Computer Technology Skills Used by Student-Teachers in Open and Distance Learning: Implications for Teacher Education in ODL

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Abstract

There is strong advocacy to use computer technology to train teachers in open and distance learning. Efforts have been made to maximize the use of information and communication technology (ICT) in Open and Distance learning. Use of computer technology is emerging and being used as a vital tool in open and distance learning institutions. The purpose of this study was to examine the use of computer technology skills by student-teachers of B.Ed program studying at Allama Iqbal Open University Islamabad. The study aimed at finding out computer skills used by student-teachers of B.Ed studying through open and distance learning mode and exploring barriers that student-teachers faced in the use of computer technology in open and distance learning institutions. The population of the study was all the student-teachers of B.Ed Program of Allama Iqbal Open University Rawalpindi Region. Sample of the study was 100 student-teachers selected through random sampling technique. A questionnaire was developed on the use of five computer skills and administered for data collection. Data were analyzed by using descriptive statistics through statistical package for social sciences (SPSS). Results showed that majority of student-teachers in ODL were not capable of using computer skills like Ms Word, Ms Power point, Ms excel and internet for their better professional growth. However, they differed in applying Ms Word, Ms Power point and Ms. Excel. Computer technology may be linked with professional development of student teachers in open and distance learning. This technology shift in ODL enhances quality, autonomy and accessibility for distance education learners and promotes communication and interaction among them.
Introduction

Teachers are vital. Unless we can get more teachers, and better teachers, we will not reach the target of making quality education available for all by 2015. But there are still world shortages of teachers, still large numbers of under-qualified teachers, and still many who need further professional education and training as they work. Conventional approaches to teacher education have not met all the demands upon the profession and this has led to an interest in open and distance learning alternatives. (UNESCO, 2002)

“Distance education involves a process in which teaching and learning is conducted with teachers physically away from the learners. Open learning is based on organized teaching materials but it had certain limitations in terms of access, time, place, pace or combination of these to study. Open and distance learning intends to approach learners at their doorsteps to provide them learning resources, to enable them to get or qualify a degree program without attending a institution physically. It facilities them to study up to date study material where and when they want without creating any hurdle for them (UNESCO, 2002).”

“Open and distance learning has been used to provide in-service and pre-service training to teachers who join a teacher training program with primary, secondary or tertiary qualifications (Hilary Perraton, 2010).”

The establishment of open universities has provided a mechanism for large-scale programmes of initial teacher training. In China, for example, 11 per cent of primary and secondary school teachers were unqualified in 1998 but were able to qualify through the China Television Teachers’ College. Between 1987 and 1999, 717,300 primary teachers gained certificates and 552,000
secondary teachers gained diplomas. As the title implies, the college made heavy use of satellite television but has moved towards multi-media packages (Zhang and Niu, 2007). The Open University of Tanzania runs programmes for teachers using a different organizational mechanism from that used in the earlier project. Britain, too, has used its Open University as a means of initial teacher training. In 1994, with a government grant, it introduced a postgraduate certificate in education for graduates who wanted to teach in primary or secondary schools. In order to facilitate computer conferencing students were provided with a computer, but the course also made use of printed materials. The course was school-based and students spent thirteen weeks doing teaching practice which was supervised by a mentor from the school staff. Examination success rates, and the achievement of qualified teacher status, were in the range 71 to 77 per cent for the first five cohorts. The primary level version of the course was criticized by the Office for Standards in Education (a national inspectorate) and subsequently abandoned by the university but the secondary-level version has continued (Walker 2007).

To sum up, open and distance learning has been widely used for initial teacher training, for students who enter the profession with a background in primary, secondary or tertiary education, but has often been organized on a one-off basis rather than as part of the established structure of teacher education (Hilary Perraton, 2010).

### Computer Technology in Distance Education

The newer technologies certainly offer us the promise of any course delivered at anytime, anywhere, the promise of truly international courses, fully inter-cultural, with students and teachers drawn from all over the world. The technology does promise greater learning effectiveness, more learner-centred approaches, and better quality of interaction. At the same time, it is important not to get carried away by the hype (A.W. (Tony) Bates, 1997).

The revised syllabus of B.Ed program makes it compulsory requirement for student teachers that they must be able to use the following computer technology skills:

1. E-mailing
2. Microsoft Word
3. Microsoft Excel
4. Microsoft Power Point and
5. Internet browsing (HEC, 2006).

The term computer is used to describe a device made up of a combination of electronic and electro mechanical (part electronic and part mechanical) components. By itself, a computer has no intelligence and is referred to hardware. A computer or computer system does not come to life until
it is connected to other parts of a system (Sawyer and Hutchinson, 1990).

According to Oak (2011), by computer education, we mean, gaining the know-how of the basic concepts related to a computer and gaining the basic knowledge of computer operation. Knowing about the basic components of a computer, the basic concepts behind the use of computers and the know-how of some of the elementary computer applications constitutes computer education. Learning about the computer basics followed by a practical experience of using a computer is the key to computer education. As computers are widely used today, acquiring computer education is the need of the day.

Changing the way we think about computers as tools is fundamental to our understanding of their potential impact on education and to determining how to integrate computer technologies into all aspects of education effectively (Haddad, 1998). Recent publications by educational associations are advocating for a more meaningful use of technology in schools (ISTE, 2000). Educational technologists are clearly describing what students should know and be able to do with technology.

Distance learners have far greater technological obstacles to overcome than campus-based students with access to a computer lab. Distance students need access to a computer, and not just any computer if the World Wide Web or CD-ROMs are to be used - we are talking several thousand dollars to purchase this kind of workstation. They need a modem at a sufficient speed to download at least a few pages within an evening over the plain old telephone system; they need a telephone line that can be dedicated for several hours a week to being on line (which rules out almost anyone with teenagers at home), they need an Internet service provider capable of explaining to someone without a PhD in computer science how to set the parameters for their machine to enable them to log on, and often they have to bear the cost of long distance calls (A.W. (Tony) Bates, 1997).

Studies support that open and distance learning systems must incorporate subject matter on computer literacy which focus not only on knowledge on computer operations but on computer skills, that is, in open and distance learning institutions, students should be capable of using basic skills mentioned in the course content. It is also being emphasized to use computer skills for organization and communication for various purposes.

Open and distance learning has been used to address the problems for training and continuing professional development of in-service and pre-service teachers.

Introduction of computer technology skills and internet have revolutionized the education systems where teachers and learners need to use technological skills. These computer technology skills are required for the professional education of teachers in ODL (Patrick and Abdurehman, 2010).

Computers are one of the elements enhancing the total development of education. All difficulties about time and distance preventing people from studying have been solved. A typical example is that from people living in remote areas, housewife’s having little time to the people in
Africa or even in North Pole can still studying by enrolling the remote courses on the Internet. As a result of it, education will be widespread in all places. In addition, through Internet people can share knowledge and experiences about education and thus enhancing globalization of education (Thao, 2008).

Institutions imparting teacher training through ODL must focus on the need to prepare student teacher to learn the use of computer technology skills (Jensen and Brushwood Rose 2006).

From the early 1990s, education stakeholders in Ghana have been concerned about how teachers and students use computers in schools and how their use supports learning. Teachers use computers to write lesson plans, prepare materials for teaching, record and calculate student grades, and communicate with other teachers. As such, “computers have become a routine tool for helping teachers accomplish their professional work” (Becker, Ravitz, & Wong, 1999). However, many teachers do not facilitate substantial student use of computers for learning activities.

E-mail is used for easy, quick and smooth transfer to information from one place to another, particularly connecting people in ODL (Murphy, 2000). Other computer skills i.e. MS WORD, MS PowerPoint, MS Excel and internet surfing are used for documentation and benefit the learners in multiple ways in open and distance learning programs.

Statement of the Problem

Computer technology not considered a vital component in open and distance learning. The students of ODL need to use computer technology skills to get maximum advantage of these skills. This study was designed to investigate into the use of computer technology skills by student teachers of B.Ed program in open and distance learning.

Research Questions

Following research questions were designed to address the problem of the study:

1. Which computer technology skills do students use in ODL program?
2. To what extent do they utilize these skills?
3. What barriers do they face in the use of computer technology skills in ODL system?

Methodology

That section of the article includes description of population, sample selection, process of developing and validating instruments, data collection and data analysis strategy of the study.

Population and Sample

Population of this study was comprised of student-teachers of B.Ed program of Allama Iqbal Open University Islamabad, Rawalpindi Region. Allama Iqbal Open University (AIOU) is the first Open University in Asia. AIOU is a unique institution in Pakistan because of its philosophy,
system, approach, functions and overall structure. The University with its main campus at Islamabad and huge network of regional centers spread all over the country is serving its clientele all over Pakistan and in the Middle East. AIOU is a Distance Education institution, which provides multi disciplinary education from basic to doctoral level programs. 100 student-teachers of B.Ed program, semester Spring 2011 were selected through random sampling technique.

Instrumentation

A questionnaire was developed on five skills of computer technology which were made compulsory for bachelor of Education by Higher Education Commission of Pakistan. The items were developed on use of Email, Ms word, Ms power point, Ms excel and internet for academic activities. An Interview Protocol was also used to get understanding into barriers that student teachers faced in the use of these skills in open and distance learning system.

The instrument was validated in the light of the comments of supervisor and experts. The reliability coefficient of the instrument was .974 calculated through Cronbach’s Alpha, which was acceptable to launch the study at large scale (Gay, 2000).

Data Collection and Analysis

The researchers collected data with the help of research assistants. The data were collected after teaching practice session and university qualifying exam of student-teachers of B.Ed program in the month of July, 2011. Out of 100, 85 questionnaires were found complete in all respects, making rate of return 85%. The simple frequency and percentage and mean score was used to describe perceptions of the respondents. The interview protocol was used to get understanding of the barriers impeding the using of five computer technology skills in ODL institutions.
Results

This section deals with the interpretation and discussion of results. It presents analysis on the perceptions of student-teachers about five content areas of computer technology. It also discusses results of the interview protocol on barriers in the use of computer technology faced by open and distant learners at B.Ed level.

The data were analyzed by using SPSS version 15. The analysis revealed that the overall response rate for student-teachers was 85%.

Table 1 - For sending E-mails

<table>
<thead>
<tr>
<th>Option</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>2</td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>6</td>
<td>7.1</td>
<td></td>
</tr>
<tr>
<td>Undecided</td>
<td>1</td>
<td>1.2</td>
<td>4.52</td>
</tr>
<tr>
<td>Agree</td>
<td>12</td>
<td>14.1</td>
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</tr>
<tr>
<td>Strongly agree</td>
<td>64</td>
<td>75.3</td>
<td></td>
</tr>
</tbody>
</table>

N=85

The table 1 indicated that 75.3% student-teachers strongly agreed that they sent and received E-mails, 14.1% agreed, 1.2% were undecided, 7.1% disagreed and 2.4% respondents strongly disagreed. Mean score was 4.52 which showed that most of the respondents were capable of sending and receiving emails.
Table 2  Using MS Word

<table>
<thead>
<tr>
<th>Option</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>24</td>
<td>28.2</td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>36</td>
<td>42.4</td>
<td></td>
</tr>
<tr>
<td>Undecided</td>
<td>12</td>
<td>14.1</td>
<td>2.1</td>
</tr>
<tr>
<td>Agree</td>
<td>8</td>
<td>9.4</td>
<td></td>
</tr>
<tr>
<td>Strongly agree</td>
<td>5</td>
<td>5.9</td>
<td></td>
</tr>
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</table>

N=85

Table 2 indicated that 5.9% student teachers strongly agreed to use MS Word, 9.4% agreed, 14.1% were undecided, 42.4% respondents were disagreed where as 28.2% teachers strongly disagreed. Mean score 2.1 showed that most of the respondents were not capable of using MS Word that indicated that they were not much familiar of computer technology.

Table 3  Creating Spreadsheets: MS Excel

<table>
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<th>Option</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Mean</th>
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</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>31</td>
<td>36.5</td>
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</tr>
<tr>
<td>Disagree</td>
<td>24</td>
<td>28.2</td>
<td></td>
</tr>
<tr>
<td>Undecided</td>
<td>16</td>
<td>18.8</td>
<td>1.21</td>
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<tr>
<td>Agree</td>
<td>9</td>
<td>10.6</td>
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</tr>
<tr>
<td>Strongly agree</td>
<td>5</td>
<td>5.9</td>
<td></td>
</tr>
</tbody>
</table>

N=85

Table 3 indicated that 5.9% students-teachers strongly agreed to create spreadsheets on MS Excel, 10.6% agreed, 18.8% were undecided, 28.2% respondents disagreed where as 36.5 % were strongly disagreed. Mean value 1.21 showed that most of the teachers were not capable of creating spreadsheets on MS Excel and they could not use computer technology to create spreadsheets and other uses of MS Excel.
Table 4  Preparation of Presentation: MS PowerPoint

<table>
<thead>
<tr>
<th>Option</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
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<td>43.5</td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>33</td>
<td>38.8</td>
<td></td>
</tr>
<tr>
<td>Undecided</td>
<td>6</td>
<td>7.1</td>
<td>1.1</td>
</tr>
<tr>
<td>Agree</td>
<td>4</td>
<td>4.7</td>
<td></td>
</tr>
<tr>
<td>Strongly agree</td>
<td>5</td>
<td>5.9</td>
<td></td>
</tr>
</tbody>
</table>

N=85

Table 4 indicated that 5.9% teachers strongly agreed to prepare presentations on MS PowerPoint, 4.6% agreed, 7.1% were undecided, 38.8% respondents were disagreed where as 43.5% were strongly disagreed. Mean score 1.1 showed that most of the students-teachers were not capable of preparing PowerPoint presentations on MS PowerPoint that ascertained that the respondents could not use computer technology for preparing PowerPoint in open and distance learning.

Table 5  Using Internet for Academic Activities

<table>
<thead>
<tr>
<th>Option</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
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<td>41.2</td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>31</td>
<td>36.5</td>
<td></td>
</tr>
<tr>
<td>Undecided</td>
<td>11</td>
<td>12.9</td>
<td>1.07</td>
</tr>
<tr>
<td>Agree</td>
<td>4</td>
<td>4.7</td>
<td></td>
</tr>
<tr>
<td>Strongly agree</td>
<td>4</td>
<td>4.7</td>
<td></td>
</tr>
</tbody>
</table>

N=85

The table 5 indicated that 4.7% teachers strongly agreed to use internet for academic activities, 4.7% agreed, 12.9% remained undecided, 36.5% were disagreed where as 41.2% respondents were strongly disagreed. Mean score 1.07 showed that most of the student-teachers in open and distance learning institution were not capable of using internet for academic activities.
Main Barriers faced by Open and Distant Learners in the use of Computer Technology Skills

1. Lack of Knowledge
2. Availability of Computers in ODL programs.
3. Lack of technical support
4. Less use of computer technology in open and distance learning
5. Expensive computer technology
6. Convenience and availability of internet
7. Non-technology based content
8. Lack of organizational support

Conclusion and Discussion

The findings of content area “E-mail” showed that student-teachers of B.Ed program use e-mail services for various purposes like; to share their documents, to link with educational blogs and websites and it helped them to vast their vision of education.

The findings of content area “world wide web” showed that student-teachers of B.Ed program use web sites to find out online references for their content material which helped them to meet the challenges of the information age. Student-teachers use search engine to retrieve different type of content material such as online book, articles, journals, videos related to their content areas. This finding also supports the finding of previous research (Phuong Thao, 2008).

The findings of content area “word processing” showed that student-teachers of B.Ed program use Ms Word with different commands of it for documentation, to store data, to prepare lesson plans etc. This software proved to be helpful for student-teachers in their teaching profession.

The findings of content area “power point” showed that student-teachers of B.Ed program use Ms Power point with different commands of it to prepare power point presentation, to show images, videos clips, illustrating their lessons, thus instructing for students.

The findings of content area “use of computer skills” showed that student-teachers of B.Ed program use different computer skills to arrange their instructional material related to lessons to be presented; to prepare their lesson plans on computer which is an easy access to store the lesson. Student-teachers use different type of computer skills to make their presentations on power point, CDs or DVDs. Student-teachers use internet to search for information and content for lesson and to retrieve model lesson plans. As such computer have become a routine tool for helping teachers accomplish their professional work. This finding supports the finding of previous research (Becker, Ravitz, and Wong, 1999).

The findings of open ended question depicts that computer training of B.Ed program is very beneficial for student-teachers. As it helped student-teachers to search out the new pedagogical techniques according to the condition of the classroom and to prepare lesson plans. Student-teachers
gain greater subject knowledge and improved teaching skills when professional development directly linked to their daily experiences and aligned with standards and assessment. This finding supports the finding of the previous research (Micheal Garet, 1990). Another finding of open ended question depicts that there is less practical work of computer training during B.Ed program which results in the less understanding of computer work.

On the basis of these conclusions, following recommendations are put forwarded for the planners, policy makers, and academicians of Open and Distance Learning Institutions which are imparting in-service and pre-service teacher training.

1. Study of computer course during B.Ed program in ODL may have practical work to perform.
2. Ways to improving the ability of ODL prospective teachers in the use of computer for teaching learning process may be suggested.
3. The regional centers of open and distance learning institutions may improve the performance of prospective teachers by using effective techniques in establishing good association among teaching staff and engaging them in co-operative learning through computer technology.
4. Further research may be conducted in this area to assess the effectiveness of B.Ed programs offered in higher education institutions though ODL.
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