factors related to e-learner dropout: case study of IUST elearning center

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Abstract:

Dropout rate between 20 to 80 percent has been reported in e-learning, so increasing e-learner persistence and decreasing dropout rate is one of the major challenges of distance and e-learning systems. The aim of this study is to identify the theories that explain the success rate of elearners. We used a quantitative content analysis by reviewing the findings of 24 major studies in this field. Findings reveal that motivational theories(f:13); self-regulated learning(f:6) and interaction(f:5) are the most important explanatory theories for elearner success. The case study implemented on 223 elearner at IUST elearning center showed that there are relationship between self-regulation and elearner dropout, in addition the results of t-test revealed that persistence elearner (M=3.50,SD=.66) had significantly high self-regulatory score than the dropout group (M=3.24,SD=.80), t=−2.54(221),p=.01.

Keywords:

E-learner, Virtual University, Persistence, Motivation, self-regulation, Interaction.

1. Introduction

Elearning as a new paradigm for teaching and learning is in its rapid development, so nearly all educational institutions have some sort of elearning center or web based educational services. These services are used as a single mode or at least in parallel with their traditional educations. At the beginning of 21\textsuperscript{st} century elearning defined promising visions to the learning community such as learning anywhere and anytime.

With rapid development of information and communication technology in education, broad terminology have been created to describe this new learning system, some of them but not all are: computer-based learning(CBL), e-learning, Internet based learning(IBL), online learning(OL), resource-based learning, technology-based learning, Web-based learning (WBL) and so on. Based on Anahina(2005) findings we can put CBL, IBL, OL and WBL under the umbrella of elearning, therefore, elearning term is selected in this paper. For the sake of normalization and also to avoid any misconception with informal learning, similar to the Kerr, Rynearson and Kerr(2006), we use online learning for the learning achieved in formal university courses, in which all instructions occur online using the Internet.

According to the above mentioned promises and ideals of elearning, Iranian higher education institutes especially engineering institutions started to integrate elearning in their education; Iran University of Science and Technology(IUST), the subject of this paper is one pioneer of them at the beginning of 2005. After more than 6 years of progress we found around 30\% of undergraduate IT students have dropped out. Concentrating in per course performance, we found more depressing results because in some courses student failing (F. grade) was over than 60\% (Mozayani&rostaminezhad,2010). Because of the importance of problem, the literature in dropout rate and dropout causes is reviewed in depth.

Literature revealed that elearner dropout rate as opposed to traditional student is too high. For instance Levey(2007) reported from several researchers that dropout rate were around 25\%--40\% as compared to 10\%--20\% in on-campus course. In UK open university Smith(2006) reported 35\% for dropout rate, in Turkey it was 36\% (Yukelturk & Inan,2006), 54\% for US Midwestern University (Park & Choi,2009) and also 23.9\% at the Ludwig-Maximilians-Universität (LMU) of Munich, Germany(Nistor & Neubauer,2010). There are Many more
reports stating relatively same statistics. Roughly concluding from the international reports, in average dropout rate were around 40%. Therefore our dropout rate in IUST university is similar to that of others. Although this rate is tolerable but is not acceptable. It means that elearner can learn anywhere and anytime but he/she should accept the risk of going out without anything and also with considerable waste of time and money.

With regard to this problem the main aim of this study is to find most frequent factors related to elearner dropout and examine this factor among Iranian elearner at IUST elearning center. In the remaining sections of this paper we will discuss the factors related to elearner dropout which are extracted from literature, after that the test of main frequent factors will be reported and discussed.

2. Theoretical background

2.1. Related literature

Researchers used several terminologies to describe elearner unsuccessfulness that include but not limited to: withdrawal, non-completion, dropout, attrition and failing. Similarly, for successful student the terminology is diverse, some of them are: retention, persistence, graduates, completion and passing. Once more, for the sake of unifying concepts let’s put them in two groups. Most frequent term are dropout for unsuccessful student and persistence for successful one. To clarify, we define the dropout elearner as a person who is not qualified in their courses and is excluded from online campus voluntarily or forcibly.

As discussed in the introduction, elearner dropout rate is relatively high, but to respect brevity of the paper the dropout rate will be excluded in this part so the main focus of remaining sections is about elearner dropout causes. As we know dropout are complex phenomena and affected by numerous factors. That is to say, technological, infrastructural, content related, teacher and support system factors are undoubtedly important, but due to learner-centric nature of elearning systems, this study concentrate on e-learner side factors.

Many researchers have conducted studies on e-learner side factors that affect elearner dropout; this study analyzed 24 published papers in scientific data bases such as Scopus, Proquest dissertation database and Elsevier. These studies examine different factors for instance Levey(2007) compare the role of Academic Locus Of Control(ALOC) and student Satisfaction or Holder (2007) surveyed the role of Hope, Academicals, Environmental and Motivational factors in online learner persistence.

In this paper we studied the main findings of these studies and calculated the frequency of important factors. For example levey(2007) find ALOC have no impact but in contrast dropout student have lower satisfaction with online learning. As we know, according to Keller's ARCS motivational Model (Keller, 1987; Keller,1999), Satisfaction is motivation factor, therefore in our content analysis, we put this result in motivational category. This process was continued for all 24 researches. The content analysis results are summarized in table 1.

<table>
<thead>
<tr>
<th>Factors</th>
<th>Study</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>Chyung (2001); Muse Jr(2003); Bernath &amp; Rubin(2004); Willging&amp;Johnson (2004); Bedore Jr(2005); Jun (2005); Levy,(2007); Womble(2007); Holder (2007); Cain(2008); Park&amp; Choi (2009); López-Pérez., Pérez-López &amp; Rodríguez-Ariza,L.,(2011); Joo.,Joung &amp; Sim (2011).</td>
<td>13</td>
</tr>
<tr>
<td>Self-regulation</td>
<td>Giles(1999); Xenos , Pierrakeas&amp; Pintelas(2002); Bernath &amp; Rubin(2004); Doherty (2006); Yúsulturk &amp; İnan (2006); Holder (2007).</td>
<td>6</td>
</tr>
<tr>
<td>Interaction</td>
<td>Shin,N&amp; Kim(1999); Tello (2002); Willging&amp;Johnson (2004); Doherty (2006); Hernandez (2008).</td>
<td>5</td>
</tr>
<tr>
<td>Academic Locus of Control</td>
<td>Parker (1999); Joo.,Joung &amp; Sim (2011).</td>
<td>2</td>
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</table>

Table 1 displays that motivational factors especially elearner satisfaction, self- regulatory especially elearner time management and interaction are much more frequent factors. It should be reminded that some of these studies found that more than one important factor, hence total frequencies are more than 24. This article selected most frequent important factors and studied them in IUST elearning center, So the hypothesis, based on the literature, are as follow:

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1 Attention, Relevance, Confidence, Satisfaction (ARCS)
Hypothesis 1. There will be a relationship between e-learner low satisfaction as a motivational factor and e-learner dropout.

Hypothesis 2. There will be a relationship between low self-regulation and e-learner dropout.

Hypothesis 3. There will be a relationship between low interaction and e-learner dropout.

3. Method

- Participant and procedure
  The population of this study was 877 undergraduate online learners who studied IT and Industrial Engineering at IUST e-learning center. The sample size of 250 was planned and selected randomly for this study. Twenty-seven of them did not complete or partially respond to the survey; therefore, they were excluded from the study. 127 of those were male; 106 were IT students and 107 of them were Industrial Engineering students. Considering higher education regulations in Iran, 128 (57.4%) of them were in the dropout group.

  The data for motivational, self-regulation, and interaction were gathered with a questionnaire administered in LMS and data about student GPA obtained through Academic Administration System of IUST in the first semester of 2011-2012 academic years. More information about instrumentation will be discussed in the remainder of this article.

- Instrumentation
  To achieve the goal of this study, a questionnaire was developed according to the literature and authors experienced that include but are not limited to motivation, self-regulation, and interaction. The initial scale was constructed with 67 items. In the next step, 290 e-learners were selected randomly and asked to describe themselves in reference to a 5-point Likert-type scale, with anchors ranging from 1 (strongly disagree) to 5 (strongly agree). Exploratory Factor analysis with varimax rotation was used to analyze the construct validity of the tool. The result revealed that an eleven-factor solution with eigenvalue over than one can count 62% variance of e-learner success construct. Three factors of eleven-factors were satisfaction ($\alpha = .84$), self-regulation ($\alpha = .82$) and interaction ($\alpha = .59$) and Cronbach's alpha were $\alpha = .84$ for the entire set of the questionnaire.

4. Result

  E-learner persistence and dropout were dichotomous variables (1 for dropout, 2 for persistence) and also in satisfaction, self-regulation, and interaction subscale, students were assigned to low and high group for each subscale based upon median split, so for each student, a dichotomous data were calculated in each subscale; 1 for low satisfaction and 2 for high satisfaction and so on. As all variables are dichotomous, the Pearson chi-square should be the best method, therefore, it was used to test the research hypothesis and to determine the relationship between research variables.

  Table 2 provides a matrix of Pearson chi-square, df, and the level of significance for satisfaction, self-regulation, and interaction, with dependent variable dropout and persistence e-learner. As shown in Table 2, e-learner satisfaction and interaction had a P value more than .25, this indicates that the first and third hypotheses are not supported, but the significant level of self-regulation indicates that the second hypothesis is supported. This means that persistent e-learners are more self-regulated than dropout ones.

Table 2: Pearson chi-square test

<table>
<thead>
<tr>
<th>Variable</th>
<th>Chi-square score</th>
<th>Df</th>
<th>Significance (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction</td>
<td>0.078</td>
<td>1</td>
<td>.74</td>
</tr>
<tr>
<td>Self-regulation</td>
<td>10.18</td>
<td>1</td>
<td>.00</td>
</tr>
<tr>
<td>Interaction</td>
<td>1.45</td>
<td>1</td>
<td>.28</td>
</tr>
</tbody>
</table>

  To ensure that dropout learner's self-regulation score is less than persistent one, after insuring from normality of the continuous score of e-learner in self-regulation subscale, independent-sample T-test were computed. The results of T-test revealed that persistent e-learners ($M = 3.50$, $SD = .80$) had significantly high score than the dropout group ($M = 3.24$, $SD = .66$), $t = 2.54(221)$, $p = .01$.

5. Discussion and conclusions

  It is a fact that e-learner dropout nearly in all educational systems is high, therefore it is necessary to find factors related to this complex phenomena. There are numerous factors that affect learner dropout, directly or indirectly. Because of learner-centric nature of e-learning, we examined learner-related factors. Literature was reviewed and revealed that three factors are the most important ones in this regard: student satisfaction as a motivational factor, self-regulation, and interaction. This case study on Iranian e-learners revealed that not also there are relationships between self-regulated e-learners and their success, but also successful students are more self-regulated.

  E-learners should learn on their own, therefore it is rational that many researches have emphasis on self-regulation. The importance of this factor in e-learning can also be understood from Zimmerman (2000) definition.
He introduced the self-regulation as a way to compensate individual differences of students in learning, defined the essential qualities of academic self-regulation, described the structure and function of self-regulatory processes and gave an overview of methods for guiding students to learn on their own.

Besides the above mentioned reasons, for Iranian elearners the self-regulatory is most essential due to some regulatory obstacles. For instance each student should take at least 12 credits in one semester, this means that student with job and family responsibility should select minimum 4 course in each semester. Surprisingly, to shorten the education period, some of these students take even more than 20 credits in a semester. In consequence courses load are too much, therefore, more self-regulated students are more likely to succeed. It should indeed be noted that time management skills are very important in online learning which is also, according to Zimerman (2008), one dimension of self-regulation.

Regarding the student satisfaction and interaction, obviously more researches are required. Finally, according to the findings of this study one practical result for Iranian elearner is that:

To improve persistence and to reduce dropout, institutions should improve self-regulatory skills of elearner, and insure these ability in their online learners.

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Reference


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