Teacher's perception about Availability and Accessibility of Information and Communication Technology (ICT) at Tertiary Level

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Abstract: ICT plays a significant part in information societies and educational systems of nations. The major purpose of the study was to explore the teacher's perception about availability and problems relating to the accessibility of ICT facilities at Tertiary Level. The study was descriptive type in nature. Major objective of the study were to find out the availability of ICT facilities for teachers at tertiary level and to investigate the problems faced by teachers in accessing ICT at tertiary level. Stratified random sample of 64 teachers (26 male and 38 female) of three leading public sector universities located at Islamabad were selected. Data were collected from departments of social sciences. Likert-scale questionnaire was developed by researcher. Data were transferred to SPSS 21.0 for statistical analysis including percentage and mean analysis. Results showed that majority of teachers were having problem in accessing those ICT tools because of frequent load-shading of electricity, poor phone lines, lack of supporting staff, less access to virtual conference room and difficulty in accessing websites at university. The present research was an attempt to catch the attention of educational administrators and planners towards the problems that teachers are facing in accessibility of ICT at tertiary level.

Keywords: Teachers Perception, Availability, Information and Communication Tertiary Level.

Introduction:

21st century has been accurately termed as the century of rapid improvement and development in every field. Knowledge outburst, globalization and fast developments in the field of science and technology have brought all sphere of life under notable pressure to respond to the varying state and educational institutions are no exception. Technology is the sum total of tools and techniques through which men have added weight to the human effort since the beginning of time, it's a force which brings together men, invention, skills, equipment and methods [1]. The fast development in technology has caused major changes in the way we live. Recognizing the impact of latest technologies in the place of work and daily life, today's educational institutions struggle to restructure their education programs and classroom services in order to reduce the teaching and learning technology gap among today and the future. It requires effectual integration of technologies into existing situation in order to present learners with knowledge of precise subject areas to encourage significant learning and to improve professional efficiency [1].

The mixing of information and communication technology in educational field has been seen as the instrument to assist teachers, students and educationists to understand the potential of the new technological apparatus to revolutionize an outdated educational system [2]. More technology-rich world raises latest concerns for education while also expecting educational institutes to expand into the front of knowledge societies. Firstly technology can present the vital tools for civilizing the teaching and learning process in educational institutes and opening newest opportunities. In particular it could perk up the customization of the education process adapting it to the demanding needs of the student. Secondly education has the accountability of preparing students for professional life therefore it must train and give students those skills vital to join a society where technology-related competencies are becoming ever more essential. The extension of these competencies which are parts of so called 21st

century competencies is ever more becoming a very important part of the goals of compulsory education. Lastly in a knowledge economy determined by technology, nation who does not master these competencies may experience from a new digital divide that may affect their capability to fully incorporate the knowledge economy and society [3].

Information and communication technology is classified as: traditional and modern information and communication technologies. Traditional ICTs may include printed media, verbal information, graphical material, audio – visual hardware but now a day's, Modern information and communication technology refers towards the use of digital video camera, multimedia, personal computer (PC), application software such as word processing spreadsheets, power point, multimedia projector like LCD or DLP to communicate to a large group, local area network (LAN), wide area network (WAN), laptop, notebook, digital libraries, e-mail, internet, world wide web (WWW), idea of virtual classroom and audio video conferencing [4].

By information and communication technology in education it represents all the up to date digital tools such as internet that can be used in education serving to achieve its goals. In the field of formal education technologies are more and more deployed as equipment's increase the students' capacity to distinguish, understand and communicate as seen in the boost in online learning programs and the use of the computers and laptops in the classroom as a learning support tools for both students and teachers. At first educators see the utilization of information and communication technology in the classroom largely as a way to teach computer literacy but now most of educators see a broader purpose that of delivering numerous kind of learning at lower cost and with higher quality than traditional institutes. The ground of education has been exaggerated by ICTs which have unquestionably affected teaching, learning and research [5].

ICT is like a sunshade that encompasses many aspects of communication, computing and technologies. Information and communication technology apparatus are to move forward organizational efficiency and effectiveness; it is clear that their use in hold up of teaching and learning process should be seriously well thought-out. There are many problems students and teachers are facing at tertiary level related with poor and uneven supply of information and communication technology resources which includes non-systematic method of implementing technologies and not making technology receptive to the idea and mission of educational institute. A nation's educational technology infrastructure sits always on the top of the national telecommunications and information technology infrastructure. Availability of sufficient infrastructures to sustain the deployment of information and communication technologies at tertiary level is a tremendous challenge that universities are presently facing. Apart from the higher initial price of purchasing the upholding and upgrade expenses as well as the cost and effort of sustaining such infrastructure are also roadblocks to the successful usage of technologies at tertiary level all over the world [6].

Literature review:

Educational institutes are the places where student's actions and future of educational achievement is formed by teachers. In the growing education model the teacher has accountability as a facilitator. The learners actively and confidently share their knowledge with each other which has been constructed based on their individual's unique, real-world experience and build new perceptive based on shared exploration of details and the growth of process skills with the help of teachers by participation in emerging learning activities by using information and communication technologies in all subjects, for this purpose E-learning has been integrated in teaching and learning by the majority of tertiary level

education institutions and it is often seen as a tool for providing students with an added teaching and learning platform to be used together with more traditional methods of delivery such as lectures [7].

The educational effectiveness of information and communication technologies depends on how they are used and for what purpose they are utilized, like any other educational instrument or mode of educational delivery all technologies do not work for everyone and everywhere at the same way. Effectiveness, equity, cost and sustainability are some major issues which must be addressed properly and clearly when allowing on the whole impact of the exercise of technologies in education system, goals should be set and considered. Universities are confronted with outside troubles coming from their own structure and culture as well as inside problems coming from their own structure and culture [8].

The combination of technologies can assist regenerate teachers. This can assist to steps forward and enlarge the excellence of education by giving curricular hold up in varied subject areas in schools, colleges and universities. According to Zhao and Cziko [9] three conditions are necessary for teachers to establish information and communication technology into their classroom settings, first teachers must believe in the efficiency of technology, secondly teachers should have self-confidence that the accomplishment of technology will not cause any turbulence and lastly teachers must think that they have supremacy over technology.

Information and communication technologies is a persistent thread that bind in cooperation the whole thing that is done and made possible including digital images, advertising, digital video entertainment, text messaging and instant communication, trading and entertaining and online working, all of these are component of the vocabulary and acts of almost all sectors of the population. According to Obeng [10], information technology can be defined as a study, plan, implementation, development, hold up and organization of computer-based information systems. ICT can help tertiary education to reach many of its goals. Radio, Telephone, World-Wide Web (WWW), Television, Fax, CD ROM, File Transfer Protocol (FTP) etc are very important to be integrated in lesson planning and self-learning at tertiary level. Technology not only provides options for instruction delivery but it also help to create new instructions and learning materials [11].

Internet is a helpful tool for training educators. Importance of Internet at tertiary level lies in its utilization for preparation of assignments, projects, presentation and research work by students. Internet provides real-time information on current events around the world. Blogs, also known as web logs where users can provide information, news on topic or online journals. This is an immense communication tool between teachers and students. Email is also one of the popular way to interact, teachers and students quickly communicate through emails. Internet has turn out to be the largest source of information in the world there are many sites use for education [12].

Sampath Kumar and Biradar [12] view the utilization of ICTs in 31 college libraries in Karnataka, India by analyzing the information and communication technology infrastructure, barriers to completion of library computerization, status of library automation, and librarian's attitudes towards the utilization of ICTs. The survey carried out with the help of questionnaire, personal observation and casual interview with chosen college librarians. Outcome of the study shows that main barriers in the way of using ICT in libraries are be short of budget, be short of skilled staff, be deficient in manpower and lack of training are the main constraints for not automating library activities. Even though library professionals have exposed there positive approach towards the utilization of information and communication technology applications and library mechanization, majority of them expressed the need of suitable training to make use of ICT tools more skilfully to get better results.

There are a lot of factors that create obstacles in accessing information and communication technologies for teachers and students which includes non-reliability of electricity supply, lack of institutional plans and strategies for introducing and increasing information and communication technologies, low level understanding and utilization among students and faculty, lack of ability of institutions to ensure the maintenance of skilled staff due to deprived salary. Due to be short of capital and political issues such as contradictory policies there has not been an optimal plan for development in the information and communication technology sector [13]. The government of Pakistan is anxious to build up ICT infrastructure to protect research and education. But these hard works are still at the initial stage. After 2000 the extensive utilization of ICT along with students was seen all through the globe the little price of computers and internet connectivity brings this technology not only to the university campuses but as well to the home of students and teachers. Information and communication technologies exercise by students and teachers has expanded to internet, e-mail, chat, programming, spreadsheet, graphics, online literature search and other online activities. Easy access to information and communication technologies at tertiary level turn out to be a matter of serious importance to become feasible and competent in training students, teachers, preparing the generation of citizens with adequate skills, producing and disseminating knowledge and the capability to guarantee national development and economic expansion [14].

Materials:

Research questions

The study answered the subsequent research questions:

1. What type of Information and Communication Technology is available at tertiary level for teachers?
2. What are the major problems that teachers face in accessing Information and Communication Technology at tertiary level?

Research objectives:

The major objectives of the study were:

1. To find out the availability of Information and Communication Technology for teachers at tertiary level.
2. To investigate the problems faced by teachers in accessibility of Information and Communication Technologies at tertiary level.

Methods:

Population and Sample

All the practicing teachers of social sciences departments comprised the population of the study. A stratified random sample of 64 male and female teachers of three leading public sector universities of Islamabad was selected.

Measures:

In the present study questionnaire was designed in Likert's-point response format, which ranged from: Strongly disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly agree (5). The cronbach's alpha reliability of questionnaire was .89. For data collection the respondents were approached to the nature

and needs of the research. The respondents were guaranteed of the privacy of the results and questionnaires were circulated through personal visits.

Procedure:

The study being descriptive in nature utilized survey technique. In order to fulfil the requirement of the study 64 teachers were selected from public sector universities. For data collection the respondents were approached to the nature and needs of the research. There were many expected and unexpected hurdles for collecting the data, so for reducing these difficulties permission letter was provided to the administrators of universities so that encounter hurdles in the data collection process may be dealt easily. The respondents were guaranteed of the privacy of the results and questionnaires were circulated through personal visits. Approximately all the participants completed the questionnaires in the presence of researcher.

Data Analysis:

Data were analyzed according to objective of the study. After completing data collection data were transferred to SPSS 21.0 for statistical analysis by applying statistical tests including Percentage and Mean analysis.

Results:

Table No. 1 show the Gender of the teacher's respondents of the study. 40.6 % (n=26) respondents were male whereas 59.4% (n=38) were female teachers. According to the figures given in the table, the percentage of female participants is more than that of the male participants.

Table No. 2 describes the teacher's perception about problems related to the accessibility of Information and Communication Technology at tertiary level. On statement No. 1, 59.4% respondents agree and 17.2% strongly agree that due to unavailability of electricity it becomes difficult to use computers. Statement No. 2 was that due to poor phone lines it becomes difficult to access internet, 54.7% agree on this and 17.2% strongly agree. Statement No. 3 was that due to lack of supporting staff teachers face problems in using internet, computers, projectors and printers, 43.8% agree on this and 12.5% strongly agree. On statement No. 4, 20.3% disagree, 37.5% teachers agree and 17.2% strongly agree that they can't use internet and computer at university whenever they want to use them. Statement No.5 was that teachers have open access to digital library in university where they can found journals, E-books, articles and projects in electronic form, 31.2% remain neutral on this, 26.6% agree and 17.2% strongly agree. Statement No. 6 was that virtual-conference room is easily accessible by teachers for conducting lectures and seminars, 29.7% responded neutral, 21.9% disagree and 14.1% strongly disagree on this. 35.9% agree, 6.2% strongly agree and 20.3% remain neutral on statement 7 that multimedia is easily accessible for teachers. Statement No. 8 was that it's very difficult to access internet websites at university, 42.2% agree on this and 18.8% disagree. 42.2% remain neutral, 39.1% agree and 7.8% disagree on statement No. 9 that library is linked to internet which makes easy access to online material. Statement No. 10 was that technical support is not easily accessible when needed, 43.8% agree, 5.6% strongly agree and 12.5% disagree on this. The overall result shows that majority of teachers were agree that they are facing problems in accessibility of ICTs at tertiary level like unavailability of electricity, weak phone lines, lack of supporting staff, difficulty in accessing websites, virtual conference room and technical support.

Table No.3 describes the opinion of teachers with the availability of ICTs at tertiary level. Statement 1 was that university has provided Broad Band internet to teachers, as shown in table 10.9%

teachers were agree and 53.1% were strongly disagree upon this. Statement no 2 was about availability of Wi-Fi network to teachers, results show that 62.5% teachers were agreed that university has provided Wi-Fi facility. Statement 3 results revealed that 67.2% teachers were strongly disagreeing that university has provided intranet facility to teachers. In statement no 4 teachers seem to disagree about availability of personal computers to each teacher by university, 42.2% teachers disagree with it and 20.3% strongly disagree. Statement 5 inquired about availability of laptops in sufficient amount for teachers in university, 31.2% teachers disagree and 26.6% strongly disagree on this which shows that laptops are not available in sufficient amount for teachers. Statement no 6 inquired about the availability of printers free of cost for teachers, 32.8% teachers remain neutral on this and 25% disagree and 15.6% strongly disagree. Statement 7 was about availability of projectors for teachers in classroom 35.9% teachers disagree and 28.1% teachers agree on this. Statement 8 was about availability of scanners at university for teachers, 39.1% disagree and 20.3% strongly disagree on this statement. Statement 9 was that university has its own digital library, 35.9% agree, 10.9% strongly agree and 31.2% disagree on this. 35.9% teachers agree on statement 10 that video conference room is available, 25% remain neutral and 25% teachers show disagreement on this statement. Statement 11 inquired about the availability of trained technical staff for teachers to resolve issues related with ICT equipment, 53.1% teachers agree on this that technical staff is available for them to resolve ICT related issues. The overall result shows that majority of teachers were disagree on the availability most of basic ICT facilities at tertiary level.

Table No. 4 indicates the mean of teachers gender score, mean of male on availability of ICT were 34 and female mean were 33.3. Female mean score (34.5) is higher as compare to male mean score (32.8) on problems in accessing ICTs. From the table it is clearly seen that on Availability of ICT and male teachers have high score, while on Problems in accessing ICT female teachers' exhibit high score.

Findings and Discussion:

ICTs fill almost every walk of our everyday life and have become most important priorities for formal and informal education at primary, secondary and tertiary level education. There has been a massive drive to increase the use of ICTs in education. This is true across different countries and sectors ranging from primary throughout tertiary education and lifelong education. According to UNESCO, mastery of information and communication technologies is now consider as critical literacy, alongside with reading, writing and numeracy. The results of the study revealed that majority of teachers in Pakistani scenario were having problems in accessing Information and Communication Technologies at tertiary level which includes frequent load-shading of electricity which make difficulties to access computers, poor phone lines, lack of supporting staff, less access to virtual conference room, difficulty in accessing websites at university and lack of technical support.

Finding revealed the opinion of teachers with problems in accessing of Information and Communication Technologies at tertiary level. Due to frequent load-shading of electricity it becomes difficult for teachers to use computers, because of poor phone lines it becomes difficult for teachers to access internet, technical support is not easily accessible when needed and due to lack of supporting staff teachers face problems in using internet, computers, projectors and printers, Virtual-conference room is not easily accessible by teachers for conducting lectures and seminars, it's very difficult to access internet websites at university. A study was conducted by Akuegwu in 2011 to discover information and communication technology services and consumption of worth instructional services delivery all along with university lecturers in Nigeria. Findings of the study exposed that accessibility of information and communication technology services and university lecturer's consumption of ICTs are very less which is the serious restraint to excellence instructional service delivery [15].

The conclusion drew from the teacher's opinion with the availability of ICTs shows fact that basic ICT facilities like broad band internet, intranet, trained technical staff, personal computers, laptops, printers, projectors and scanners are not available in sufficient number for the teachers at tertiary level. A survey was conducted by Al-Qallaf and Al-Azmi [16] on use of ICTs in community libraries in Kuwait the study includes Internet, hardware and software, patterns of connectivity such as LANs, training and development activities. The study revealed that a small number of libraries have internet connectivity, limited use of ICT applications and implementation of an automated library system are extremely slow.

Mean of teachers gender score shows that female mean score is higher as compare to male mean score on problems in accessibility of ICT facilities at tertiary level. Moreover on the availability of ICT facilities at tertiary level male teachers have high mean score as compare to female teachers.

Recommendations:

1. It is recommended that at tertiary level special attention may be paid towards infrastructure such as through provision of UPS (Uninterrupted Power Supply) and Generators for computer laboratories.
2. It is suggested that poor phone lines should be repaired and replaced.
3. It is recommended that proper training may be given to technical supporting staff.
4. It could be recommended that access to virtual conference room may be given to teachers.
5. ICT facilities may be made available for teachers such as personal computers, laptops, scanners, printers and projectors.
6. It is suggested that particular attention may be provided towards the availability and utilization of ICTs among female teachers. Special trainings may also be given to female teachers for better handling of ICTs.

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Table No. 1
Frequency Tables for Gender – wise Distribution of Teachers

Gender	Frequency	Percent	Cumulative Percent
Male	26	40.6	40.6
Female	38	59.4	100.0
Total	64	100.0	

Table No. 2
Percentages of Teachers perception on Problems in accessibility of ICT at tertiary level

Problems in accessibility of ICT					
Statement	**Strongly Disagree %**	**Disagree %**	**Neutral %**	**Agree %**	**Strongly Agree %**
1.Electricity	0	12.5	10.9	59.4	17.2
2.Poor Phone lines	0	12.5	15.6	54.7	17.2
3.Lack of supporting staff	1.6	20.3	21.9	43.8	12.5
4.Use of Internet	7.8	20.3	17.2	37.5	17.2
5.Open access to digital library	4.7	20.3	31.2	26.6	17.2
6.Virtual conference room	14.1	21.9	29.7	25	9.4
7.Multimedia	12.5	25	20.3	35.9	6.2
8.Websites	6.2	18.8	26.6	42.2	6.2
9.online material	3.1	7.8	42.2	39.1	7.8
10.Technical support	3.1	12.5	25	43.8	15.6

Table No. 3

Percentages of Teachers perception on Availability of ICT at Tertiary level

Availability of ICT					
Statement	**Strongly Disagree%**	**Disagree %**	**Neutral %**	**Agree %**	**Strongly Agree%**
1.Broad Band	53.1	10.9	14.1	10.9	10.9
2.Wi-Fi	4.7	7.8	7.8	62.5	17.2
3.Intranet	67.2	9.4	14.1	1.6	7.8
4.Personal Computer	20.3	42.2	14.1	15.6	7.8
5.Laptops	26.6	31.2	14.1	23.4	4.7
6.Printers	15.6	25.0	32.8	21.9	4.7
7.Projectors	14.1	35.9	15.6	28.1	6.2
8.Scanners	20.3	39.1	12.5	20.3	7.8
9.Digital Library	7.8	31.2	14.1	35.9	10.9
10.Video Conference room	9.4	25	25	35.9	4.7
11.Technical staff	3.1	14.1	18.8	53.1	10.9

Table No. 4

Mean values of male and female teachers on Availability of ICT and Problems in accessing ICT

Gender	**Male**	**Female**
	M	**M**
Availability of ICT	34	33.3
Problems in accessing ICT	32.8	34.5