Assessment of Students' Readiness toward E-Learning

Abstract

The process of learning and training has been nearly changed by the growth of Information Technology and the use of networks. The widely-used information technology has also led to the growth of virtual learning or popularly called the e-learning. Nowadays, the most pertinent question conjectured is whether the organizations and academia are essentially prepared to use e-learning methods or not. Therefore, it is required to assess students' e-learning readiness for the implementation and application of e-learning. The statistical population of this study consists of 226 M.Sc and Ph.D agriculture students from Tarbiat Modares University, Tehran, Iran, 2008-2009. The study is based on Morgan's Table, using random sampling technique. Content and face validity of the questionnaire have been verified by a panel of experts. The reliability of the questionnaire is obtained using SPSS software version 16. The results of Friedman Test, is used for one-way repeated measure analysis of variance by ranks, indicating that the students' psychological readiness for E-Learning classes is the highest (M=7.97) and their knowledge about e-learning technologies is the lowest (M=1.10).

Keywords: e-Learning, information technology (ICT), E-Learner.

1.0 Introduction

The process of learning and training has been changed due to the growth of Information Technology, use of computer networks as well as globalization. The various formats/designs of e-Learning technologies can change the foundations of learning and training (Urdan & Weggen, 2000). One of the significant issues in growing number of organizations and academies is the appropriate use of e-learning.

Nowadays, a majority of institutes and organizations present education programs using e-learning techniques. However, are they actually ready for implementing such e-learning strategy?

In fact, today numerous institutes, organizations and academies take no necessary steps for assessing the necessity and effectiveness of e-learning. It is mostly emphasized on "Why is e-learning technology used?" rather than "Is there readiness for e-learning?" This has led to creation and use of inefficient e-learning programs. It is vital to assess e-learners' readiness for attending e-learning courses. According to Anderson (2002), Bean (2003), Chapnick (2000), Clark and Myer (2003) and Gold et al (2001), e-learning without effective planning most likely would lead to a failure.

Learner and instructor should be prepared for e-learning since it is different from traditional education requiring both the students and the academic institutions to understand the concept (ACSDE, 1999).

A combination of technical, personal, cognitive, motivational, and psychological factors lead to successful e-learning programs. Computer literacy, reading and writing skills and appropriate correspondences certainly will have effect on the success of e-learning programs (Buchanan, 1999). Students should be also encouraged for online courses. They should enjoy their own progress, have capability of time management as well as exploring the internet and connecting it to other students (Blocher, De montes, Willis, & Tucker, 2002; ACSDE, 1999).

E-learning success is further determined by self management, self learning program, psychological readiness, self generated motivation, persistence in learning and optimizing learning control (Bocchi, Eastman, & Swift, 2004; Buchanan, 1999; Draves, 2000; Liu & Ginther, 1999; Wang & Newlin, 2000).

Numerous studies have been carried out on e-learning readiness. Several assessment models have been presented and used in this field, such as International Telecommunication Union (ITU), Computer System Policy Project (CSPP), Centre for International Development at Harvard University (CID), Chapnick and Haney models.
Although these models are similar among themselves from some points of view but they differ from each other due to their definitions of e-learning readiness, objectives and other factors.

Chapnick (2000) has presented an instrument/tool for assessing e-learning readiness, which has been considered as an e-learning needs assessment model, classifying 66 factors in 8 categories like: (1) psychological characteristics; (2) sociological characteristics; (3) environmental features; (4) human resources; (5) financial readiness; (6) technological and technical skills; (7) facilities; and (8) course content readiness. This model helps managers to determine the e-learning readiness level of company as well as to identify the sections of company which needs to be developed for e-learning.

Haney (2002) recommends that managers, previous to implementing electronic education programs, answers 70 questions which are classified in 7 Categories: (1) Human resources readiness (2) Learning management system readiness; (3) Learners readiness; (4) Course content readiness; (5) Information technology readiness; (6) Finance readiness; and (7) Hardware equipments readiness.

Koponen (2008) in his research on implementation of e-learning indicates that social, cultural, emotional and a number of other factors have effect on assessing e-learning. Trondson (2004) in a survey on learners’ attitude toward online learning shows that self-guidance, computer and internet use skills, time management, absence of face-to-face contact, access problems, technical support and appropriateness of course content are concerned as the major effective factors in learners’ online participation.

Deirdre, Lynch, Whiteley, Emmerling & Brinn (2000) prepared a questionnaire to identify variables that may enhance students’ readiness for computer-based testing. The questionnaire was designed to obtain information about students’ skills in computer and internet, experience with computer-based testing, their opinions about computers and learners’ demographic characteristics. It was found that students’ readiness for computer-based testing may be facilitated by preparing them for examination content, by enhancing their opinion about computers and by increasing their computer-based testing experiences.

Based on the studies and models which have been carried out on e-learning, a framework for assessing e-learning readiness was proposed by the researcher (See Figure 1).

This Figure contains components/indications related to assessing e-learners’ readiness to attend e-learning courses.

2.0 The Purpose and Exclusive Objectives
The overall purpose of this study is to survey the students’ e-learning readiness based on the proposed e-learning readiness assessment model.

The exclusive objectives of this study are:
1) To determine the students’ demographic characteristics, and
2) To determine the relationship, if any, between demographic characteristics and the effective variables on students’ e-learning readiness

3.0 Methodology
This is a quantitative research with applied goal which helps students in utilization of e-learning and assesses students’ e-learning readiness for implementation of this method of learning by using questionnaire. This research in terms of statistics is either a descriptive study since it surveys what it is, and or a correlation study because it surveys the relationship between factors.
3.1 Statistical population
A research population is generally a large collection of individuals or units that have at least a common characteristic. The statistical population of this study consists of MSc and PhD students, (N=566), in the Faculty of Agriculture at Tarbiat Modares University (2008-2009).

3.2 Sample size
In this research, the sample size has been determined based on Krejcie and Morgan Table (1970). According to this Table, the necessary sample size for surveying 556 statistical populations for the time period 2008-2009 includes 226 M.Sc and Ph.D students.

3.3 Sample selection method
Random sampling procedure has been used for sample taking of students. In this method, each of statistical population has the same chance of selection as sample. 226 questionnaires were submitted to the M.Sc and Ph.D students of Faculty of Agriculture and 226 questionnaires were filled in and returned to the researcher.

4.0 Data Gathering Tool/instrument
In this research, questionnaire was used for surveying the students’ e-learning readiness. A nine-section questionnaire was used to collect data about students’ e-learning readiness and they are as follows:
Section 1: Learners’ computer skills;
Section 2: Learners’ internet-using skills;
Section 3: Learners’ psychological readiness;
Section 4: Learners’ access to computer and internet;
Section 5: Learners’ interests in attending e-learning courses;
Section 6: Learners’ knowledge about e-learning technology;
Section 7: Learners’ attitude toward e-learning;
Section 8: Learners’ problems in using e-learning; and
Section 9: Demographic characteristics of the students.

All sections above are measured on a five point scale. The scale ranged from; 1=very low 2=low 3=fair 4= high 5= very high.

4.1 Validity
To determine the face and content validity, several copies of questionnaires were reviewed by the experts and Faculty Board of Agriculture Training and Development. The Questionnaire included 66 questions, assessing the student’s readiness in 9 sections. Regarding the content validity all the questions were found to be relevant to the subject of assessment and regarding face validity the questionnaire structure and format were approved by them and then, questionnaire was tested for reliability.

4.2 Reliability
A pilot test was carried out for the purpose of verifying the questionnaire reliability by submitting 30 questions to the respondents not included in the statistical sample. After collecting the questionnaires, it was obtained that the instrument has acceptable reliability (Corn Bach’s alpha = 0.8).

5.0 Results and Discussion
Exclusive objective-1
Demographic characteristics of the learners: Majority of the students was male (48%). Most of the students (55.2%) were between 22-25 years of age and the least were 36-42 years of age. 80% of the learners were studying M.Sc and 20% of them were Ph.D students. 17 % of the students were employed and 83% of them were jobless. 23% of the students had e-learning experience.

Exclusive objective-2
To determine the relationship, if any, between students’ demographic characteristics and their e-learning readiness
The result of t-test shows that there is meaningful difference between students of M.Sc and Ph.D, on Computer and Internet using skills, contrary to Hakan (2007) findings. Ph.D students were more capable of using ICT compared to M.Sc students (Table 1).

Table 1: t-test mean difference between M.Sc and Ph.D. students considering computer and internet using skills (N=226).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Education level</th>
<th>N</th>
<th>M</th>
<th>Sd</th>
<th>t value</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer &amp; Internet using skills</td>
<td>M.Sc</td>
<td>173</td>
<td>29.58</td>
<td>8.05</td>
<td>4.36</td>
<td>00.0</td>
</tr>
<tr>
<td></td>
<td>Ph.D</td>
<td>42</td>
<td>33.71</td>
<td>4.66</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A mean computed on a scale 1 “very low” to 5 “very high”

*: p<0.05

According to findings, female students had more psychological readiness for e-learning compared to the male students which supports the findings of Lynch, Whitely, Emmerling, & Brinn, (2000). The results of t-
test show that there is significant difference between male and female students relating to psychological readiness (Table 2).

**Table 2. t-test mean differences between male and female students in regard to psychological readiness (N=226).**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Gender</th>
<th>N</th>
<th>M</th>
<th>Sd</th>
<th>t value</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological readiness</td>
<td>Male</td>
<td>107</td>
<td>48.5701</td>
<td>9.10</td>
<td>0.001</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>female</td>
<td>112</td>
<td>48.5714</td>
<td>5.78</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A mean computed on a scale 1 “very low” to 5 “very high” **p<0.01

t-test result indicates that there is meaningful difference between M.Sc and Ph.D students regarding their interests in e-learning Courses at 0.05 level. Ph.D students were more concerned about e-learning classes compared to M.Sc students in line with the reports of American library association (2008).

**Table 3. t-test mean differences between M.Sc and Ph.D students in regard to their education and interests in E-L Courses (N=226).**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Education level</th>
<th>N</th>
<th>M</th>
<th>Sd</th>
<th>t value</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interests in attending E-L Courses</td>
<td>M.Sc</td>
<td>182</td>
<td>2.67</td>
<td>4.77</td>
<td>2.59</td>
<td>0.018</td>
</tr>
<tr>
<td></td>
<td>Ph.D</td>
<td>44</td>
<td>3.11</td>
<td>2.72</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A mean computed on a scale 1 “very low” to 5 “very high” *p<0.05

According to t-test result, there is meaningful difference between employed and unemployed students considering their interests in e-learning classes at 0.05 level. Employed students were more interested in E-L courses in comparison with the jobless students approving Panitz, T(2008) findings. (Table 4).

**Table 4. t-test mean differences between employed and unemployed students in regard to their occupation and interests in E-L Courses (N=226).**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Job status</th>
<th>N</th>
<th>M</th>
<th>Sd</th>
<th>t value</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest in attending E-L Courses</td>
<td>employed</td>
<td>39</td>
<td>3.48</td>
<td>1.35</td>
<td>-1.64</td>
<td>0.035</td>
</tr>
<tr>
<td></td>
<td>Jobless</td>
<td>186</td>
<td>3.86</td>
<td>1.01</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A mean computed on a scale 1 “very low” to 5 “very high” **p<0.05

t-test result shows that there is meaningful difference between M.Sc and Ph.D students relating to knowledge about E-L technologies at 0.01 level. Ph.D students have more information about E-L technologies than the M.Sc students which approve the findings of a report in Ireland.(2005). (Table 5).

**Table 5. t-test mean differences between M.Sc and Ph.D. students in regard to education and knowledge about E-L technologies (N=226).**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Education level</th>
<th>N</th>
<th>M</th>
<th>Sd</th>
<th>t value</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge about E-L technologies</td>
<td>M.Sc</td>
<td>175</td>
<td>3.41</td>
<td>2.71</td>
<td>4.07</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Ph.D</td>
<td>44</td>
<td>5.02</td>
<td>2.24</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A mean computed on a scale 1 “very low” to 5 “very high” **p<0.01

Students with experience of attending E-L courses, have more knowledge about E-L technologies in comparison to those without that experience. Significant difference was found at 0.05 level (see table 6).

**Table 6. Mean differences between students with and without the experience of attending E-L courses (n=226).**

<table>
<thead>
<tr>
<th>variable</th>
<th>experience of attending e-l courses</th>
<th>N</th>
<th>M</th>
<th>Sd</th>
<th>t value</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>having knowledge about E-L technologies</td>
<td>with experience</td>
<td>47</td>
<td>4.57</td>
<td>2.42</td>
<td>2.65</td>
<td>0.021</td>
</tr>
<tr>
<td></td>
<td>without experience</td>
<td>167</td>
<td>3.47</td>
<td>2.75</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A mean computed on a scale 1 “very low” to 5 “very high” *p<0.05
The result of correlation test shows that there is a relative meaningful relationship at 0.05 level between students’ age and psychological readiness, as psychological readiness for e-learning increases with age and this is in accordance with Reio & Leitsch.(2003) findings. (Table 7)

**Table 7.** Correlation between students’ age and Psychological readiness

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Correlation coefficient</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological readiness</td>
<td>0.163</td>
<td>0.020</td>
</tr>
</tbody>
</table>

*:p<0.05

According to correlation test, there is a positive and significant relationship at 5% level between Age and knowledge of E-L technologies which shows that knowledge about E-L technologies increases with age in approval to Sullivan,(2001) findings. (Table 8).

**Table 8.** Correlation between students’ age and having knowledge about E-L technologies

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Correlation coefficient</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>having knowledge about E-L technologies</td>
<td>0.148</td>
<td>0.035</td>
</tr>
</tbody>
</table>

*:p<0.05

There is a positive and meaningful relationship at 0.05 level between the students’ attitude toward E-L and their computer skills (Table 9). In case the students’ attitude toward e-learning is more positive, they will be more efficient in using computers. In contrary to Link,T.M.,& Marz,R.(2006) findings.

**Table 9.** Correlation between students’ attitude toward E-L and their computer-use skills

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Correlation coefficient</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer-use skills</td>
<td>0.134</td>
<td>0.047</td>
</tr>
</tbody>
</table>

*:p<0.05

There is also a positive and significant relationship at 0.01 level between the students’ attitude toward E-L and their internet skills (Table 10). In case the students’ attitude toward e-learning is more positive, they will be more skilled in internet. This is in contrary to the findings of Link, T.M., & Marz, R. (2006).

**Table 10.** Correlation between students’ attitude toward E-L and their internet-use skills

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Correlation coefficient</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet-use skills</td>
<td>0.252</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**:p<0.01

This research is a survey on students’ e-learning readiness in attending online courses regarding various aspects of e-learning, by which students’ e-learning readiness is assessed and the significant differences between them are statistically indicated. This is based on Friedman Test which is a kind of non-parametric test in SPSS software which is equal to parametric two-way variance analysis. Friedman test is used when equality of mean scores of several dependent variables is required. Friedman test shows that the students’ psychological readiness for E-L courses obtained the highest score (M=7.97) and the students’ Knowledge about E-L technology obtained the lowest score (M=1.10) for implementation of e-learning technique (Table 11). The lines between scores show that there is no significant difference between mean at 0.05 level. There is no meaningful difference between students’ attitude toward e-learning and their problems in using e-learning (Table11).

**Table11.** Means and rankings of students’ readiness toward E-learning in various indicators of E-L

<table>
<thead>
<tr>
<th>Indicators Of E-L Readiness</th>
<th>Psychological readiness Mean</th>
<th>Interests in E-L technologies Mean</th>
<th>Learners’ Problems in using E-L Mean</th>
<th>Learners’ Interests in E-L Mean</th>
<th>Computer skills Mean</th>
<th>Access To computer &amp; internet Mean</th>
<th>Knowledge About E-L technologies Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7.97</td>
<td>6.19</td>
<td>5.78</td>
<td>5.68</td>
<td>3.77</td>
<td>3.62</td>
<td>1.90</td>
</tr>
</tbody>
</table>

According to the findings of this study there was a meaningful relationship between demographic characteristics of the students and factors relative to students’ e-learning readiness in approval to the findings of previous studies. There are just some disagreement to few previous studies regarding no relationship between ‘students educational level and attitude toward e-learning’ and computer and internet using skills. As it is expected it can be related to the characteristics of the sample. In case the students’
attitude toward e-learning is more positive, they will be more skilled in computer and internet using skills. Creating positive attitude in students toward e-learning can be effective in implementing e-learning system.

6.0 Conclusion
In this research, findings indicate that the majority of students are interested in having face to face learning along with e-learning classes. Therefore, it is recommended not to eliminate entirely the traditional training delivery methods and use e-learning instead. The results show that two items: “flexibility in time and access” and “saving time and materials” are considered important by the students. In general, the students have appropriate attitude toward e-learning which leads to facilitate the successful implementation of e-learning. The students have interest and motivation toward online learning. However, students should be trained in some aspects of e-learning technology about which they have no adequate knowledge, such as synchronous and asynchronous technologies and standards such as SCORM standard (sharable content object reference model) by which students can access and use the educational contents step by step and not the whole content simultaneously. In this research, it is observed that there is a positive and meaningful relationship between the students’ attitude toward e-learning and their computer/internet skills. Hence, it is recommended to create a positive attitude among students toward use and application of e-learning which can be achieved by informing them about the advantages of utilization of E-L system.

7.0 References


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