Model of Learning Management System for Self-Directed Learning

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ABSTRACT

The purpose of this study is to develop a model of learning management system (LMS) for self-directed learning (SDL) in higher education in Iranian university. Scholars' researches presented, different models of SDL in various learning context. In this research SDL is used as a foundation to design a LMS that can help students to improve their abilities by motivation, self-management, monitoring, overall learning activities and personal attributes. Using a mix method methodology, 710 of 800 post graduate students participated and completed the survey, It measured SDL; that was adapted from Caffarella and Caffarella and prepared based on two factors (process learning and personal attributes) and seventeen IT managers answered the questionnaire in interview. Cronbach's alphas with 0.936 confirmed its reliability in quantitative research. Interview, observation and documents used to supporting validity and reliability in qualitative research. Case study, experimental research and correlation used to examine the research questions and hypothesized model. Results shown between pre and post-test in control group and experimental group after two semesters are significant. According to IT managers in interview, LMS need supporting system and some critical factors Such as; instructor, organization, and technology. The results of the study present a model of LMS on SDL.

KeyTerms: Self Directed Learning, Learning Management System, Process Learning, Personal Attributes

INTRODUCTION

The rapid development of information and communication technology (ICT) during the past decade has caused a significant impact on education. A modern technology that is able to put together the pedagogical and technological features into a virtual learning environment is a software application known as a Learning Management System (LMS). It gives the students a chance to practice computer skills; allows flexible working; provides independent skills; and encourages the skills development in time. LMS is not aimed to impose autonomy on learners, but through monitoring, planning, giving the needed support and encouraging reflection, it provides a context wherein learners become accustomed to a different, greater proactive approach towards their learning. Another interesting capability of LMS is that students can guide and direct their own learning and it provides them with self-directed learning. SDL is capable of affecting the way a student becomes motivated for learning, and the way students use a variety of strategies and resources for accomplishing learning in a particular learning context. Nowadays, SDL has been recognized as an outstanding model; this is because of many changes that have occurred in technology, and the competitive market have made it necessary...
for institutions, universities, and colleges to provide a context ready for constant learning and re-learning.

**LITERATURE REVIEW**

- **Learning Management System**
  One of the electronic packages mostly used for online learning and teaching is Learning Management System (LMS) that offers a huge development in the field of learning applications. LMS is increasingly applied to higher education as well as to small-, middle-, and large-sized firms. Learners and instructors have been using LMS since the past decade. At first, LMS was basically used only for delivering articles oriented for content sharing; however, it currently provides a varied interaction between instructors and learners, and makes available a set of instruments that can facilitate the learning process. Today, LMSs help users share their media, articles, blogs, meetings, portfolios, and bookmarks. Several commercial and open source LMSs are available on the web. Some popular LMSs include WebCT™, Moodle™, SAKAI™, and Blackboard™. Within a conventional setting, online LMSs can enhance the speed and efficiency of educational processes and promote an appropriate communication among students and instructors. According to Lonn & Teasley, LMSs have changed the process of learning from a mere information transmission to the enablement and administration of students’ learning. Using LMS, new frameworks can be designed for learners and new knowledge can be shaped; it expands the learners’ capabilities and skills and makes a relationship between online learning and self-directed learners.

- **Self Directed Learning**
  (SDL) method is increasingly used for adult education by tertiary institutions. SDL can be referred to in regard to the degree of responsibility learners take for their own learning. Self-directed learners control and accept the freedom for learning what they view as significant. The extent of this control is dependent on the learners’ abilities, attitude, and personality characteristics. SDL can be readily taken to some extent by all individuals. As indicated in the literature, if teaching delivery is matched with SDL readiness, the best opportunity for learning is provided. Knowles states when many students enter new learning situations, they deeply desire firm structure and a teacher who is distinctly in charge. When using the term "self-directed", they think of the burden of too much responsibility and the lack of structure, hence becoming nervous. According to Knowles, instructors should be mainly aimed to help such students develop competence in the SDL process, particularly those teachers who deal with online learners who are used to be taught hard facts in conventional classrooms. In addition, self directed learner
  - Connect actively new information with their prior experiences and knowledge.
  - Know that learning needs effort and intention.
  - Are responsible of their own learning rather than expecting this from their teachers.
  - Identify their favorite styles of learning.
  - Know how to manage their own learning.
  - Are able to apply a range of strategies to any learning situation.
  - Have the critical thinking ability about what they learn.
  - Monitor and reflect on their learning.
  - Have confidence, independence, and preparedness to take risk.
  - Are not afraid of asking questions and seeking help when needed.

- **SDL in Online Learning**
  According to Song and Hill, SDL is incorporated as a learning process and a personal attribute. In this model, a two dimension such as: personal attribute, learning process and learning context that is added to indicate the influence of environmental factors on SDL. With the development of online learning in higher education, SDL began to attract greater deal of attention because of its effect on online learning contexts. Song and Hill state that online learning gives more control of instruction to learners. In addition, online learning affects the learners’ perception towards their level of self-direction.

**AIMS OF STUDY**

Various perspectives on SDL are presented by different researchers. Some of them consider SDL as a process for organizing the process of instruction; they are focused on the learners’ autonomy level over the instructional process. Other scholars see self-direction as a personal attribute with the education objective described as to develop learners who can assume intellectual, emotional, and moral autonomy. Like Candy, Brockett and Hiemstra, Garrison also recognized the context factor in his model in that he specified self-management of resources in a given context. Yet, the role of context was somewhat superficial in Garrison’s model and the dynamic interaction between learning context and SDL was not explicit. The present study attempts to assess SDL in online learning through LMS and fill the gap that existed in the previously-conducted studies. This also identifies and discusses the capabilities and skills required for SDL in online learning in the higher education system, and it focuses on the contribution of online learning environment to the acquisition and improvement of SDL skills of graduate students in Iran, who use actively the LMS. Many universities exist in Iran; however, the present research is the first carried out on SDL by LMS in the higher education context of Iran.

**OBJECTIVES**

The objectives of this study are as follows:
  - To develop a model of LMS on SDL in higher education in Iran.
  - To identify elements of LMS in higher education in Iran.
  - To identify the level of SDL on LMS in higher education in Iran.
  - To examine the effect of LMS on SDL.
  - To examine the impact of LMS on SDL.
  - To develop a model of LMS on SDL in higher education in Iran.
POPULATION AND SAMPLE SIZE

In this study population and sample size refer two groups:
First group: 17 IT managers in electronic campus (population and sample size is same).
Second group: Post graduate students in traditional and electronic campus. The sample size shows the Fig.1

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Research Instruments

The research instruments used in the present study are interview, observation, and questionnaire. In first group for 17 IT managers, Interview and observation used. Also, they answered the questions about the LMS. They made new questionnaire that distributed among experimental group in post test. Second group is students (control & experimental group in pre test) and (experimental group in post test). Control & experimental group in pre test answered the questionnaire of SDL; that was adapted from Caffarella and Caffarella and prepared based on two factors (process learning and personal attributes) and it was based on literature review. This questionnaire has two parts; a first part is the respondents’ demography and the second part is about SDL. It is designed to measure the complexity of attribute, skills, and characteristics. The questionnaire for learning process and personal attribute include 58 questions by Likert scale.

After two semesters, in post test control & experimental group answered the questionnaire of SDL again that was adapted from Caffarella and Caffarella. Also, the post graduate students in experimental group answered the LMS questionnaire that was adapted from IT managers’ experiences in the University of Electronics.

Reliability in (SDL)

Cronbach’s alpha is used. The value of alpha is based on the average of all the inter-term correlation coefficients and the number of items in the measure. It is also possible to correlate each item score with the total score based on all items. Table 1 illustrates Cronbach’s Alpha results that is Based on Standardized Items. Total score show .936. It is good result and acceptable for most instruments. The questionnaire contains 58 questions in SDL;

<table>
<thead>
<tr>
<th>Reliability Statistics for SDL</th>
<th>Cronbach’s Alpha Based on Standardized Items</th>
<th>No. of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.936</td>
<td>.938</td>
<td>58</td>
</tr>
</tbody>
</table>

Qualitative Reliability

Reliability refers to the consistency of these inferences over time,
location, and circumstances. In this research qualitative reliability includes the following:

- Member checking, asking one or more participants in the study to review the accuracy of the research report.
- Interviewing individuals more than once.
- Documenting the source of remarks whenever possible and appropriate.

Research Design

Research design in this study is mix method research qualitative and quantitative with equal weight and for gathering data interview, observation and questionnaire (triangular strategy) used. For qualitative research used single case study and qualitative research used experimental research (Quasi-experimental design) and correlation research.

Fig. 2 shows the model of research design. It shows research method and analysis data for each question. Qualitative method is used in first question and data gathering is observation and interview. For other questions, quantitative method is used and questionnaires of SDL and LMS are instrument for data gathering.

![Fig. 2 Summary of Research Design](image)

**DATA ANALYSIS**

Qualitative Researches (respondent 17 IT managers).

Table 2 shows relationship between LMS elements, learner abilities, and critical factors. This presents the extracted facts from the IT managers’ responses. It illustrates how LMS elements can have relationship with the critical factors and learner abilities and what is the relationship between learner abilities and critical factors. Table 2 presents the suggestions and experience of IT managers that work in the electronic campus.
Table 2: Relationship between LMS Tools with Learner Abilities

<table>
<thead>
<tr>
<th>Ranking of frequency of use</th>
<th>LMS tools</th>
<th>Learners’ abilities</th>
<th>Critical factors (Accepted factors in university)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Assignments</td>
<td>Planning, monitoring, evaluation, Resource use, strategy use, motivation</td>
<td>Self-efficacy, Experience, teaching style and personal innovativeness, Motivators, technology alignment, organization support, support and training, system quality</td>
</tr>
<tr>
<td>2</td>
<td>Announcements</td>
<td>Planning, monitoring, evaluation, Resource use, motivation</td>
<td>System quality, information quality</td>
</tr>
<tr>
<td>3</td>
<td>Forums</td>
<td>Planning, monitoring, evaluation, Resource use, strategy use, motivation</td>
<td>Experience, teaching style and personal innovativeness, Motivators, technology alignment, organization support, support and training, system quality</td>
</tr>
<tr>
<td>4</td>
<td>Drop box</td>
<td>Planning, monitoring, evaluation, Resource use, strategy use, motivation</td>
<td>Self-efficacy, Motivators, technology alignment, organization support, support and training, System quality.</td>
</tr>
<tr>
<td>5</td>
<td>Test/ Quizzes</td>
<td>Planning, monitoring, evaluation, Resource use, strategy use, motivation</td>
<td>Teaching style and personal innovativeness, system quality, organization support, training and support.</td>
</tr>
<tr>
<td>6</td>
<td>Messages</td>
<td>Monitoring, evaluation, Resource use, strategy use, motivation</td>
<td>System quality, organization support, training and support.</td>
</tr>
<tr>
<td>7</td>
<td>Wiki</td>
<td>Monitoring, evaluation, Resource use, strategy use, motivation</td>
<td>System quality, information quality</td>
</tr>
<tr>
<td>8</td>
<td>Glossary</td>
<td>Monitoring, evaluation, Resource use, strategy use, motivation</td>
<td>System quality, information quality</td>
</tr>
<tr>
<td>9</td>
<td>Grade book</td>
<td>Monitoring, evaluation, Resource use, strategy use, motivation</td>
<td>System quality, information quality, Experience, teaching style and personal innovativeness, motivators,</td>
</tr>
<tr>
<td>10</td>
<td>Resources tool</td>
<td>Planning, monitoring, evaluation, Resource use, strategy use, motivation</td>
<td>Experience, teaching style and personal innovativeness, Motivators, technology alignment, organization support, support and training, system quality</td>
</tr>
<tr>
<td>11</td>
<td>Web content</td>
<td>Planning, monitoring, evaluation, Resource use, strategy use, motivation</td>
<td>System quality, information quality, teaching style and personal innovativeness, technology alignment, organization support, service quality.</td>
</tr>
<tr>
<td>12</td>
<td>Site Stats</td>
<td>Planning, monitoring, evaluation, Resource use, motivation</td>
<td>Organization support, service quality, system quality.</td>
</tr>
<tr>
<td>13</td>
<td>Schedule</td>
<td>Planning, monitoring, evaluation, Resource use, motivation</td>
<td>Organization support, service quality, system quality.</td>
</tr>
<tr>
<td>14</td>
<td>Polls</td>
<td>Planning, monitoring,</td>
<td>Experience, organization</td>
</tr>
</tbody>
</table>

Experimental Research:

Pre Test: It has exam between two groups control group and experimental groups. The groups appeared equivalent to age. The mean SDL pre-test score of control group (M=3.41, SD =0.25) and the experimental group (M=3.44, SD =0.24). Result show between them was not significantly difference.

Post Test: Post test between two groups control and experimental groups after two semesters. The mean SDL posttest score of control group (M=3.45, SD =0.27) and the experimental group (M=3.44, SD =0.24). Result show between them was not significantly difference.

Post Test: Post test between two groups control and experimental groups after two semesters. The mean SDL posttest score of control group (M=3.45, SD =0.27) and the experimental group (M=3.44, SD =0.24). Result show between them was not significantly difference.

Correlation

Result show between Polls and Grade book in LMS tools and Personal attribute (PA) haven’t any relationship. PA hasn’t any relationship with Site state. Site state has relationship with SDL and learning process (LP) with significant 0.05 levels (2-tailed). Results show between web content and Polls in LMS tools and LP haven’t any relationship. Other tools such as; messages, Glossary, Wiki, Grade book, web content, Site state, Schedule and polls have relationship with SDL. This correlation is with significant (0.05) level and (2-tailed). Also, between Assignment, Announcement, Forum, Drop box, and test with SDL is good relationship (0.01) level and (2-tailed).

Fig. 3 demonstrates a theoretical and practical model of LMS for SDL in Islamic Azad University in Iran. It shows the relationship between LMS tools and SDL with two dimension and six factors by critical factors.
REFERENCES