

THE IMPACT OF WEB BASED RESOURCE MATERIAL ON LEARNING OUTCOME IN OPEN DISTANCE HIGHER EDUCATION

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ABSTRACT

One of the most powerful educational option in open and distance education is web-based learning. A blended (hybrid) course combines traditional face to face and web-based learning approaches in an educational environment that is nonspecific as to time and place. The study reported here investigated the impact of web based resource material practices on MPhil, Teacher Education course of Allama Iqbal Open University A sample of 68 students was selected.

Thirty-eight students comprised the control group, whereas another group of 30 students was named as experimental group. The study package of control group included self instruction material comprising of two study guides (six credit hours course), recommended book, four assignments, and assignment submission schedule. Experimental group received the same package plus CD having web based articles related to each unit of study guide, and a list of web sites for further reading. After the submission of assignments a one week workshop was held. Participation in workshop was assessed by the oral presentation of student on the topic assigned to him/her before the commencement of workshop. The final examination was held at the end of semester. The marks obtained by both groups were compared by t-test. The scores of experimental group were higher on all assessment components. The study concluded that integration of IT in teaching-learning increased the understanding of subject related knowledge.

Keywords: Information Technology, Web-based Distance Learning, Higher Education, Pedagogies

INTRODUCTION

Among the emerging trends in the pedagogies computer aided teaching continues to expand. The main purpose of the use of computer technology as a pedagogical tool not only empowers the teachers, it also maximizes the student's learning potential. The current pedagogical practices in higher education focus on multiple learning approaches.

A degree of commonality can be achieved by integrating constructivism, Behaviorism, Developmental theory, etc. In addition to this, teachers whose pedagogy is grounded in constructivism, multiple intelligence theory or learning style will utilize the rich learning experiences provided by diverse material, collaborative learning where knowledge is inseparable from practice.

An extensive body of research points out the advantages of the use of computers in motivating students to learn which in turn enhances their cognition. No doubt the advent of ICT is expanding the frontiers of knowledge. The utilization of IT has made the students less dependent on teachers and books on one hand and on the other hand it serves as catalyst for teaching. The learning material in the form of on line journals, e-libraries, access to libraries, and on-line web based teaching-learning material, Google

etc. provide a rich content and skills to teach and to learn. Todd (1997) was right to declare that 'a real learning revolution has started, in which, educators use Information Technologies to provide learning experiences that are quantitatively different than from their predecessors' . Thirteen years back Tinsley and Van Weert (1995) concurred with Hawkrige (1990) and stated that computers are useful tools for building intellectual structures, data retrieval and data manipulation. The introduction of ICT has changed both the process of learning and the content to be learned in many ways (Boshuizen & Wopereis, 2003). Kizlick (2003) while emphasizing the impact of computers on learner said:

When students are using technology as a tool or support for communicating with others, they are in an active role rather than passive role of recipient of information transmitted by a teacher, text book, or broadcast. Moreover, when technology is used as a tool to support students in performing authentic tasks, the students are in the position of defining their goals, making decisions, and evaluating their progress.

This great impact of technology enables the learners not only to increase their technical skills rather to accomplish more complex tasks by regulating their own learning styles. Menon (2004) while presenting an argument in the favor of use of Networking for quality assurance in alternative modes of teacher education said:

Developments in open and distance learning and technology made it possible to think of alternative modes of teacher preparation. Many countries are benefiting by the use of ODL and ICT for teacher training. (p.205)

Among the quality assurance tools 'Curriculum' is an important and foremost indicator. With the explosion of knowledge a dictated syllabus or only a book produced by one person is not considered sufficient. Therefore, it is important to updating the curriculum. Allama Iqbal Open University has a system of developing curriculum through its various committees and statutory bodies. Normally it is observed that revision of a course takes a great amount of time due to University's strict structure.

Therefore, most of the courses of Faculty of Education of AIOU are more than five years old. This becomes obstacle in providing quality teacher training. Curriculum design with reference to teacher education is more critical for open Distance system. As we see that in the advanced countries, information and communication Technologies have booted the Distance education. There is now explosion of information around the world. Information in massive quantity is available not only to some group but to majority of groups.

The printed material is no longer source of providing information or knowledge and nor is the main source of access to information. In fact, with current information available on a number of web sites is influencing the traditional printed material in distance learning courses and the current ICT is emerging a tool for enhancing quality in learning.

The Allama Iqbal Open University has taken initiative to revise courses while involving web based resources. The first step taken by Faculty of Education was to prepare course out in the light of global trends. At initial stage MPhil and PhD level courses have been developed after the approval of course outline from various committees, a study guide has been written by different resource persons who have been identified from the related field. The resource person first identified web base topic related latest articles, on-line

books or chapters, and researches and saved them on CD. For each unit 5-14 items (related material) were included. Their references have been properly cited in the study guide. An extra list of web sites has also been provided.

This material before final approval will be sent to students for pilot testing. The feedback provided by the student will enable the course development coordinator to revise/improve the course. It is envisaged that Allama Iqbal University will revise its courses on two year cycle. It can only be done by involving computers and internet. It will not only save the teacher's time rather will save students time on searching relevant latest material and will be more effective.

The importance and utility of ICT, has made ICT literacy a compulsory part of MPhil/MS course. The MPhil/MS students of Faculty of education study this course in their first semester. By keeping in view the awareness amongst teachers about ICT and its use in teaching-learning, this study was designed to develop competency among the teacher trainees of using on-line and off-line electronic resources and use internet for personal academic improvement.

The main purpose of this pilot testing was to find out the extent of dependability of learning on ICT (computers and the internet). Integration of computer technology has brought profound educational changes. Infusion of technology in educational contexts must underlie reliable pedagogical assumptions to ensure quality of application of the technology. Keeping in view above mentioned arguments use of ICT in this study has been taken as an independent factor in teaching-learning process.

Therefore, this study has investigated the technological applications in content learning at higher education. In addition to this, on one hand this study investigates the enhancement in learning through web resources and on the other hand it measure the ability of teachers to use network resources to help students collaborate, access information, and communicate with external experts to analyze and solve their selected problems (ICT Competency Standards for Teachers, UNESCO, 2008).

METHOD

Sample

MPhil students of Secondary Teacher Education Department, Faculty of Education, Allama Iqbal Open University (AIOU) enrolled in course 'Measurement and Evaluation in Education" (code-742) from Autumn Semester 2002 to Autumn Semester 2007 constituted the sample (the course is offered in Autumn Semester only). There were 78 students who enrolled in six Semesters i.e from autumn 2002 to autumn 2007, data on 68 students who had completed their program was available from student's certification files. Therefore a sample of 68 students was taken for the present study.

Design and Material of the Study

The sample was divided into two groups: Control group and Experimental group.

Control Group

Students who enrolled in Autumn Semesters of 2002, 2003, and 2004 Academic Sessions were named as control group. AIOU offers ODL mode, therefore, the learning package contained study guide, recommended book, four assignments, and instructions that how to solve these assignment, and schedule of submission of each assignment. For six credit hours course 18 units covering a wide range of related content of specific subject area is included in the study guide. The study guide is written on self instructional pattern by a course development team. The course development team comprises of unit writers, unit reviewers, course coordinator, course development coordinator, course development team chairman, course designer, and editor. The assignments are prepared by the course coordinator by giving equal weightage to each unit of study guide.

The solved assignments submitted by the student according to the schedule are evaluated by the tutor on 100 point scale and are assigned letter grades according to AIOU grading system.

The next continuous component is holding of 10 days workshops @ of five sessions per day (one hour per session). The sessions of the workshops are conducted by different resource persons/ experts from the related field. The attendance of students in the workshop is mandatory. Besides attending the workshops the each student presents a seminar paper of 15-20 minutes on the topic assigned to him/her by the course coordinator. The presentation is evaluated by the coordinator on 10 points scales. The workshop is followed by final examination.

Experimental Group

The group of students who enrolled in autumn Semester 2005, 2006 and 2007 was named as experimental group. In addition to study package mailed to control group, web based content related material (on-line articles, book chapters, e-library resources, different related web sites) on CD was provided as additional reading.

Students were directed to read articles related to the unit of study guide before solving the assignment and for preparing the workshop presentation. They were further directed to prepare power point presentation. Both the groups evaluated all components of the course on five point Likert scale as a feed back for the improvement of course material.

Analysis

To examine the impact of IT on learning outcomes t-test analysis was performed. The comparison between control group and experimental group was made separately for assignment evaluation, workshop evaluation, final examination scores, and conflated marks. The results of descriptive statistics are given in Table: 1.

The analyze is given in Table. 1 & 2 explains the relationship among the assessment components of control group and experimental group.

Table: 1
Descriptive Statistics of Continuous and final Assessment

Assessment Factors	Group	Descriptive Statistics					
		N	Minimum Score	Maximum Score	Mean	Std. Deviation	Std error of Mean Score
Assignment	1	3	75.00	92.00	82.10	5.44	0.99
	2	0	68.00	89.00	78.53	6.49	1.05
Workshop	1	3	6.00	9.00	7.00	0.83	0.14
	2	0	5.00	8.00	6.37	0.88	0.16
Final Exam	1	3	60.00	83.00	66.50	6.31	1.13
	2	0	50.00	81.00	62.66	6.46	1.04
Conflated Marks	1	3	63.00	87.00	72.73	5.90	1.08
	2	0	50.00	83.00	67.58	7.27	1.18

Group 1 experimental group, Group 2 control group

There was increase in mean scores of continuous components and final exams of experimental group who was provided web based related learning material on CD and list of related web sites for further exploration of related knowledge beside study guide and recommended books (table 1) by the course coordinator.

Table: 2
Correlation among Assessment components of experimental group

	Assignment	Workshop	Exam	Conflated Marks
Conflated Marks	0.81**	0.81**	0.94**	1
Exam	0.70**	0.68**	1	
Workshop	0.69**	1		

** correlation is significant at the .010 level (2-tailed)

The correlation coefficients among the assessment components of experimental groups are significant at the .01 level. These inter-correlations indicate that increase in mean score of one component shows increase in the other component. The highest positive correlation coefficient is between exam marks and conflated marks. It is obvious because of the reason that 70% of obtained marks in examination are added while calculating the conflated marks. The same pattern has been observed between the relationship of final exam and conflated marks of control group (table 3).

Table: 3
Correlation among assessment factors of control group

	Assignment	Workshop	Final Exam	Conflated Marks
Conflated	.61**	.34*	.73**	1
Final Exam	.53**	.29 ^{ns}	1	
Workshop	.42**	1		

** correlation is significant at the .010 level (2-tailed)

* correlation is significant at 0.05 level (2-tailed)

^{ns} not significant

All correlations displayed in Table: 3 are significant at 0.01 level and 0.05 level except the relationship between final exam and workshop that is not significant.

Table: 4
t-test statistics between experimental group and control group

Groups	Mean	Mean difference	Standard error of difference	t-value	Significance level (2- tailed)
Experimental	82.10	3.57	1.47	2.41	.018
Control	78.53				
Experimental	7.00	.63	.21	2.04	.046
Control	6.37				
Experimental	66.50	3.84	1.55	3.84	.016
Control	62.66				
Experimental	72.73	5.15	1.63	3.14	.002
Control	67.58				

It can be concluded that students of control groups did well in workshop but not in final exam or vice versa. In other words there is no consistency within the scores of final exam and workshop.

Mean differences between assessment components of the both group as shown in table 4 are significant. It indicated the positive impact of web based material. This material served as catalyst in bringing improvement. Specifically the non- significant correlation between workshop scores and assignment scores of control group increased significantly for experimental group.

It implies that extra web material besides conventional study guide and printed material helped the student to prepare quality assignments and a good class presentation with the support of IT.

Analysis of Students Feedback

Majority of students from experimental group gave positive feed back. They liked the way they were delivered instructional material. The apprised that information and content provided in the form of article were appropriate and fulfilled their need.

It was also observed that almost all students from experimental group prepared power point presentation. In this regard they them searched extra material. They were also able to identify new topics to be included in the course that were not previously included. Some of the students from 2005 session said that information found on CD should be made available in printed self-instructional format so that those who have no access to computer may not be deprived of the same information. The main difficulty students from experimental group faced was the electricity breakdown that continued for hours. They were handicapped without the facility of electricity. Therefore they have to get the prints of some articles. Otherwise most of the students were able to schedule their study timings according to electricity breakdown.

CONCLUSIONS

Emerging pedagogies has brought radical changes in teaching-learning process. Gone are the days when only teacher or book was considered a sole provider of knowledge. Information and communication technology has changed the whole scenario. Every sphere of life is influenced by the new advances in technology. How teacher use these technologies effectively is the main issue? The findings of this study have provided the answer to this question. Web based resource material accelerated the achievement level of experimental group. Results show that use of different web based resources have positive effects on writing assignments, preparing power point presentation, final exam. This, in turn affected conflated marks. Specifically the study found significant correlation between marks obtained in final exam and marks of presentation for experimental group which was non significant for control group. The students were asked to provide their feedback for the improvement of content. In the light of their comments the course has been improved and revised that is ready for pilot testing.

Methods of delivery of courses of programmes vary all over the world. We must realize that it is the developing world that has the most need for education and information; this can be found and obtained via the internet, CDs, and other multimedia resources. But unfortunately like other developing countries Pakistan lack even the most basic form of electronic access, or even if, it is available, it is unstable or incompatible. The study recommend that technology of learning sciences may be made compulsory part of teacher training programmes of all levels.

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Rehana MASRUR KHAN, PhD, is Dean Faculty of Education, Allama Iqbal Open University Pakistan. She carries over 27 years of teaching and research experience at university level. Dr. Khan holds master in Secondary Education, received her doctorate in Education specializing in Research and Evaluation from College of Education, the University of the Philippines Systems, Diliman, Quezon city, Philippines in 1990. She has to her credit the distinction of College Scholar for three consecutive semesters during Ph.D program. Dr.

Khan has been honored as post-doctorate visiting scholar at Department of Curriculum and Instruction, College of Education, Southern Illinois University, USA in 1995. Dr. Khan has authored 25 research papers, published in national and international research journals, a research manual for AIOU research scholars, written and reviewed 45 units for MPhil, PhD, BEd, MEd and Diploma in Education programmes, and supervised 22 PhD and MPhil theses. Dr. Khan has participated in more than 20 international conferences, seminar, talks and workshops in Malaysia, India, UK, Paris, Bangkok, and Sri Lanka. Dr. Khan has presented Pakistan in Pre-PCF5 and PCF5 conference organized by COL and University of London, in London in 2008, and, in joint COL-National Assessment and Accreditation Council (NAAC) India Review Committee meeting at Bangalore, Dec. 2006. Recently she has attended a workshop in New Delhi on 'Cost and Financing of Distance Education' in September 2009, organized by Commonwealth of Learning. And has also attended a conference on 'Regional Thematic Issues for Education for Sustainable Development' in Thailand in July 2009 organized by UNESCO. Prof. Rehana Masrur is member of 'National Accreditation Council for Teacher Education' of Pakistan, and member and convener of 'National Curriculum Review Committee' for Education. She has vast experience of developing the curricula in Education at graduate and post graduate level in Allama Iqbal Open University.

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