Association for Information Systems
AIS Electronic Library (AISeL)

AMCIS 2001 Proceedings

Americas Conference on Information Systems (AMCIS)

December 2001

The Factors Influencing the Learner's Motivation in the Internet Distance Learning IDL in Taiwan

Szu-Yuan Sun
National Kaohsiung First University of Science and Technology

Shih-Wei Chou
National Kaohsiung First University of Science and Technology

Her-Sen Doong
National Sun Yat-Sen University

Follow this and additional works at: http://aisel.aisnet.org/amcis2001

THE FACTORS INFLUENCING THE LEARNER'S MOTIVATION IN THE INTERNET DISTANCE LEARNING IDL IN TAIWAN

Szu-Yuan Sun
National Kaohsiung First University of Science & Technology
sunnyy@ccms.nkfust.edu.tw

Shih-Wei Chou
National Kaohsiung First University of Science & Technology
swchou@ccms.nkfust.edu.tw

Her-Sen Doong
National Sun Yat-Sen University
hsdoong
@mail.hamastar.com.tw

Abstract

Learning in an Internet or Web environment has become an emerging tendency in Taiwan. However, it is argued whether an IDL (Internet distance learning) environment can facilitate effective learning and teaching. Numerous Challenges are posed when delivery of instruction via the Web or using Internet. Challenges for learners related to IDL include: learner's degree of acceptance, prior participant knowledge, attitude toward technology, content level, degree of interactively, amount of difficulty in using the system, ease of accessibility into the system, and learner's ability and availability to communicate with instructor. These challenges portend a potentially serious problem, motivation.

IDL educators have long been concerned about motivation. Some estimate that as many as 30-50% of all learners who start an IDL course drop out before finishing. In highly distant programs, learners have to take responsibility for making judgments and taking decisions about study strategies. Therefore, motivation plays the key role for learners to continue finishing the courses in the IDL. The purpose of this study is to investigate the influencing factors on the learner's motivation in the IDL in Taiwan. These factors can help identify learners who may not be motivated to complete a course so that appropriate support can be made available to them.

The research model was developed based on the related literature. Many factors are indicative of learner success in completing an IDL course. This study was conducted by survey research. The total useful respondents of students from four different universities located in the southern part of Taiwan were 460, for a gross respondent rate of 91%.

After finishing running the confirmatory factor analysis (CFA), five factors were grouped to be the influencing factors on the learner's motivation. They are: learner's learning style, IDL environmental support, learner's involvement, learner-instructor interaction, and social factor of IDL. Regression model was used to analyze the relationship between the learner's motivation and the five influencing factors. The contribution of this study is to find those factors which can motivate the learners to complete a course so that appropriate support can be made available to them.

Keywords: IDL (Internet distance learning), motivation

Introduction

Learning in an Internet environment has become an emerging tendency in Taiwan. Learners are attracted to the flexibility of time and space that an IDL (Internet Distance Learning) may support. Moreover, other functions, such as multimedia and hyperlink, also play critical role to facilitate learning and teaching. However, it is argued whether an IDL environment can facilitate effective learning and teaching. Numerous Challenges are posed when delivery of instruction via the Web or using Internet. Challenges for learners related to IDL include: learner's degree of acceptance, prior participant knowledge, attitude toward technology, content level, degree of interactively, amount of difficulty in using the system, ease of accessibility into the system, and learner's ability and availability to communicate with instructor. These challenges portend a potentially serious problem, ***motivation*** (Cornell and Martin 1997).

IDL educators have long been concerned about motivation. Some estimate that as many as 30-50% of all learners who start an IDL course drop out before finishing (Moore and Kearsley 1996). In highly distant programs, learners have to take responsibility for making judgments and taking decisions about study strategies. Therefore, motivation plays the key role for learners to continue finishing the courses in the IDL. The purpose of this study is to investigate the influencing factors on the learner's motivation in the IDL in Taiwan. These factors can help identify learners who may not be motivated to complete a course so that appropriate support can be made available to them.

The research model was developed based on the related literature (Armstrong et al. 1985; Billings 1989; Martin and Bramble 1996; Moore and Kearsley 1996). Many factors are indicative of learner success in completing an IDL course. This study was conducted by survey research. The total useful respondents of students from four different universities located in the southern part of Taiwan were 460, for a gross respondent rate of 91%. The students that took an IDL course may have some face-to-face classes, the authors made a survey right after such classes; therefore the respond rate is high. Likert's five point scaling method was adopted to measure the answers from respondents. Since the contents of the questionnaire were derived from literatures and suggestions of experts, the collected data were evaluated for reliability and validity. SPSS 8.0 was employed to analyze the collected data.

After finishing running the confirmatory factor analysis (CFA), five factors were grouped to be the influencing factors on the learner's motivation. They are: learner's learning style, IDL environmental support, learner's involvement, learner-instructor interaction, and social factor of IDL. Regression model was used to analyze the relationship between the learner's motivation and the five influencing factors. The contribution of this study is to find those factors which can motivate the learners to complete a course so that appropriate support can be made available to them.

Literature Review

Motivation Defined

Martin and Briggs (1986) stated that "motivation is a hypothetical construct that broadly refers to those internal and external conditions that influence the arousal, direction, and maintenance of behavior". Motivation is actually an umbrella term that encompasses a myriad of terms and concepts (such as interest, curiosity, attribution, level of aspiration, locus of control, etc.); the theories and ideas can be related to individual or environmental and social influences of motivation.

According to the keller (1983), motivation "refers to the magnitude and direction of behavior…, it refers to the choice people make as to what experiences or goals they will approach or avoid, and to the degree of effort they will exert in that respect". Keller used these two concepts, *choices and effort*, to illustrate (a) the reasons a person approaches or avoid a task and (b) how to design instruction to make a task more interesting (Martin and Briggs 1986).

Motivation in Internet Distance Learning

Research has found three factors indicative of learner's success in completing an IDL course (Armstrong et al. 1985; Billings 1989; Moore and Kearsley, 1996). They are: intention to complete the course, early submission of work, and completion of other distance education courses.

Other components that may influence learner's motivation are: (a) course design, (b) the degree of interaction that is provided and available, and (c) the role of the site facilitator. Some general considerations designing effective IDL courses that are motivating include organizing the course into short, self-contained segments, providing frequent summaries and reviews, and linking the content to real-life work or issues with a high degree of transfer from learning to everyday life (Moore and Kearsley 1996).

Regarding **learner-instructor interaction**, learner typically prefer to interact with the instructor, other students, and the instructional media by asking questions, giving presentations, and having discussions rather than listening to a lecture or having limited involvement and interaction (Martin and Bramble 1996). The learner study guide can play a role in creating **learner's involvement** by providing learners with specific questions to answer and assignments to complete. In addition, it is the responsibility of the instructor to provide adequate and immediate feedback to learners to keep them on track and facilitate their completion of the courses.

An IDL facilitator can be crucial in promoting interaction and can serve to humanize or to personalize the instruction. Other ways that instruction can be humanized is to provide pictures of learner and instructor to each other (Cortell et al. 1995), to have each

student meet with the instructor at least once during the course, and to make plans for teleconferences and other forms of synchronous interaction.

Other Related Literature

Moore (1996) claimed that a system approach is very helpful to an understanding of distance education as a field of study. Since a system model examines all the components which belong to a distance education, such a "system view" is a good conceptual tool that help us realize and analyze distance education, on the other hand, from a practical point of view, this tool may be applied too. A system model for distance education usually contains the following components

(1) **Content experts, educational philosophies and other sources of knowledge**: For most distance organizations it is critical to know what are their students' needs, and to design the courses that take into account what the students want to learn. On the other hand, the educational philosophies and faculty of the organization will influence the source of knowledge that may draw on students.

(2) **Design of courses**: Since so many skills are necessary to design an effective distance education course, a group of specialists such as instructional design, media, evaluation, and research experts are needed to design a successful distance education course.

(3) **Distinguishing technology and media**: The use of technology to transmit the messages of teachers and students is that makes distance education so novel. Each technology can support the use of a variety of media, and each medium has different characteristics, which support varying degrees of structure in teaching programs.

(4) **Interaction**: The people who interact with students are instructors, tutors, and counselors. The main job of instructors is to help students learn the content of the course, the tutors who interact with learners to provide individualized instruction according to the designed course content. The major responsibilities of counselors are to make suggestions about study techniques and solve academic or even personal problems that interfere with learning.

(5) **Management and administration**: The main job of managers is to help (a)assess the needs of learners (b) policy-makers to understand the potential of distance education (c) obtain funding (d) bring about the organizational culture change that is needed to accommodate to distance education.

(6) **Learning environments**: Learning center should be located in geographic proximity to the student's home or workplace. A lot of valuable roles these centers can play, such as providing instructional materials and equipment, carrels for individual study, or place for group discussions and meetings with tutors or counselors.

Two commonly accepted frameworks by educators that explain how learning can be achieved are information transmission and transformation (Berge 1998). In the information transmission framework, the learner accepts whatever contents those are taught by experts. On the other hand, the framework of transformation is based on "constructivism" which covers a wide range of beliefs about cognition (Jonassen 1991).

According to social constructivism theory (Collins 1991), in order to create knowledge, it is necessary that learners interact by interpreting, evaluating, and critiquing peers' ideas and suggestions, and through such interactions learners may share information with others and eventually create their own knowledge. Therefore, in such situation, the learns role will assume responsibility for their learning and become less rely on the teachers' direct instruction. Twigg (1994) proposed the same idea, he said that in an IDL environment students will learn more independently, adopt learning resources which match their own individual needs, abilities, preferences, and interests. Moreover, students in IDL will spend more time in small discussion groups or working on collaborative projects with their peers.

Research Design

This study developed a research framework (figure 1) based on the related literature (Armstrong et al. 1985; Billings 1989; Martin and Bramble 1996; Moore and Kearsley 1996), the system model for distance education (Moore 1996), and other related theories in learning (Berge 1998; Collins 1991; Twigg 1994). Five constructs, such as learner's learning style, IDL environmental support, learner's involvement, learner-instructor interaction, and social factor of IDL, are indicative of learner success in completing an IDL course. Learner's motivation was affected by these five constructs.

This study conducted a survey research to investigate the aforementioned issues from respondents. The contents of the questionnaire were derived from literatures mentioned above. One question was used to measures learner's motivation in an IDL course, that is " What is degree of your intention to finish the distance course?" Before the final questionnaire was proposed, a pretest has been fulfilled which collected feedbacks from experts and students to refine the original questionnaire. The total useful respondents of students from four different universities located in the southern part of Taiwan were 460, for a gross respondent rate of 91%. The students that took an IDL course may have some face-to-face classes, the authors made a survey right after such classes; therefore the respond rate is high. Likert's five point scaling method was adopted to measure the answers from respondents. SPSS 8.0 was employed to analyze the collected data.
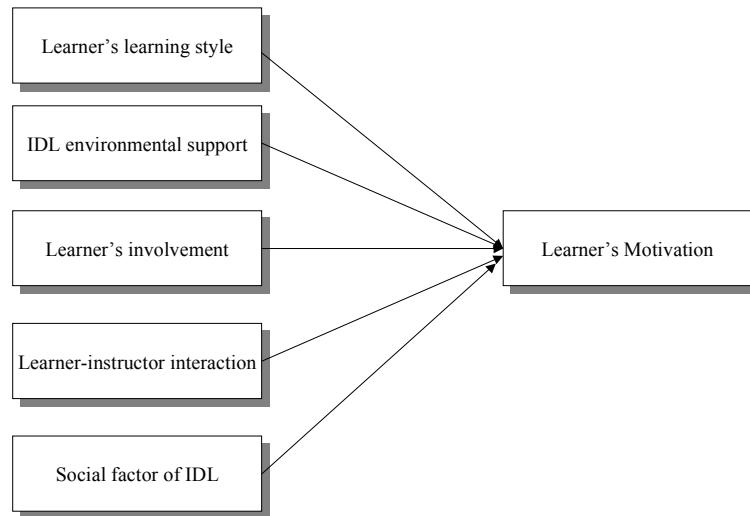

Figure 1. The Research Framework

Research Result

The Descriptive Data of Factors

Tables 1 through 5 show the descriptive data of five constructs.

Table 1. Learner's Learning Styles of IDL

Question in the questionnaire	Mean	SD
A1. To facilitate collaborative discussion for case study	3.74	0.92
A2. To facilitate the exchange of working experiences from different fields	3.94	0.83
A3. To acquire solution for specific problem	4.01	0.77
A4. To express individual perception and propose problems	3.89	0.83
A5. To acquire the state-of-art knowledge for working	4.13	0.75
A6. To integrate the related knowledge through hyperlink	4.10	0.74
A7.To make the learning more interesting and active through multimedia	4.05	0.79

Table 2. IDL Environmental Support

Question in the questionnaire	Mean	SD
B1. Transmission speed and security of computer network	2.68	0.92
B2. The supports (such as equipment, money, and human resource etc.) from school	2.96	0.9
B3. The requirement for employee to use "IDL for continuing education"	3.23	1.01
B4. The requirement for managers to use "IDL for continuing education"	3.12	0.96
B5. Completeness of education policy for "IDL for continuing education"	2.79	0.88
B6. The maturity of the concept about "IDL for continuing education" for public	2.77	0.85
B7. The feasible environment for "IDL for continuing education"	3.03	0.93

Table 3. Learner's Involvement

Question in the questionnaire	Mean	SD
C1. Solve the problem of not enough parking spaces	3.47	1.08
C2. Provide more flexible time and place to learn	4.07	0.83
C3. Control the learning pace according to individual's ability	4.03	0.82
C4. Provide a more convenient way to submit assignment	4.07	0.8
C5. To fulfill homework assignment and examination by learner independently	3.87	0.88

Table 4. Learner-Instructor Interaction

Question in the questionnaire	Mean	SD
D1. The message exchange between students and teachers become more efficient through IDL communication tools	3.76	0.91
D2. The interactions become more effective by adopting IDL communication tools	3.63	0.95
D3. The embarrassment of fact-to-face interaction may be eliminated by IDL communication tools	3.59	1.01
D4. The relationship between students and instructors become closer through adopting IDL communication tools	2.97	0.97

Table 5. Social Factor of IDL

Question in the questionnaire	Mean	SD
E1. Familiarity of computer network for public	2.9	0.75
E2. Acceptance of computer network for public	3.31	0.82
E3. Prevalence of applying network technology	3.05	0.87

Data Validation

The collected data must be evaluated for reliability and validity. Reliability is the stability of the instrument over various conditions and has traditionally been assessed by the Cronbach alpha coefficient, which measures the internal consistency of the collected data. Table 6 shows the number of items, their means, standard deviations, and Cronbach alpha values. Since most of all Cronbach alpha values are higher than 0.7, a level generally considered satisfactory for multi-item scales, the data reliability is acceptable.

Table 6. The Cronbach Alpha Coefficient of Measurement

Factors	Number of Item	Mean	Standard Deviation	Cronbach Alpha
Factor1	7	27.743	4.646	0.89
Factor2	7	20.424	4.741	0.82
Factor3	5	19.459	3.421	0.80
Factor4	4	13.072	2.480	0.78
Factor5	3	9.263	1.928	0.66

Convergent validity is achieved if the items that measure the same factor correlate highly with one another. Discriminant validity holds if items are correlated more highly with the factor they intend to measure than with the other factors. Factor analysis has been a popular approach for assessing the convergent and discriminant validity of constructs. The results from the factor analysis using principal components extraction on the items, such as learner's learning style, IDL environmental support, learner's involvement, learner-instructor interaction, and social factor of IDL. The results show that the Eigen values of both factors are greater than one, which collectively explained 58.4 percent of the variance. All items have higher loads on their associated factors, which fulfill the requirement of the convergent validity. For the discriminant validity, each item must load higher on its

associated factor than on any other construct. The condition is also satisfactory. Therefore, both convergent and discriminant validities hold.

Regression Model

This study uses the regression model to analyze the relationship between the five factors and the Learner's motivation (Y). The F value of ANOVA equals 18.213 and the p value is 0.000 which is significant at the $\alpha=0.01$ level. The R^2 value equals 0.409 meaning that the amount of variance in the dependent variable explained by this model is 40.9%. The regression model is showed below:

$$Y = 1.009 + 0.176 \text{ x Factor1*} - 0.12 \text{ x Factor2**} + 0.213 \text{ x Factor3*} + 0.141 \text{ x Factor4*} + 0.081 \text{ x Factor5}$$
*coefficient is significant at the 0.01 level
**coefficient is significant at the 0.05 level

Discussions and Implications

According to the regression model, several interesting points can be discussed:

- The Factor 2 (*IDL environment support*) shows negative correlation with the Learner's motivation. The major reason is the questionnaire designed in Factor 2 measuring the subjects' perception about the **drawbacks** in the current status concerning the IDL environmental support. Therefore, we got a negative correlation result. Actually, the learners really think that the "IDL environment support" is a very important factor to upgrade their learning motivation in the IDL.

- The Factor 5 (*Social factor of IDL*) shows no significance with the Learner's motivation. The best reason is that the learners don't care about the IDL social factor. They just want to attend the IDL course.

- The Factor 1, 3 & 4 are significant correlation with the Learner's motivation. That means *learner's learning style*, *learner's involvement*, and *learner-instructor interaction* really significant affect the learner's motivation.

According to the result of our research, learners' learning style and learners' involvement, as well as learner-instructor interaction are the factors, which have significant impact on learners' motivation, therefore, it is essential that we may design activities to facilitate such factors in an IDL. We propose some activities

- Learning activities: According to Keller's (1983) "motivational-design model," there are four categories from which a learner's motivation may be facilitated. They are interest, relevance, expectancy, and satisfaction. Since Keller's model deliberated the motivation through courses design, it is argued that such a view is rather narrow. From the result of our experiment, we suggest that in order to increase motivation, learning activities should be versatile by adopting appropriate IT. For example, we may fulfill the constructivist or cooperative model of learning. Moreover, since each learner may prefer a special type of learning, it is effective to match instructional methods with an individual's learning style. These suggest the need for the cognitive information-processing model of learning (Leinder and Jarvenpaa 1995).

- Teaching style: In (Webster and Hackley 1997), the most important influence on involvement and participation is teaching style. Webster and Hackley (1997) also suggested that an interactive teaching style is a very effective method to facilitate student involvement. We claim that in order to facilitate learners' motivation, teachers play a critical role. The following methods are suggested to fulfill the interactive teaching: "Try to motivate students to ask questions and stimulate discussion," "Elicit participation by using the discussion mode," "Assign team-project to let every students involved," and "Adopt constructivist and cooperative model of learning." Instructors ' familiarity and exploit of the technology, and positive attitudes to the technology will also play an important role to students' motivation.

- Using technology appropriately: By adopting appropriate IT, learners' involvement and learner-instructor interaction may be facilitated. According to (Webster and Hackley 1997), the perceptions of medium richness can be increased by including: (a) camera and technology layouts to ensure that instructors maintain eye contact, (b) training instructors not to concentrate on the technology at the expense of students. Other emerging technology that we may use to support different types of learning models. For example (Leinder and Jarvenpaa 1995), Hypermedia and Internet facilities are suitable to fulfill

constructivist and cognitive information processing models of learning. Synchronous/asynchronous communication and groupware-supported synchronous/asynchronous classrooms may achieve cooperative model of learning.

Moore and Kearsley (1996) specified the importance of a learner's motivation, since it plays a key role for learners to continue finishing their courses in an IDL. However, in order to facilitate a learner's motivation, it is important to clarify what are the key factors on which the motivation may depend. The contribution of this study is to find out the key factors those affecting the IDL learner's motivation. Those are really helpful to motivate the learners to complete a course so that appropriate support can be made available to them. The research results indicated that learner's learning style and learners' involvement, as well as the interaction between instructor and learners have significant relation with learners' motivation. On the other hand, the quality and administration of an IDL environment also have impact on learner's motivation. The implication of this research is that instructor still plays a crucial role in an IDL, since learners' learning style and learners' involvement, as well as learner-instructor interaction are all influenced by the instructional design. Different types of learning model can be achieved by adopting suitable IT. Future research may want to more carefully delineate the functions of IT that are key to students' motivation and teaching style.

References

Armstrong, M., Toebe, D., and Watson, M. "Strengthening the instructional role in self-directed learning activities," *Journal of Continuing Education in Nursing* (16:3), 1985, pp. 75-84.

Berge, Z. L. "Conceptual Framework in Distance Training and Education" In D. A. Schreiber and Z. L. Berge (eds.), *Distance Training : How Innovative Organizations are Using Technology to Maximize Learning and Meet Business Objectives*, Jossey-Bass Inc. 1998.

Billings, D. M. "A conceptual model of correspondence course completion." In M. G. Moore and G. C. Clark (Eds.), *Readings in distance learning and instruction,* 2. University Park, PA: ACSDE, 1989

Collins, A. "Cognitive Apprenticeship and Instructional Technology." In L. Idol and B. F. Jones (eds.), *Educational Values and Cognitive Instruction: Implications for Reform*, Hillsdale, N.J.: Erlbaum, 1991.

Cornell R. and Martin, B. L. "The Role of Motivation in Web-Based Instruction." In B. H. Khan (eds.), *Web-Based Instruction,* Englewood Cliffs, N J: Educational Technology Publications, 1997

Cortell, R., Fernacdes, M., and Foshee, N. "The message was the medium." In R. A. Cornell and K. Murphy (Eds.), *An international survey of distance education and teacher training: From smoke signals to satellite II* (pp.142-152). Orlando, FL; University of Central Florida, and Paris: International Council for Educational Media, 1995.

Jonassen, D. H. "Objectivism versus Constructivism: Do We Need a New Philosophical Paradigm?" *Educational Technology Research and Development* (39:3), 1991, pp. 5-14.

Keller, J., and Burkman, E., Motivational Principles. In M. Fleming and W. H. Levie (Ed.), *Instructional Message Design: Principles from the Behavioral and Cognitive Sciences* (pp. 3-53) (2nd ed.), Englewood Cliffs, NJ: Educational Technology Publications, 1993.

Keller, J. M. "Motivational design of instruction." In C. M. Reiguluth (Ed.), Instructional design theories and models: *n overview of their current status* (pp. 386-434). Hillsdale, NJ: Lawrence Erlbaum Associates, 1983

Keller, J., Burkman, E. "Motivation principles." In M. Fleming and W. H. Levie (Eds.), *Instructional message design:Principles from the behavioral and cognitive sciences* (pp. 3-53)(2nd ed.), Englewood Cliffs, NJ: Educational Technology Publications, 1993

Leinder, D. E., Jarvenpaa, S. L. "The Use of Information Technology to Enhance Management School Education: A Theoretical View," *MIS Quarterly* (19:3), 1995, pp. 265- 291.

Martin, B. M, and Bramble, W. J. "Designing effective video training instruction: The Florida Teletraining Project," *Educational Technology Research and Development* (44:1), 1996, pp. 85-99

Martin, B. M, and Briggs, L. J. *The affective and cognitive domains: Integration for instruction and research*. Englewood Cliffs, NJ: Educational Technology Publications, 1986

Moore, M. G. "Self-directed learning and Distance Education." *Journal of Distance Education* (1:1), 1986, pp. 7-24.

Moore, M. G., and Kearsley, G. *Distance Education: A System View*, Wadsworth Publishing Company, 1996.

Twigg, C. A. "The Need for a National Learning Infrastructure." *Education Review* (29:5), 1994, pp. 17-20.

Webster, J. and Hackley, P., "Teaching Effectiveness in Technology-mediated Distance Learning." *Academy of Management Journal* (40:6), 1997 , pp. 1282-1309.