Based on this study and the experiences that we have accumulated in implementing e-learning systems at schools, some suggestions are listed below:

1. Setting e-learning policies: In order to create appropriate policies to support e-learning systems, schools should have the policies to distinguish the differences between teachers who have developed learning courses and those who have not. For example, the differences could be seen as financial award, job security, recognition, and annual evaluation.

2. Finding motivating factors: As we all know, someone is willing to do something that attracts him/her. Currently, most schools use financial means to motivate teachers. We can not deny that this is a motivating factor. However, it depends on how we use it. As we have mentioned, some colleges provide US $1,000 dollars as a cash award to motivate teachers. This is a one time cash award. However, there is another way that can provide a much more attractive reward for teachers. For example, when schools embrace e-learning as one of their teaching methods, this new technology can reduce their costs by lowering their teacher numbers. If the school can take part of the savings from every semester and give it to the teachers as their long term cash rewards, this will be a huge motivation for teachers to participate. Moreover, a lot of teachers are concerned about promotion. All teachers are climbing the ladder (from instructor, assistant professor, associate professor to professor). Therefore, there should be policies that can help these teachers climb higher. In general, there are many things that need to be done before teachers can really implement an e-learning system. Teachers, therefore, need to be motivated.

3. Building e-learning facilities: Most schools fail to implement e-learning systems because they are short of the relevant facilities for teachers to use in a simple and convenient way. Currently, most schools provide e-learning systems that allow teachers to use their computer to record and edit their materials. It seems to be the right way to do it because every school uses the same method. However, this is also the reason that most schools have the same problems when implementing their e-learning systems. As mentioned above, if schools use this method, then only the teachers who have the required techniques can produce e-learning materials. Under this situation, e-learning courses will be restricted and fail. However, there is another method that can solve this problem. One college has built studio rooms to help teachers produce their e-learning courses. In these studio rooms, college provides the entire editing (Pre and Post authoring) services from the time teachers work in the studio until the courses are uploaded to the system. This kind of service gives every teacher the opportunity to produce their e-learning courses. When all teachers have the ability to produce their e-learning, it can increase the chance of the e-learning process.

4. Providing training courses: Basically, when schools want to implement any program, relevant training is required for successful implementation of the program. For example, teachers need to know what specific skills, knowledge, and system requirements are needed. If schools do not have studio rooms to help teachers, then the training will focus on how to help teachers use their computers to put together e-learning courses. E-learning system is usually composed of two parts. One is to produce the courses; the other is to management the courses. Training classes should also include these two parts and beheld every semester since schools will have new teachers needing to be trained.

VI. CONCLUSION

The development of an e-learning system is an important policy in Taiwan's higher education. Most schools are trying to make it. However, most of schools are facing the problem that only a few of the teachers have the ability to produce e-learning courses resulting in the fact that the quality of these courses is not as good as expected. Therefore, the Ministry of Education in Taiwan (MOE) has urged universities to unite their resources (equipments, courses, techniques, etc.) and figure out a better solution for this situation. Much research and many projects have been conducted and focused on this area. Our research found that if schools want to implement an e-learning system, they need to give all the teachers the ability to produce e-learning courses. If schools just provide an e-learning system and expect teachers to automatically pick up the system, the miracle of e-learning will not bear fruit. Therefore, as far as schools are concerned, policies, facilities, training, and the motivating of teachers are the key issues for implementing the system.

ACKNOWLEDGMENT

Part of this study is under grant NO 92-2511-S-157-001-X3 funded by National Science Council in Taiwan.

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