Exploring the Potential of Virtual Learning in an Open and Distance Learning (ODL) Environment

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Abstract

Virtual Learning is an emerging model in a distance mode of education. Due to advancement in technology, the concept of virtual learning has also prevailed in the job industry specially in the form of electronic internship or simply e-internship. It is not only providing opportunities for employers and employees but there are many challenges that are arising due to technology competency of interns in a remote learning environment. The concept is new in the developing countries like Pakistan and therefore, this research has been conducted with aim to investigate the basic ICT skills of students of the Allama Iqbal Open University (AIOU), Pakistan, which is the largest and oldest distant learning institute of Pakistan and is the most relevant with the concept of virtual learning environment. A survey was conducted to evaluate student's skills on the usage of operating systems, office automation tools, graphic animation tools and social networking tools. The survey results show that the students have requisite level of skills to precipitate in different tasks of virtual learning or e-internship. They are fully capable to use operating systems, office automation tools and graphic animation tools. They are also used to participate in group work through social networking tools. The results are encouraging as the Anova for regression model is showing significant role of these variables in virtual learning.

Keywords: ODL, Virtual learning, ICT, skills

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Introduction

Distance education has been around for a long time but has evolved in a number of ways from postal correspondence to technology based digitized course instruction (Moore, 2002). The amalgamation of distance learning i.e. the ability to learn from distance has merged with the phenomena of Open learning which is the ability for anyone to access the educational contents anywhere anytime in a virtual learning environment (Devi, 2006). With the advancement in technology, the ODL has undergone technological transformations and provided seemless interaction between students and teachers (Franks, 2012). These technological gains have also affected the office environment and therefore new models of remote working has been introduced all over the world including the e-internships (Michael, 2003).

Internship is an activity which is performed during the course of study of a professional degree program (Howard, 2007). The normal Internship procedure involve placement of students in relevant companies. They are associated with a professional department where they sit and work as per their official timing. The professionals train the internees through guidance, training and assess their work by giving professional work. The e-internship is a new concept where the interns do not have to travel to a central place of work (Howard, 2007). They use Information and Communication technology (ICT) to interact with the office representative/mentor from remote locations (Anderson, 2009). The remote location can be from home, or class room, or any other place except central office. This concept is new in the developing countries including Pakistan and thus facing many challenges. The use of ICT skills is one of the important challenges which can be converted into an opportunity if inhabitants are fluent in these skills (Anderson, 2009).

Pakistan is a developing country struggling to enhance the ICT usage in different fields including education and training. The technology mechanism may be used to support and initiate the novel idea of virtual learning which has yet to be practiced in the country. The study (Howard, 2007) reveal that promoting online model of remote work requires investigation of several parameters like ICT skills, attitude and behavior of learners and organizational set up of employers (Park, 2009). The basic ICT skills is the most important parameter that needs to be

investigated in a localized environment. Such innovation requires investigation of the ICT capacity of local students before promoting this new idea of internship. This research paper is focused on the evaluation of basic ICT skills among the students of AIOU which is the most relevant institute to introduce virtual learning or e-internship due its philosophy of distance education all over the country.

Literature Review

The term virtual learning is a model where workers can work from remote areas by using Information and Communication Technology (ICT). The concept was emerged from the state of California, USA where virtual working idea was conceptualized at the University of Southern California (Postma, 2003). Nilles one of earlier Telework Titan (Postma, 2003) gave a strong idea of getting off people off the road and provide them opportunity to work from their homes. It will not only reduce the rush on traffic but will save time and money as well. Following the new idea of working virtually, big IT companies like AT&T has freed up US$550 million in cash flows by eliminating traditional office sittings and reducing related overhead costs since 1990's (Anderson, 2009). Center for work and family was established in Boston College Carrol school of management by adapting new concept of virtual working. (Anderson, 2003). The idea was also conceived by other countries like Brazil, Portugal and Spain where big IT companies adopted this model (Howard, 2007).A study was conducted in Singapore that identified many women who can work but are not in work force as main avenue. It appeared that many women who are busy with their family commitments cannot go to office five/six days, 40 hours per week. E-internship offers them flexibility (Postma, 2003). A survey was conducted which showed attitude of Singaporeans female computer professionals. Out of 459 respondents, 73% were in favor of e-internship. (Postma 2003).

The concept of virtual Learning is slightly new in developing countries (Anderson, 2009), however, it can contribute in socio economic development of the developing countries. Many developing countries in Asia and Africa are facing economic and infrastructure challenges due to lack of infrastructure and slow economic growth rate (Aker and Mbiti, 2010). Virtual learning can be used as an alternate way of job opportunities to local inhabitants at their home and can help to reduce

poverty specially in rural areas. But it is important that information and communication technology infrastructure is available at rural areas of the developing countries. Working in virtual environment in developed countries have many advantages, from employee's perspective, one have autonomy and flexibility in working over work schedule, reduction of money in commuting and parking, no office politics which leads to job satisfaction. With advantages, there were challenges as well, it was difficult distinguishing between work and home time, there was feeling of isolation from workplace social network, lack of technical support if IT equipment is not working. Some advantages from Organizational perspective are improved employee productivity, increased employee retention if the jobs assignment is completed on time. However, there are challenges as well like difficulty in employee performance monitoring, also difficulty in evaluating the employee productivity (Postma2003). The developing countries have high intensity of technology in their society. A teleworker in a developed country can participate in virtual working without worrying about the technology availability. Virtual working replaces old way of traditional concept of Internship where employee travels and works for 8 hours/week plus 5 days a week. Virtual commuters must be able to use the software and hardware required to effectively connect to the company's server. (Anderson, 2009).

Pakistan is a developing country and it is progressing day by day in the field of Information Technology (IT). Due to technological advancements in the recent years, students living in far flung areas are also interested in learning the new ICT tools available in the market. However in the developing countries the technology infrastructure is not as advanced as in developed countries. Some countries are also facing power failures and lack of ICT literacy. This has a great concern not only for employees but also for the employers. Only selected organizations offer virtual learning in selected areas, where facilities are available (Gordon, 2001).

This research study has focused the Computer Science students of the AIOU living in the urban/semi urban/ rural areas who don't have this new concept of working through virtual mode. The objective of the study is to investigate the skills towards using following tools which are required to participate in virtual learning:
1. Operating system.

2. MS Office.
3. Social networking.
4. Graphics/animation.

Research Question

Virtual learning is a new concept that needs to be implemented in a localized environment to meet the international standards. The traditional way of offering internship needs to be replaced with this newer concept of internship and therefore moving towards online is the need of today's era of technology.

Do students have skills of using following tools in order to participate in Virtual Learning:
1. Operating system.
2. MS Office.
3. Social networking.
4. Graphics/animation.

Limitation of the Study

As virtual learning and e-internships are new concepts, therefore, the ICT skill investigation was initially focused on the students of computer science domain. The researchers collected data from the students of BS Computer Science program of Allama Iqbal Open University, Islamabad studying at five different cities including two remote locations of the country.

Theoretical Framework

A remote worker working through virtual learning model has to communicate with the firm from the remote location. There are geographical distances which have to be covered through the use of Information and Communication Technology. The ICT skills are very important for effective and objective to and for communication and can lead to the success of the concept of e-internship. Due to importance of these parameters, the conceptual framework is proposed to investigate four essential ICT skills on the use of operating systems, Microsoft

office, social networking tool and graphics/ animation tool skill. The conceptual framework is focused on the evaluation of these skills as shown in the figure.
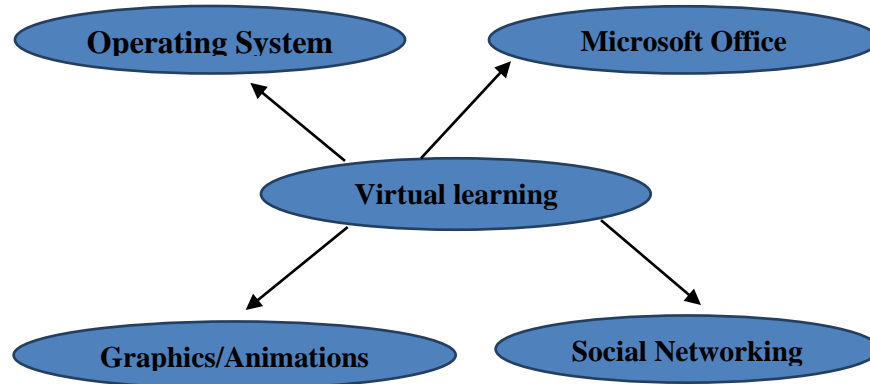

Fig 1. Theoretical Framework

The information about operating system is the basic requirement to use the computers at home, office or any other remote location. The intern should have the knowledge of latest operating system in order to sustain in the virtual environment. Depending on the requirements, some companies prefer to work on windows software and some other would go for Linux and some other may require apple. The other important expertise is the use of office automation tools. These tools are used in a variety of organization varying from business to education. The productivity of interns can be increased if they have strong secretarial and communication skills. Having such skills, the interns can prepare letters, compile reports, prepare budgets and program basic database applications.

The social networking tools are another area of expertise which let the users to participate in group. The work that the student complete can be called as social networking between him and the companies' representatives, for instance if student uses Google hangouts or drop box for completing such activity. They help to maintain close coordination with the company and relevant professionals. They also help to maintain good relationship with the immediate boss sitting at the remote location. The intern can get immediate feedback and response from the bosses and

if they have strong skills of using social networking it will add in their performance. The expertise on graphic and animation tools is another important skill specially for IT students. Such skills can be used to manage proposals from typesetting to design styles. It can also help to develop graphics and styles for business products, logos and web pages.

Research Methodology:

The survey research methodology was followed to study on potential of Virtual Learning in an Open and Distance Learning environment. In order to investigate the basic ICT skills a questionnaire was developed with the consultation of technology and education experts. The basic ICT skills were chalked out in order to measure the strength of students for virtual learning environment. The changes suggested by experts were incorporated in the final questionnaire for distribution among students. The questionnaire was distributed among the students at five cities. The total questionnaires distributed were 120, out of which, we received feedback from 101 students. The questionnaire designed for the study were closed ended and structured to check the whether the students of computer science program have the required ICT skills.

Content Validity

Content validity was conducted to check that the items selected for the study are true and can support the respective variables. After checking the reliability with the variables, content validity was also checked individually with every variable to check that whether it needs to be changed for the accuracy or the same content will be sufficient, after clear examining, it was proved sufficient.

Sample Selection

The students of computer science program studying in different semesters were targeted and identified where they have the required ICT skill to meet the virtual learning need. Samples were selected from five AIOU regions where BS computer science students are enrolled including two remote locations.

Analysis and Results:

Demographics

The demographic results are shown in the table 1. 58.42% of the respondents were male and 41.58% of the respondents were females, which means female has a substantial proportion. 44.55 % of the students who responded were less than 21 years of age, 31.68% were between the age of 21 and 30, while 15.85% were found in age of 31 and 40 and only 7.92% were over the age of 40.

From geographical point of view, 53.46% of the respondents were from urban areas of the country, 32.67% from semi-urban areas and 13.87% from rural areas showing good percentage of students living in rural area who have the access to ICT devices.

Table 1
Demographic results of the population

Variable	Frequency	Percentage
Gender		
Male	59	58.42
Female	42	41.58
Total	*101*	*100*
Age Group		
Less than 21	45	44.55
21 – 30	32	31.68
31 – 40	16	15.85
More than 40	08	7.92
Total	*101*	*100*
Location		
Urban	54	53.46
Semi-urban	33	32.67
Rural	14	13.87
Total	*101*	*100*

SPSS version 16 was used for the analysis of data. The analysis started from finding the correlation, regression and Anova. The significant independent variables were found in office automation, graphics & animations and social networking tools. The significant value as found are 0.05 for MicrosoftWord,0.04 for Microsoft Power Point, 0.02 for Dreamweaver, 0.02 for Adobe Flash and0.01 for Social Networking as shown in table. The change in response regarding the virtual learning are 0.32 for Microsoft Word, 0.23for Microsoft PowerPoint, 0.20 for Dream weaver, 0.43 for Adobe flash and 0.29for social networking. In mostly cases, the standard error value is less than 1 shows that there is less variation in the responses of the respondents and there is consistency in the response.

Table 2
Information and Communication technology (ICT) skills of the respondents

	Unstandardized Coefficients	Std. Error	Standardized Coefficients (beta)	T	Sig.
(Constant)	2.52	0.81		3.10	0.003
Skills (OS: Windows XP)	0.12	0.11	0.15	1.06	0.29
Skills (OS: Windows 7)	0.05	0.11	0.05	0.42	0.68
Skills (OS: Windows 8)	0.13	0.30	0.05	0.45	0.66
Social Networking & Communication tools (Skype)	0.15	0.16	0.10	0.96	0.34
Social Networking & Communication tools (Google Hangout)	0.30	0.20	0.18	1.52	0.13
Social Networking & Communication tools (Facebook)	0.09	0.15	0.08	0.65	0.52
Social Networking & Communication tools (Dropbox)	0.07	0.24	0.03	0.29	0.77
Social Networking & Communication tools (Twitter)	0.19	0.21	0.13	0.92	0.36
Social Networking & Communication tools (Other)	0.45	0.17	0.25	2.66	0.01
Software (MS Office: Words)	0.32	0.16	0.26	1.98	0.05
	Unstandardized Coefficients	Std. Error	Standardized Coefficients (beta)	T	Sig.
Software (MS Office: Excel)	0.17	0.17	0.11	1.00	0.32
Software (MS Office: Power Point)	0.23	0.11	0.28	2.05	0.04
Software (Graphics: Dream Weaver)	0.20	0.09	0.22	2.38	0.02
Software (Graphics: Adobe Photoshop)	0.20	0.21	0.09	0.94	0.35
Software (Graphics: Corel Draw)	0.11	0.45	0.03	0.26	0.80
Software (Animaions: Adobe Flash)	0.43	0.19	0.31	2.31	0.02
Software (Networking)	0.29	0.12	0.29	2.42	0.02
Dependent variable: Virtual learning					

The R square value is 0.37 as shown in table which explains the variation in the model is 37% due to Independent variables while R is 0.61 that shows that suitable and appropriate relationship exists between the variables of model. Standard error estimate values are low which reveal that parameters. The p values for Anova regression model is 0.001 which shows overall significance of the variables as shown in table 4.

Model Summary

Table 3
Model summary of variation in the model

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	0.61	0.37	0.25	0.49

Table 4
ANOVA Regression Model

ANOVA					
Model	Sum of squares	Df	Mean square	F	Sig
Regression	11.66				
		17	0.69	2.91	0.001
residual	19.56	83	0.24		
Total	31.23	100			
Dependent variable: Virtual learning					

Conclusion

This paper has explored the potential of virtual learning in an ODL environment. Virtual learning is a new concept in the developing countries especially Pakistan. Introducing such innovative idea requires analysis of students in using basic Information and Communication technology tools. A questionnaire was prepared to investigate ICT skills among students of AIOU. The skill level was divided into four classes: Operating System, MS Office, Social Networking and Graphics/

Animation tools. The 21st century students must have these skills before applying virtual learning for remote working.

The survey was conducted from the students of Computer Science studying at the AIOU, which is country's largest ODL institute and, therefore, the most relevant for introducing virtual learning model. The computer science was selected as sample as e-internship is going to be introduced for computer science students first time as a pilot project.

The result shows that students have sufficient ICT skills to participate in virtual learning environment. The students belonging to remote areas of the country also have the ICT competency including both male and female students. The Information and communication technology is penetrating in the country at a fast pace. The youth is fully capable to learn new tools and techniques. They can be trained for virtual learning where they can earn money and improve their livelihoods and help in uplifting the socio economic condition of the country.

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