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Investigation of Informationand Communication Technology(ICTs) related resources and Prospective Teachers' Competencies in ICTs at University Level

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The present study was conducted to examine ICT related facilities and resources availability at Pakistani universities. In addition, this research investigated the competence level of prospective teachers in the use of Information and Communication Technology (ICTs) for different purposes. A questionnaire probing ICTs related facilities and competence level of prospective teachers was used for the collection of data. Data were collected from 480 randomly selected prospective teachers of 12 public sector universities selected from Punjab, Khyber Pakhtunkhwa, and Federal area of Pakistan. Main findings of the study show that personal computers, interactive whiteboards, and laptops were available to the majority of the respondents at their institutions. On the other hand the majority of the prospective teachers reported that they were lacking in facilities like online labs, virtual libraries, virtual classrooms, and satellites cable. The majority of the prospective teachers were able to use computer, laptop and interactive whiteboard. The majority of the respondents were competent in using Microsoft Word documents. They were able to save a document to a location on a drive, could switch between open documents and create back-ups of important files. The majority of respondents were not competent enough to use online library, virtual library, virtual classroom, satellites cable, virtual resource centre, scanner, bulletin board, and printer. This study has future implication in teachers education for the provision of basic ICTs related resources so that prospective teachers may be equipped with essential skills for using ICTs in educational setting.

***Keywords*:** facilities and resources, ICT competencies, Microsoft Word documents, virtual libraries, online labs,

The usage of ICT on large scale has brought huge change in all spheres of human life. It has resolved current issues and challenges of modern era. It has influenced social, economic and educational sectors to great extent (Ovensi&Alibabic, 2010). ICT is a key pillar in knowledge society since it has an important role to spread out knowledge. It has played vital role in developing, supporting, facilitating, and accelerating scientific and cultural research (Arab Knowledge Report, 2009). A country cannot progress in any field of life without the implementation of modern technologies. ICT skills are very essential for the new generation to meet global standards and these skills are also compulsory for modern education system throughout the globe (Sala, 2004).

Kumar and Kaur (2005) stated that the present information revolution and growing impact of information and communication technologies has modernized the teaching learning process and

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1. Studied review of literature and developed the questionnaire, piloted the research and collected data.
2. Administered statistical tools for the analysis and guided the first author whenever needed.
3. Did proof reading, contributed in review of literature.

brought great innovation in the field of research. The educational technology devising new ways and models for removing the educational problems related to cultural, social, economic and technical issues with the aim to facilitate performance of teaching and learning process (Januszewski & Molenda, 2008). Modern technologies provide opportunities for effective collaboration and communication among teachers and learners in ways that were not possible in the past. Pachler (2001) mentions that technological expansion; particularly interactive multimedia and the internet have brought about an information revolution. Technology has reshaped the way we work, play, study, form relationships and communication. For preparing future generations to survive in an emerging society, it will be largely technology-oriented; they must be equipped with skills harmonizing to the needs and requirements of the digital age.

Commonwealth Secretariat's report (1991) mentioned four reasons at a national level for bringing in ICT into educational institutes. These include: (i) to build a resource for the people who are already skilled and have command in the use of ICT; (ii) to equip students with ICT skills for a future in which basic computer skills and technological awareness will be considered very essential for majority of citizens; (iii) to use the technology for improving the existing curriculum and for bringing improvement the way in which it is delivered; and (iv) to encourage changes in education by bringing innovation in curriculum and a new definition of the teachers' role.

Koc (2005) stated that the use of ICT facilitates enable students to share, communicate and work collaboratively at any time and everywhere. For example, a teleconferencing classroom can facilitate students throughout the globe to participate simultaneously in a topic discussion. Through this facility, students may investigate problems and explore new ideas or develop concepts. Students can also share diverse learning experiences from one another.

The Higher Education in most of the countries has invested huge amount for the implemention of ICT in teaching and learning process, carrying out research and for administrative functioning. Many times integration of ICT in education sector become core part governmental policies: often ICT is thought to be the best source for increasing participation rate in higher education. In spite of institutional endeavors and enouncements for enhancing student learning with ICT, there remain a lot of deficiencies (Kirkwood & Price, 2014).

Universities as true representatives of societies can play important role in improving and enhancing ICT skills among students. Achimugu, Oluwagbemi and Oluwaranti(2010) deemed that university education is coming up to the point at which technology; particularly ICT takes up a pivotal role in almost all phases of the educational process. Technology escalates the volume, complexity and speed of the expansion of global interconnectedness. Universities authorities should launch IT zone for promoting virtual communities, supporting exploration and experimentation (Cogburn, 1998). In the modern era, we are surrounded by digital technology, even our major source of accessing to others in far and near places is mediated by ICT. Ellul (1989), asserts that "technology is progressively affacing the two previous environments: nature and society" (p.134). He claimed that man of today cannot live without modern gadgets.This is what makes human subservient to technology rather that technology being subservient to humanity.

Technologically advanced countries always attach great significance to the implementation of ICT in education. For instance, the United Kingdom spent £2.5 billion on the application of ICT in education in 2008 to 2009 (Yilmaz, 2011). For global competition in all spheres of life, the education system of a country should fulfill the demands of the digital world, in terms of knowledge and skills.

Global forces such as modern technology, international political struggles, international economies, and global communication method have greatly affected university education (Levin, 2001). Universities should consider the changes throughout the globe for meeting social, political, and economic demands of the modern era. Computer training has become greatly important due to rapid progress in the digital technology throughout the world (Yadav & Mehta, 2014).

Akgul, Kupeli, and Kir (2015) stated that modern technology has greatly influenced the education system and it has increased the quality of education. Academic career of students can be improved greatly with the help of ICT. It can also enhance the quality of lesson plans and bring betterment in learning process of the students at any stage. The use of ICT in teaching process minimizes the difference between the diverse learners. The application of computer technology in educational institutes gives the vision of integrating ICT into general teaching activities. ICT plays vital role in the field research and administration but its impact is not less on teaching learning process also (Sahin& Thompson, 2006). Schrum, Skeele and Grant (2002) highlighted the significance of ICT and explained that the ICT has been used for several years but developing countries are still lagging far behind in the field of Information and Communication Technology particularly, its usage is rare in teaching learning process (UNESCO, 2014).

Hadded and Draxler(2009) stated that the usage of ICT in teaching process promots joint activities and develops skills in students' centered instruction. ICT provides a platform that is full of opportunities in any field of life (King, Bond &Bandford, 2002). Hennessy, Ruthven and Brindley (2005) deemed that the integration of ICT for teaching purpose is important as it brings innovation and is also useful in the pedagogical application. Many countries have invested a lot on ICT, using it as powerful tool in the field of education for the achievement of transmutation and inventiveness (Pépin, 2001).

The use of ICT in teaching learning process has brought great changes. Traditional method of teaching emphasized only content knowledge while the teaching through ICT assists in constructive learning where learners interact with one another. Integration of ICT also provides atmosphere for collaborative learning and learners become skilled at modern technology, along with traditional content knowledge (Angadi,2014; Gredler, 2000; Ziphorah, 2014).

Literature Review

Danner and Pessu (2013) conducted a study and obtained data from 100 prospective teachers in the University of Benin. The study investigated ICT usage and perceptions of competencies possessed by prospective teachers. The findings of research indicated that 81% respondents perceived as a computer literate while 19% had not possessed these competencies. The study also showed that majority (85%) of prospective teachers had got access to the computer at internet cafes while only 15% of them had access to computers in their homes.

Demiralay and Karadeniz (2010) conducted a study and data were obtained from 1801 last year elementary school prospective teachers. The aim of the study was to investigate perceptions of prospective teachers' level about information literacy self-efficacy. The findings of the research revealed that i) Perceptions of the respondents about information literacy self-efficacy level was high. ii) 58% prospective teachers were found at the intermediate level, 33% at advanced level 9% at beginner level. (iii) 47% prospective teachers use the internet often, 31.9% used the internet always, 20.5% used the internet rarely, and 0.6% never used the internet. Accordingly, the frequency of computer and internet usage was at theintermediate level. Approximately, 45% of the respondents

revealed that they contacted computer and the internet from different places that wereuniversity, internet cafe, and home.

Menzi, Çalışkan,and Çetin (2012) conducted a research to investigate the technological competencies of prospective teachers in various aspects i.e. use of computer and internet, the frequency of internet use, the ownership of the personal computer and network, department. Data were obtained from 642 respondents who were studying in different fields at theeducation department. The findings revealed that prospective teachers found themselves competent in usingword processor and computer basics.

Like other developing countries, Pakistan has been trying to make ICTs as core part of curriculum for a decade. In this connection computer literacy and ICT awareness have been included in the courses of pre-service training in teachers' education institutions at university level. Despite these endeavors the application of ICT has not reached to its grass root level due to one reason or the other. Like many others studies one of the study was conducted by Jamil in (2016) at secondary level showed that lack of teachers' effective training account for 73% hindrance regarding the use of ICT to coordinate and support the adoption of ICT at school level. Therefore, it seems imperative to explore the ICTs related resources and facilities for the training of prospective teachers and their competency level in ICTs at university level.

Objectives

To examine the facilities available at the university campus for developing ICT skills among prospective teachers.

To investigate ICT skills of prospective teachers at university level.

Research Questions

To achieve the research objectives of study the following questions were explored.

Q1. To what extent ICT related facilities and resources were provided at universities compuses in Pakistan?

Q2. How for prospective teachers are competent in the use of ICT?

Method

This study used survey research design. The suryey is considered as vital design in educational field as it has provision for collecting credible data from a small sample drawn from a large population. The results of the study can be generalized on the whole population with a quite reasonable confidence (McMillan& Schumacher, 2006). It helps to examine the abilities, beliefs, and degree of knowledge of the target population in some particular area (Fraenkel&Wallen, 2006). The focus of this study was to investigate ICT related resources and facilities at universities and to examine prospective teachers' competency in using ICT so, survey design was considered suitable for the present study.

All the public sector universities of KP, Punjab, and Federal Area were the target area for this study. From all 51 public sector universities in the target area, 12 universities (4universities from KP, 6 from Punjab and 2 universities from the federal area) were selected using random sampling technique. From each selected university, 40 students of M.A Education/B.Ed (Hons)/M.Ed programs were randomly selected. In this way, total 480 prospective teachers were taken as a sample of the present study. For the collection of data, a questionnaire was prepared. There were two sections A and B of the questionnaire. Section A had two parts: first part was to explore availability of ICT

related facilities and resources at campus while the part second was to probe the perceived competency level of prospective teachers' in the use of ICT; it had four options; 1= have no knowledge, 2= have little knowledge, 3= Can use but not expert, 4= Expert. The section B was to probe competency level with rating 1= Very Low 2= Low, 3=Average, 4= High, 5= Very High knowledge. The draft questionnaire was presented to three experts (with educational assessment, teacher education, and ICT as a field of expertise): two from Hazara University and one from Haripur University. They were provided the statement of theproblem, objectives of the study, and research questions for establishing face and content validity of the research tools.The questionnaire was improved in the light of suggestions recommended by the experts, and again it was reviewed by two members of the committee for approval to use. For pilot-testing, the improved questionnaire was distributed among 25 prospective teachers who were the part of the population but were not included in the sample of the study. The questionnaire was again improved and finalized in the light of feedback from the pilot-testing. The data obtained through pilot-testing was used for calculating the Cronbach's alpha and its value was found to be 0.801 for part A and 0.937 for part B. Hence,the questionnaire was reliable enough for the use in research (Nunnally, 1978). The finally improved and refined research tool was administered to the sample prospective teachers under circumstances where they were free in providing an honest response. Moreover, the research ethics were observed and clear instructions were provided to the respondents for collecting this data. The collected data was analyzed by using frequency, percentage, and mean score as statistical tools.

Results

The following tables provide data and result analysis.The data contain responses of prospective teachers that are connected with ICT facilities and software available at university campuses.

Table 1

ICT facilities available at campus

S. NO	ICTs related facilities	Provision			
		Yes		No	
1	Computer	396	77%	111	23%
2	Scanner	179	37%	301	63%
3	Bulletin board	207	43%	273	57%
4	Multimedia projector	381	79.4%	99	20.6%
5	Laptops	309	64%	171	36%
6	Interactive white board	354	74%	126	26%
7	On-line labs	203	42%	277	58%
8	Virtual libraries	213	44%	267	56%
9	Virtual classroom	197	41%	283	59%
10	Satellites cable	82	17%	398	83%
11	Virtual resource centre	115	25%	362	75%
12	Video conferencing	243	51%	235	49%

Table 1 shows that majority of prospective teachers had adequate facility regarding computer (77%), multimedia projector (79%) laptops (64%) and video conferencing (51%) at the university campus. While majority had no facility regarding scanner (37%), bulletin board (43%), online labs (42%), virtual library (44%), virtual classroom (59%), satellite cable (17%) and virtual resource centre (25%).

Table 2

Availability of Software Resources at Campus

S. NO	ICT Resources	Provision			
		Yes		No	
1	Adequate access to network	277	(58%)	203	(42%)
2	Access to printing	216	(45%)	264	(55%)
3	Educational portals	279	(58%)	201	(42%)
4	Teachers' websites	268	(56%)	212	(44%)
5	Students' websites	273	(57%)	207	(43%)
6	Syllabus available on-line	300	(63%)	180	(37%)
7	Sample exams quizzes for learning process	240	(50%)	240	(50%)
8	Turning in assignments online	246	(51%)	234	(49%)
9	Getting assignments back from teachers with comments	381	(79%)	99	(21%)
10	Sharing material among students	299	(62%)	181	(38%)

Table 2 illustrates that majority of prospective teachers had adequate access to network (58%), access to printing (55%), educational portals (58%),teachers' websites facility (56%), students' websites (57%), syllabus available on-line (63%), sample exams quizzes for learning process (50%), turning in assignments online (51%),getting assignments back from teachers with comments (79%) while (62%) prospective teachers were being shared material at campus.

Table 3

Prospective teachers' Competencies in ICT tools and resources

S.No	Students' Competencies in ICT	Responses						
		1	2	3	4	M	χ^2	P
1	Computer	49 (10%)	108 (23%)	189 (39%)	134 (28%)	2.85	84.517*	0.000
2	Usage of scanner	234 (49%)	121 (25%)	74 (15%)	51 (11%)	1.87	165.6*	0.000
3	Usage Bulletin board	222 (46%)	108 (23%)	76 (16%)	74 (15%)	2.00	121.7*	0.000
4	Usage of printer	145 (30%)	127 (26%)	118 (25%)	90 (19%)	2.31	13.150*	0.04
5	Multimedia projector	120 (25%)	142 (30%)	116 (24%)	102 (21%)	2.41	6.867	0.076
6	Laptops	100 (20%)	88 (18%)	115 (24%)	177 (37%)	2.76	39.150*	0.000
7	Interactive white board	134 (28%)	95 (20%)	97 (20%)	154 (32%)	2.56	20.883*	0.000
8	Usage of on-line labs	207 (43%)	117 (25%)	87 (18%)	69 (14%)	2.03	93.900*	0.000
9	Usage of virtual libraries	227 (47%)	109 (23%)	78 (16%)	66 (14%)	1.96	135.4*	0.000
10	Usage of virtual classroom	238 (50%)	96 (20%)	92 (19%)	54 (11%)	1.92	163.7*	0.000
11	Usage of satellites cable	316 (66%)	78 (16%)	54 (11%)	32 (7%)	1.58	435.7*	0.000

12	Usage of virtual resource centre	301 (63%)	87 (18%)	52 (11%)	40 (8%)	1.64	374.0*	0.000

Expected frequency=120 df=3*Significant at 0.05

1= Have no knowledge, 2= Have very little knowledge, 3= can use but not expert,4= Expert

Table 3 shows prospective teachers' level of expertise in using different ICTs related devices. The analyzed data shows that a majority of prospective teachers had significant competence (P<0.05) to use computer applications, laptop, and interactive white board. On the other hand, a substantiate proportion of prospective teachers hadsignificantly low competence (p<0.05) to use a bulletin board, printer, on-line library, virtual library, Satellite cable and virtual resource center. However, the response of prospective teachers was not significant regarding the use of multimedia ((χ2 =6.867, p>0.05).

Table 4

Prospective teachers' Competencies in classroom-based ICT Resources

S.NO	Competencies in Local ICT Resources	Responses						
		1	2	3	4	M	χ^2	P
1	How to access to network	171 (36%)	136 (28%)	104 (22%)	69 (14%)	2.14	47.617*	0.000
2	Use of electronic mail (e-mail)	118 (25%	115 (24%)	116 (24%)	131 (27%)	2.54	1.383	.709
3	Usage of printer	214 (45%)	131 (27%)	76 (16%)	58 (12%)	1.95	123.1*	0.000
4	Usage of educational portals	174 (36%)	138 (29%)	102 (21%)	66 (14%)	2.12	54.000*	0.000
5	Usage of teachers' websites	170 (36%)	126 (26%)	98 (20%)	86 (18%)	2.20	34.800*	0.000
6	Usage of students' websites	160 (33%)	115 (24 %)	102 21%)	103 22%)	2.30	18.650*	0.000
7	How to access syllabus available on-line	160 (33%)	141 (30%)	102 (21%)	77 (16%)	2.20	35.117*	0.000
8	Access to sample exams quizzes on-line	187 (39%)	111 (23%)	98 (20%)	84 (18%)	2.16	53.917*	0.000
9	turning in assignments online	183 (38%)	114 (24%)	94 (20%)	89 (18%)	2.18	47.017*	0.000
10	getting assignments back from with comments	96 (20%)	115 (24%)	134 (28%)	135 (28%)	2.64	8.517*	.036
11	Competency of sharing material on-line	152 (32%)	113 (23%)	114 (24%)	101 (21%)	2.34	12.250*	.0007
12	Video conferencing	141 (29%)	91 (19%)	92 (19%)	156 (33%)	2.54	28.017*	0.00

Expected frequency=120 df=3*Significant at 0.05

1= Have no knowledge, 2= Have very little knowledge, 3= can use but not expert,

4= Expert

Table 4 shows prospective teachers' level of expertise in the classroom based ICT. The analyzed data shows that a majority of prospective teachers had significantly low competence (p<0.05) to get access to thenetwork,use of theprinter, in the use of educational portals, in the use teachers' websites and in Video conferencing. The data shows that majority of prospective teachers had low competence (p<0.05) to get access syllabus available on-line, get access to sample exams quizzes for learning process on-line, in turning in assignments online, and in sharing material among students on-line. However, a majority of prospective teachers had competence (p<0.05) get

assignments back from teachers with comments. The analyzeddata shows prospective teachers response about their expertise in the use of electronic mail (e-mail) was not significant ($\chi 2 = 1.383$, $p>0.05$).

Table 5

Prospective teachers' competency in Microsoft words

Competency in Microsoft words	Responses							
	1	2	3	4	5	M	χ^2	P
Opening and closing MS word documents	16 (3%)	25 (5%)	82 (17%)	136 (29%)	221 (46%)	4.08	300.0*	0.000
Opening one or several documents	11 (2%)	32 (7%)	100 (21%)	149 (31%)	188 (39%)	3.98	235.5*	0.000
Saving a document to a location on a drive	18 (4%)	41 (8%)	79 (17%)	122 (25%)	220 (46%)	4.01	265.1*	0.000
Switching between open documents	18 (4%)	55 (11%)	109 (23%)	121 (25%)	177 (37%)	3.80	157.5*	0.000
Creating back-ups of important files	35 (7%)	71 (15%)	127 (26%)	109 (23%)	138 (29%)	3.50	75.41*	0.000

Expected frequency=120 df=3 *Significant at 0.05
Very Low=1, Low=2, Average=3, High=4, Very High=5

Table 5 shows students' level of expertise in the use of Microsoft words. The analyzed data shows that a majority of prospective teachers had significant competence ($p<0.05$) in theopening and closing MS word documents, opening one or several documents,saving a document to a location on a drive,switching between open documents and in creating back-ups of important files.

Table 6

Prospective teachers' Competency in Microsoft words Main operation

Competency in Microsoft words Main operation	Responses							
	1	2	3	4	5	M	χ^2	P
Inserting text, special characters, and symbols	8 (2%)	29 (6%)	100 (21%)	135 (28%)	207 (43%)	4.15	419.8*	0.000
Selecting a word, line, sentence, paragraph	11 (2%)	28 (6%)	99 (21%)	158 (33%)	184 (38%)	3.99	244.2*	0.000
Moving text within a document or between open documents	9 (2%)	42 (9%)	113 (24%)	137 (28%)	179 (37%)	3.90	201.5*	0.000
Using the search command for a specific word or phrase	10 (2%)	56 12%)	119 (25%)	134 (28%)	161 (33%)	3.79	158.3*	0.000
Changing text appearance including fonts type and size	13 (3%)	40 (8%)	90 (19%)	161 (33%)	176 (37%)	3.93	215.5*	0.000
Applying text formatting such as bold, italic or underline, highlight	21 (4%)	32 (7%)	82 17%)	136 (28%)	209 (44%)	4	253.0*	0.000
Applying case changes to text	20 (4%)	51 (11%)	103 (21%)	149 (31%)	157 (33%)	3.77	149.8*	0.000
Aligning text	24 (5%)	66 (14%)	120 (25%)	123 (26%)	147 (30%)	3.63	104.1*	0.000
Applying single or double line	11	42	129	131	167			

spacing within paragraphs	(2%)	(9%)	(27%)	(27%)	(35%)	3.83	182.2*	0.000
Applying and changing bullets and numbers to a single level list	15 (3%)	47 (10%)	108 (22%)	137 (29%)	173 (36%)	3.84	174.1*	0.000
Changing page margins, inserting and deleting a page break	14 (3%)	15 (11%)	118 (25%)	127 (26%)	170 (35%)	3.65	163.2*	0.000
Adding and modifying text in headers or footers	25 (5%)	65 13%)	119 (25%)	119 (25%)	152 (32%)	3.64	106.2*	0.000
Applying automatic page numbering/ auto numbering to a document	34 (7%)	57 (12%)	128 (26%)	119 (25%)	142 (30%)	3.57	94.10*	0.000

Expected frequency=120 df=3 *Significant at 0.05
Very Low=1, Low=2, Average=3, High=4, Very High=5

Table 6 shows students' level of expertise in the use of Microsoft words. The analyzed data shows thata majority of prospective teachers had significant competence ($p<0.05$) in inserting text, special characters and symbols, selecting a word, line, sentence, paragraph, moving text within a document or between open documents, using the search command for a specific word or phrase and in changing text appearance including fonts type and size was significant. The analyzed data also reflects that prospective teachers had significant competence ($p<0.05$) able in applying text formatting such as bold, italic or underline, highlight, applying case changes to textand in aligning text. A majority of prospective teachers had significant competence($p<0.05$)in applying single or double line spacing within paragraphs, applying and changing bullets and numbers to a single level list, changing page margins, inserting and deleting a page break, modifying text in headers or footers and in applying automatic page numbering/ auto numbering to a document.

Table 7

Prospective Teachers' Competency in (MS Word)

Competency in creating or inserting objects and images	Responses 1	2	3	4	5	M	χ^2	P
Creating tables for text insertion	19 (4%)	48 (10%)	120 (25%)	118 (25%)	175 (36%)	3.79	161.8*	0.000
Inserting and editing data in table	15 (3%)	52 (11%)	101 (21%)	146 (30%)	166 (35%)	3.82	165.9*	0.000
Inserting and deleting rows and columns	16 (3%)	45 (9%)	85 (18%)	143 (30%)	191 (40%)	3.93	212.0*	0.000
Modifying column width or row height, with, style&color	18 (4%)	47 (10%)	118 (24%)	147 (31%)	150 (31%)	3.75	150.9*	0.000

Expected frequency=120 df=3 *Significant at 0.05
Very Low=1, Low=2, Average=3, High.=4, Very High=5

Table 7 shows students' level of expertise in the use of Microsoft words. The analyzed data indicates that a substantiate proportion of prospective teachers had significant competence ($p<0.05$) to creating tables for text insertion, insert and edit data in thetable, insert and delete rows and columns and modify column width or row height, cell border with, style& color.

Discussion

Tondeur et al., (2015) emphasized that access to proper and well-organized infrastructure is the main component for teachers to use technology in their educational practices. In this aspect, more and more investment is needed to facilitate both pre-service and in-service teachers to utilize

technology in their teaching practices more effectively.In the present study, majority of prospective teachers were found deficient in using specifically those ICTs tools for which their institutions were lacking in infrastructure and facilities. They were deficient in the use of scanner, bulliton board, on line lab, virtual lab, virtual classroom and printing.In the target population of this study, two courses had been offered in BS program. These courses were: Computer Literacy, and ICTs in Education. The study indicated that prospective teachers were efficient in computer literacy, but they were not able to useICTs appliences in class rooms for techning learning purposes. These findings are concordant with the clain byMumtaz (2000), who regaredededaccess to ICTs related resources as a mian factor undermining ICTs skills of learners.

The results of this study also reflected that most of the prospective teachers were significantly able to use computer, laptop, and interactive white board and their institutions had sufficient facilities regarding computers, interactive white board, laptop and video conferencing arrangements. Majority of prospective teachers also had sufficient facilities regarding power point software,spread sheet, open office impress, Adobe flash software, Gopher software and had adequate access to network facility. In all these ICTs applications, the prospective teachers had significant competence.This indicates that if teachers have access to ICTs resources, then they will be able to use digital technology. These finding are aligned with the assertion of Plomp et al., (2009) and Yildirim (2007) that latest software and hardware are necessary elements for the successful adoption of technology. ICT infrastructure and resources are essential conditions for the integration of ICT skills in education

In some cases,despite possessing facilities and resources for multimedia, educational portals, teachers' websites, students' websites, and on-line syllabus, majority of prospective teachers were found to be deficient in using these applications of ICTs. They were also found weak to use spread sheet, Google docs, open office impress, word processing, Graphic software, and desktop publishing. These findings depict that either prospective teachers have not been trained in using these applications or there may be deficient instruction leading to these deficiencies.

The analyzed data also reveals that a considerable proportion of respondents was significantly able in changing page margins, inserting and deleting a page break. They were able in adding and modifying text in headers or footers and majority were able in applying automatic page numbering/ auto numbering to a document. The analyzed data indicates that substantial proportion of respondents were significantly able to create tables for text insertion, inserting and editing data in thetable, inserting and deleting rows and columns, modifying column width or row height, cell border with, style and color. This aspect of ICT competency in the present study is quite similar to the study conducted by Alejandro et al., (2016) which indicated that majority of the respondents were significantly able to use MS Word.The present study is also similar to the study conducted by Usta andKorkmaz (2010) showed that majority (75%) of respondents had sufficient skills in these applications of computer.

Conclusion

The findings of the study revealed that lack of resources affect the competency level of the learners. The prospective teachers were efficient or with average skills in those areas of ICTs for whichthe facilities were available while they were deficient in the skills of ICTs applications that were missing at their institutions. The prospective teachers were not able to use of scanner, bulliton board, on line lab, virtual classroom and printer. The overview of available infrastructure and facilities in the study showed that the facilities that were available in universities usually support

documentation, editing and publishing functions; that are mostly needed in offices and have least use in the classroom teaching. Resources and facilities play vital role for preparing prospective teachers to use ICTs in their professional life and in class room teaching.

Recommendations

On the basis of the findings the following recommendations are proposed.

- Absence of ICT resources and facilities undermines learning about ICTs applications. The universities were lacking in some facilities and resources like scanner, bulletin board, virtual classroom and virtual resource center. As these resources play important role in developing competence in ICTs application, the universities authorities may provide ICT related modern equipments for providing quality education to prospective teachers.
- In some cases ICT related resources and equipments were found at universities campuses but prospective teachers were not able to use them. This situation suggested deficient training on the part of teacher educators. Therefore, teacher educators may focus on these deficient areas of prospective teachers training.
- HEC as patron of higher education may keep check on the needs and requrirements of universities and make sure the implementation and integration of ICT along with its necessary resources.

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