IS SAUDI ARABIA READY FOR E-LEARNING? – A CASE STUDY

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ABSTRACT

The steady growth of e-learning around the world is inspiring many educational and business institutions to adopt the same. In order to benefit from e-learning, educational institutes should first conduct investigation to assess the learners' readiness. This paper analyses a small scale readiness evaluation case study for three groups of learners of a Saudi Arabian University. Statistical analysis and data mining tools have been used to find correlations among the technical ability, learning ability, time management ability and preferred mode of study of these learners. Our investigation shows that majority (73%) of the students still prefer classroom teaching to individual study.

Keywords: e-learning, e-learning readiness, readiness evaluation measurement

1. INTRODUCTION

E-learning (Electronic Learning) is the unifying term to describe the fields of online learning, Web-based training, and technology-delivered instruction. The widespread accessibility of the World Wide Web and the ease of using the tools to browse the resources on the Web have made the e-learning technology extremely popular and the means of choice for distance education and professional training. The concept and the use of e-learning were adapted in the mid 1980’s by several institutes in the United States. Approximately 1.9 million learners participate in e-learning at institutes of higher education, a million of which are from Australia, New Zealand and the United Kingdom. The number of people applying for e-learning courses all over the world increases at a rate of 25 percent each year [12].

Some of the middle-east countries have introduced and are successfully running e-learning in their educational institutes and business organizations. Saudi Arabian education system is somewhat under stress to provide additional educational opportunities for increasing population and to boost the literacy rate. With over 50% of the country’s population under the age of 20 and one of the highest birth rates in the world, SA higher education institutions have been facing a growing demand for enrolment. The capacity growth rate of existing Saudi educational institutes doesn’t match the current growth rate in enrolment demand. A viable e-learning system represents an excellent cost-effective solution to these problems [13]. The government of SA have taken some major plans but Internet based distance learning is still not so popular in SA. This paper tries to evaluate the e-learning readiness of three groups of undergraduate level students by investigating their technical ability, learning ability, general awareness and perceptions of e-learning over formal classroom based training.

Section-2 of this paper gives an overview of the current state of e-learning in SA. Interesting findings of a number of recent studies have been listed in section-3. Readiness evaluation measurements have been discussed in section-4. Section-5 points out the objectives and research methodology of this paper. Results and analysis of this investigation are elaborated in section-6. Section-7 concludes the paper with proposals.

2. PRESENT STATE OF E-LEARNING IN SA

In 1993 King Fahd University of Petroleum and Minerals (KFUPM) in Dhahran becomes the first Saudi institution to connect to the internet. In 1999 Internet access begins the move from government and academia into the mainstream. Though the first few years did not notice much progress, but in following years Internet subscription and use increased rapidly.

In 2008, SA called for a national plan to adopt information technology across the country. The plan recommends implementation of e-learning and distance learning, and their prospective applications in higher education. In a major transformation of traditional education, most universities in SA are expected to switch to a system of e-learning in coming years. The Saudi Ministry of Higher Education has established the National Centre of E-learning & Distance Learning, known as the ELC, to organize the change and prepare e-learning material. Nine universities have already agreed to implement
the system. The Higher Education Ministry has set up a repository for e-learning material to help universities adopt the system. E-books for engineering, medical, computer science and humanities courses will be available initially. Academics in the universities who have agreed to adopt e-learning are being offered training [14].

According to a recent study conducted by Madar Research, the SA e-Learning industry is projected to reach $125m in 2008 and is set to grow at a compound annual rate of 33% over the next five years. The growth is being driven by the Saudi Ministry of Education’s initiatives for the integration of Information and Communication Technology (ICT) and the education sectors, including pilot e-classrooms in five secondary schools in Riyadh. The strong support of key government officials for the adoption of e-learning programs is evident in the considerable increase in KSA's budget appropriation for education and manpower development, which has grown from SR. 96.7 billion in 2007 to SR. 105 billion in 2008 [2].

The demographic profile of Arabian Internet users conducted by Harvard University in 2008 and 2009, gave indication that most users were young (under the age of 35), majority of them were male, while the share of women among younger users (under 25 years old) was almost equal to men, which suggests that the digital gap between men and women is closing [15].

The penetration percentage of the total population of Internet users in ME and SA are 29.8% and 38.1% respectively, where SA contributes 15.5% of the total ME Internet users. The growth of Internet users in SA from year 2000 to 2010 (4800.0%) is also overwhelmingly inspiring [7]. All these information motivates the authors of this paper to conduct this small case study to explore the real scenario of e-learning readiness for learners of a comparatively young university.

3. LITERATURE REVIEW

E-learning is the use of electronic technology to deliver, support and enhance teaching and learning. It may include all types of technology enhanced learning (TEL), where technology is used to support the learning process.

The meaning of the term also seems to be dependent on the context in which it is used. In companies, it often refers to the strategies that use company networks to deliver training courses to employees. Lately in most universities, e-learning is used to define a specific mode to attend a course or programs of study where the students rarely or never meet face-to-face, nor access on-campus educational facilities, because they study online. E-learning lessons are generally designed to guide students through information or to help students perform in specific tasks.

Recently a number of studies have been undertaken in different countries to investigate the preparedness level of e-learners in academic as well as commercial institutions and to suggest recommendations to overcome their shortcomings.

Sadiq M. Sait gave an elaborated investigation results on the perceptions about e-learning from the students of King Fahd University of Petroleum & Minerals, Dhahran, SA in 2003 [13]. He showed that majority of the respondents prefer not to take courses on the Internet mostly because these courses are not considered equivalent to regular courses and moreover online courses are not accredited in SA.

Reima Sado conducted a study on two groups of students of Kang Saud University, Riyadh and Umm Al-Qura University, Makkah with the aim to investigate the effectiveness of collaborative online instruction on students’ attitudes towards online collaborative learning and teaching. But this study proved to be an unsuccessful effort [8].

In 2005, Aydin et al. presented the results of a study that examines organizational readiness of companies for e-learning in Turkey [1]. Authors claimed that though there are a number of instruments in the market that can be used for assessing readiness for e-learning, these instruments consist of terms, phrases, and applications that are meaningless for many institutions in especially technologically emerging countries. So they proposed and developed a new survey instrument that would fit their study.

Kaur et al. presented a study to determine the e-readiness of Open University Malaysia receivers and enablers [7]. Most important findings among many are receivers were more positive about their own level of readiness in comparison to enablers’ perception of learner readiness and non-electronic channels of communication and modes of learning were preferred to learning through e-networks.

Ryan et al. continues their research in defining an instrument that measures an e-learner’s readiness, with the cooperation of volunteer participants from the U.S. Coast Guard, and presents preliminary results in [16]. Several self assessment categories including technology access, online skills and relationships, motivation, internet discussions,online audio/video etc provide evidence to support that questions used consistently measured the desired scale of e-learners readiness.

Agboola investigated the preparedness of the academic lecturers for the introduction of e-learning at the International Islamic University Malaysia [3]. His results showed strong influences of two statistical terms e-learning confidence and e-learning training on e-learning readiness. It was also mentioned that gender issue had a lesser influence on the same.
The importance of e-learning readiness evaluation is applicable for not only a group of users of any particular type of institution, but also for a country. Since 2000, the Economist Intelligence Unit in cooperation with the IBM Institute has assessed the world’s largest economies on their ability to absorb information and communications technology and use it for economic and social benefit. The E-learning readiness ranking includes four main areas: Connectivity (the quality and extent of Internet infrastructure), Capability (a country’s ability to deliver and consume e-learning), Content (the quality and pervasiveness of online learning materials) and Culture (behaviors, beliefs and institutions that support e-Learning development within country). It indicates a country’s ability to produce, use and expand Internet-based learning—both informal and formal, at work, at school, in government and throughout society. According to the Economist Intelligent Unit (2010) SA was ranked 52 out of the world’s 70 largest economies for the annual e-readiness ranking [5].

4. READINESS EVALUATION MEASUREMENTS

As students make choices to take online or blended courses, there are a number of pros and cons that they should consider into their decisions. Learning online courses can be a better option because they offer convenience and flexibility. Students may have more individual attention from instructors in this way. More consistent and interactive teaching materials provide assistance for students to be more independent, self-disciplined and active learners. Sometimes it also gives a feeling of socio-inclusiveness for students can learn in a relatively anonymous environment without the embarrassment of failure and/or socio-cultural bias from personal contact.

On the other hand, this method has some major drawbacks and students should have good technical, learning and time management skills to be able to take the full advantages of e-learning. Some of the obstacles students have to overcome are it may create a sense of isolation and since there is no proper guidance for students to remind them about class time, or deadlines for assignments or exams, it makes them easier to procrastinate. The total process is more technology dependent and requires expensive start-up. It is also not suitable for certain types of courses which require skills relying heavily on inter-personal contact.

Considering all the above facts readiness measurement evaluation can be measured by four dimensions and these are the (1) computer or technical skill, (2) learning skills, (3) time management behaviors and (4) general awareness of the learners. The major components of each skill are mentioned below.

(1) Computer/Technical Skills
i. Ability to use computers, have access to a stable Internet connection and email.
ii. Ability to use software applications, access online library and other resource databases.
iii. Ability to upload, download, prepare, send, and receive files.
iv. Ability to use search engines properly.

(2) Learning Skills
i. Ability to work independently, have self-motivation.
ii. Have mature reading and writing skills.
iii. Have positive attitude about the learning experience in general and communicate with online students.

(3) Time Management Skills
i. Have respectable level of commitment and discipline to plan time for participation and study within their existing lifestyle and commitments.
ii. Have desire for technology enhanced occupation.

(4) General Awareness
i. Have knowledge about e-learning terminologies and tools.
ii. Have experience about online learning management systems (LMS).

5. OBJECTIVE AND RESEARCH METHODOLOGY

The objective of this research work is to investigate the preparedness of young students of Saudi Arabia to deal with the e-learning methodology that is expected to be offered at many government universities. Specifically we aim to identify how the computer operating skills, study habits, time management skills and general awareness of the students influence their readiness for the challenges of e-learning environment, materials and tools.

A sample dataset was created using a questionnaire survey for three groups of students who are currently studying undergraduate courses. The first group consists of second year female students (age 19-20 years), second group consists of third year female students (age 20-22 years) and the last group consists of third year male students (age 20-22 years). A set of questions were prepared addressing the issues of readiness evaluation measurements mentioned in section 4.

Both statistical analysis and Data Mining (DM) analysis were used to analyze the acquired data. For
DM analysis, Waikato Environment for Knowledge Analysis (WEKA), version 3.6 was used. WEKA is a data mining system developed by the University of Waikato in New Zealand that implements data mining algorithms.

6. RESULTS AND DISCUSSIONS

The major findings of this study have been grouped according to four readiness evaluation measurement skills. One of the key objectives is to assess the technical ability of the students. Since SA has high socio-economic structure, it is not surprising that all students have their personal computers and 96.5% of them have Internet connection at home. One important finding should be mentioned here that almost 10% students do not have any registered email addresses though most of them have Internet connection, and all of them are female students. It indicates their unwillingness to reveal personal information on Web.

On an average, students spend 2 hrs on Internet daily and 36% of them told they mostly work on education related web-pages, 27% of them read newspapers and 25% of them play online games [figure 1].

![Daily Internet Usage](image1)

**Figure 1:** Students’ daily usage of different Internet sites

Figure 2 shows percentage of students who know how to operate different software and use basic computer operations. It is clear that respondents are quite confident about their abilities. Apart from using online libraries they are familiar with handling basic software and file operations.

The second part of the study examined the learning ability of the students. According to our survey, students show poor level of confidence on their independent reading and writing performance. Figure 3 shows that only 13% students response positively that they can manage to study and understand the study materials themselves, whereas 75% need frequent assistance and 12% need continuous support from others.

![Ability to Demonstrate Technical Skills](image2)

**Figure 2:** % of students confident about their technical skills

![Independent Study Ability](image3)

**Figure 3:** Chart showing independent study ability of the students

Although it is not absolutely necessary to have English as the medium of instruction for e-learning, no doubt almost every country is now opting for English. When asked about the capability to communicate in English almost 35% learners replied they are not confident enough. 68% students believe that their English listening capability is above average and this percentage is little less (54%) for reading and writing skills.

Students should have positive attitude towards communicating with other online students to take the full advantage of e-learning method. In our survey, 54% students stated that they are interested to learn courses over Internet with learners from other SA/non-SA universities but among them 32% still believe they will face difficulties to communicate with other students due to cultural obstructions (50%) or language barriers (62.5%). More interestingly about 45% students mention that they will participate in online learning only if their personal information is not made public.

E-learning demands frequent communications among fellow students and instructors through student forum, chat, email etc. Almost 82% students claimed they have no hesitation communicating others online, while rest of the students (18%) clearly mentioned their disinclination to work with students from non-SA countries.
Ambitions for future occupations also influence students’ motivation for technology-oriented learning method. Figure 4 shows that a large number of students are interested in teaching (42%) and IT related job (33%). So if they become accustomed to e-learning it will definitely facilitate their professional life where they can update themselves continuously.

The next step of this study investigates for correlation among the components given below.

(A) Student’s ability to read study materials and books without taking helps from others, categorized as Good, Medium and Poor,
(B) Student’s preferred study mode, categorized as study alone, group study, class lecture and class lecture plus information available on Internet
(C) Student’s preferred format of reading materials, categorized as text books only, books with illustrations and books plus supporting audio/video materials.

Results derived from association rule mining using WEKA 3.6 are presented in Table 1. The first column contains rules and the second column shows the confidence value of that rule. Rules with very high confidence values only have been added in this result section. Table 1 shows that students with medium level of independent study ability who prefer textbooks with illustrations opt for face-to-face class lectures (confidence 100%). The second rule says that students with medium level of independent study ability who likes to search and study from Internet apart from textbooks go for blended learning where they can search the net for study material and get direct guidance of the subject teachers (confidence 100%). Students with poor independent study ability prefer short lecture notes and face-to-face interaction with teachers (confidence 100%). There is also 73% confidence that students with average independent study ability prefer group study as the method of learning as well as want to study from lecture notes only.

<table>
<thead>
<tr>
<th>Association Rules</th>
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<tr>
<td>A=Medium C= Books with pictures, tables =&gt; B=Only class discussion by teachers</td>
<td>1.0</td>
</tr>
<tr>
<td>A=Medium C= Books with pictures, tables and video from Internet =&gt; B=</td>
<td></td>
</tr>
<tr>
<td>Class discussion by teachers &amp; information from Internet</td>
<td>1.0</td>
</tr>
<tr>
<td>A=Poor C=Short Lecture notes =&gt; B= Only class discussion by teachers</td>
<td>1.0</td>
</tr>
<tr>
<td>A= Medium C=Short Lecture notes =&gt; B= Group Study</td>
<td>0.73</td>
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The last part of the questionnaire asks about general awareness about students that whether they are familiar with various e-learning tools, terms and LMS available today. Approximately 68% students told that they know the terminologies and usage of E-learning, but none of them have any practical experience of using any LMS.

7. CONCLUSIONS

E-readiness is a measure of the quality of a country’s information, communications and technological infrastructure and the ability of its consumers, businesses and governments to use ICT to their benefit. Among all these institutions, educational institutes play the most vital role. This paper presents the results of the e-readiness evaluation for three groups of students of a Saudi Arabian university, which is the initial phase of an ongoing research project. The next phases of the project include proper training for the prospective e-learners and design of assessment based methodologies for e-learning.

This study finds that almost 97% students are equipped with personal computers with steady Internet connection but only 54% of them expressed interests to learn courses over Internet with learners of other universities. Most of the students are good users of application software and tools but they do not have independent learning ability. Almost half of the respondents expressed their discomfort to communicate with other online students from different countries around the world due to weakness in English language and cultural prohibitions. Students also showed variety of choices for reading materials and learning methods. As a result, a large number of students (73%) still prefer classroom teaching to independent study at home.

Authors of this paper expect that with proper training and guidance it is possible to motivate students so that they can overcome language barriers and cultural embargo, and can get more involved in online based learning methods.
REFERENCES


