Teacher Educators and Prospective Teachers' Current use of ICT tools in a women university of Pakistan a case study

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Abstract

Information communication technology (ICT) is an increasingly significant tool in all fields of education. It is frequently stated that a qualified and competent teacher, regardless of his priorities in teaching subject must be able to use ICT for the benefit of his personal and professional development. Review of related literature reported that limited competence and less use of ICT from the teachers side or the student side can become a threat to effective and quality education by minimizing or eliminating the expected added value of ICT in learning. The present study aims to assess current use of ICT tools of teacher educators and prospective teachers in education department of Lahore College for women University Lahore, Pakistan. A questionnaire was designed, aiming to assess current use of ICTs in classroom. The questionnaire was distributed to all teaching faculty of education department and to a cohort of final year MS students (2013).Current use of ICT tools by the teachers in education department were measured through ICT use Scale (ICTS) in the both groups. A total of 20 questionnaires were collected from the educators' group and 30 from the prospective teachers. The results from this study indicate that education department of Lahore college for women university has lack of ICT tools but teachers and prospective teachers both have great inclination for use during their teaching learning process.

Key words: ICT competence; Teacher educators; Prospective teachers; education informatics.

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Introduction

Our new generation can be described as **"**digital natives**"**, having grown up with digital technology such as the internet, computers, cell phones and MP3 players etc. Rapidly increasing Information and Communication Technologies (ICT) has influenced our educational institutes to a great extent. Their impact on administration, teaching and learning has been investigated in different parts of the world. Teachers being a change agent and main stakeholder of the education system, are found to have been equipped with ICT competencies and technology literacy. A single definition for ICT is not possible due to continuous innovations in this realm. It starts from scientific calculator to desk tops, laptops, notebooks, laser printers, LCD projectors, palm devices, iPods, fax machines, mobiles and Internet. These rapid advances in technology are reshaping our society, social and educational institutions. Latest technologies have greatly improved our capacity to know and do things and to correspond and work together. They allow us to convey information rapidly and extensively, connecting far-flung places and diverse areas of endeavor in dynamic novel ways. It has been noted that when technology is applied to teachers and learner**'**s lives in an institute, a positive

result arises. Today through internet link students and teachers have a doorway and tie to every part of the world.

Kozma in 2005 and Leech in 2008 supported ICT as a principal driver of economic and social change and development. Generally many countries throughout the world, justify investments in educational reform and in educational ICT in terms of economic and social development needs. KellesViitanen (2003) conspicuously commented on major role of ICT play in all aspects of public life in developing countries including politics, economics, social and intellectual development by bringing fast revolution in the way people run business, get information, correspond with each other,

and even entertain themselves. Likewise in education sector, ICTs, particularly computers have become an important tool to boost teaching learning process and support to develop high order thinking skills. The propagation and success of web based curriculum at all levels of education is just the latest example of the importance of technology to both students and teachers. The computers exclusive ability to offer lessons in multimedia formats, and to provide a means for real time student/teacher dialogue and exchange already enriches online instruction, but may only be the tip of the iceberg to what emerging technologies will bring to the delivery of quality education in the

new century. In order for classrooms to achieve or be successful, technology must be in place to improve academics. According to Kulik, computer simulations and Instructional Learning Systems (ILS) are effective only when they are integrated into the **"**regular classroom instruction**"** (Blomeyer,

2005).Taking it one step further, students whose teachers were high level users of technology scored significantly better than did the students whose teachers were low level users of technology in the classroom. Presently, classroom learning is increasingly dependent on the integration of

technology, thus enhancing learning. The current technology uses email systems, data processing and laptop audio/videos webinars. As we go into the 21st century educators need to define what role the ICTs especially computer can play in the students learning. Associates (2005) opined that

students can learn from computers-where technology used is essentially as tutors and serves to increase students basic skills and knowledge; and can learn with computers- where technology is used a tool that can be applied to a variety of goals in the learning process and can serve as a resource to help higher order thinking, creativity and research skills. For example productivity tools such as databases, spreadsheets, computer-assisted design, graphics programs, and multimedia authoring programs (programs for creating computer-based presentations or lessons) allow students to independently organize, analyze, interpret, develop, and evaluate their own work. Review of related literature reported that by adapting technology for education there is a positive change in the academic performance, motivation, critical thinking skills, Literacy, attitudes and real life work skills both in teachers and students. Woodrow (1990), who investigated the computer attitudes of 106 pre-service student teachers, found that positive attitudes correlated with an externally-oriented perception of locus of control. The external attribution of luck was most highly correlated with positive computer attitudes. In addition, those student teachers who felt that they had high ability were more positive about using computers, while

those who felt that higher level of effort was needed to be able to use computers tended to have negative attitudes. During the last several decades, alongside a series of different programmes for the integration of technology in education, there have been research studies of the implementation of ICT in education like, Cox, Rhodes & Hall in 1988 examined the effects of teacher training. Later on Cox in 1993 discussed the levels of resources , in the same year Watson explored the teachers' pedagogies and practices, and before them in 1990 Woodrow conducted a study related to teachers attitudes . The findings of all these studies pointed out that inspite of teacher

training programmes, an increase in ICT resources and the requirements of curricula there has been a poorly slow adaptation of ICT in institutes by the majority of teachers.

Göktaş, Y., Yıldırım, S., & Yıldırım, Z. (2009) conducted a study to find out

the teacher educators' perceptions about ICT integration into teacher education programs, their perceived ICT competencies and their ICT usage in their courses. They collected data through a questionnaire and interview from teacher educators in schools of teacher education. They reported that majority of the teacher educators expressed positive perceptions about the integration of ICT into teacher education programs. They were sufficiently competent in ICT skills. Further, They use the internet as a supportive tool during their teaching, and search engines like Google and Yahoo etc regularly.

In 2004, Simonson conducted a study on beliefs of primary school teachers and their use of ICT in their classes. He reported a positive relationship between teachers' attitude and actual use of ICT. Eugene (2006) observed the teachers' beliefs and attitudes towards the use of ICT in classrooms .Contrary to Simonson, his results indicated an inconsistency between teachers' beliefs and their use of technology. Their perception and practical

application of ICT had not associated to each other. Drent and Meelissen (2008) explored that student–oriented pedagogical approach, positive attitude towards computers, computer experience, and personal entrepreneurship of the teacher educator are factors which have a considerable influence on the innovative use of ICT by the teacher. Cognitive, technical, and social areas of ICT are recognized by *Zhang* and *Martinovic in 2008.*

No doubt, ICTs have great utility for knowledge communicating, successful learning, and the growth of well-organized didactic services. Furthermore, the implementation of ICT in education has been considered as an influential mean to contribute to educational innovations, better train learners for the technology age, enhance learning feedbacks and skills of learners, and prepare students with essential skills for living in global interconnected society. For that reason, educators are expected to incorporate ICT into their teaching and learning processes. Research data suggests that successful integration of ICT into teaching is influenced by teachers' attitudes and beliefs. (Hew & Brush, 2007; Keengwe & Onchwari, 2008). If teachers have optimistic attitudes toward the use of ICT, then they can easily supply valuable approach about the acceptance and incorporation of ICT into teaching and learning processes. Teachers and students perceptions about use

of ICT and their integration and implementation in teaching and learning process further their relationship is studied by some researchers during last

decade. Eugene (2006) focused on effect of teachers' beliefs and attitudes towards the use of ICT in classrooms. He used an observation method

to explore impacts of technology. He found an inconsistency between teachers' beliefs and their actual use of technology in the classroom.

Teachers' beliefs and pedagogies were reported not to be related . In 2005, Huang and Liaw concluded that teachers' attitudes towards technology have impact on their acceptance of the effectiveness of technology and its incorporation into instruction . Results of EU Schoolnet (2010) survey related to teachers' use of netbooks in six European Union countries, show that teachers opined that the use of netbook had positive impact on their learning and further teaching. Very few teachers ,on the other hand , were not satisfied with the benefits of ICT. They perceived that the teachers'use of ICT had not significantly influence their students' learning Another survey of UK teachers also reported that teachers' positivity about the possible contributions of ICT was moderated as they

became 'rather more hesitant and sometimes doubtful' about 'definite, existing advantages' (Becta, 2008, p.45).

Rozell and Gardner(1999) admitted that Teachers computer attitude and their computer experience both are positively related . More experience

teachers have with computers, the more likely that they will show positive attitudes towards computers. Computer use in the class depends on the

Positive computer attitudes of teachers. (van Braak, Tondeur, & Valcke, 2004). According to Woodrow (1992) for effective transformation in educational practice, users need to develop positive attitudes toward the technology.

Milan Kubiatko (2006) proved that the teachers firmly restricted the ICT use in biology class. Similar results were mentioned by Patterson (2000). The reasons reported were as follows: fear of using ICT; teachers do not know to use ICT; schools are poorly equipped with ICT; only informatics´ lessons

are taught during the ICT classes. By reviewing literature,it has revealed that the amalgamation of information and communication technologies can help in energizing teachers and students. By providing support in curriculum development and further in its implementation, ICT can help to promote and expand the quality of education too. These objectives can be achieved only when teachers are actively involved in collaborative projects and in developing innovative strategies by adopting ICT in and out of the class as

a tool. Teachers' attitudes are most important predictors and indicators of the use of latest technologies in classroom settings. Teachers' attitudes toward ICT influence not only their own ICT experiences, but also the experiences of their students. Zhao and Cziko (2001) presented three necessary condition for teachers adoption of technology Their believes regarding the effectiveness of technology, regarding the harmless use of technology, and regarding their own grip over technology. Demetriadis (2003) supported these three conditions and concluded the results of his study highlighting thattraining efforts are generally welcomed by teachers, and further opined that support and extensive training is necessary in order for them to consider themselves able to integrate ICT in their teaching methodologies.

Five basic features of technology were pointed out by Rogers in1995. These

features were adoption: relative advantage, compatibility, complexity, observability, and trialibility which significantly influence the teachers attitude towards technology.In short, ICTs will be increasingly implemented if potential adopters recognize that it: (1) has an advantage over previous technology; (2) is well-matched with on hand practices, (3) is not difficult to understand and use, (4) shows apparent results, and (5) can be experimented

with on a limited basis before acceptance.Braun and Kraft (1995) opined that preparing students for real life in our technological and diverse world teachers'use of ICT in significant learning experiences is essential.Smeets(2005) reported that teachers recognize the benefits and

utility of ICT but they do not make use of ICT to contribute to the quality of learning environments.Harris (2002) conducted case studies in three primary and three secondary schools, which focused on innovative pedagogical practices involving ICT. He concluded that the benefits of ICT

will be gained **"…when confident teachers are willing to explore** new opportunities for changing their classroom practices by using ICT**"** (p. 458). Earlier in 2001, Wheeler said that the use of ICT will not only

improve learning environments but also prepare next generation for future lives and careers.

The present study

It is noted that there are a number of studies on teachers' perceptions, skills and practices of ICT in primary and secondary schools and at higher education level in developed and developing countries, but there is lack of study on teachers' perceptions, skills and uses of ICTs in female institutes.

This underlying principle motivated to carrying out the current research. Lahore College for Women University is famous one among oldest female institutions in Pakistan. It was established as women's college in 1922. It has currently 4 faculties and 4 institutes. Its institute of Education has been established with a vision to promote learning and achievement by evidencebased and research oriented leadership in education. There are five departments namely Education, TESOL, Physical Education, Research and Evaluation and Professional studies in the . The present study was conducted to identify the available ICT tools in the institute and to examine the current use of available ICT tools of teachers educaters and prospective teachers of MS (final year students).

Aim of the study

1. To identify the available ICT tools in the education department
2. To examine Teacher Educators and Prospective teachers use of ICT Tools at Education department in Women university

Research questions

1. Which ICT tools are available in the Education Institute of Women University?

2. To what extent teachers educators and prospective teachers use ICT in education Institute of Women University?
3. In what ways do teacher's educators and prospective teachers use ICT in education Institute of Women University?

Method

A mix method study was designed to examine the availability of ICT tools and current use of ICT tools in the Institute.

Site and participants

Teachers' educators(20) and prospective teachers (30) in Education department of Lahore college for women university were selected as a sample by purposive sampling method. **Instrumentation**

A Questionnaire ' ICT use in teaching and learning Scale (ICTTLS)was adapted and modified. It was developed for two cohorts of teachers, teacher educators and prospective teachers. Many items on the scale and basic format of the questionnaire was borrowed from Osama Abdulwaha who developed it for his study in 2008. Semi structured interviews related to availability of ICT tools and their current use were conducted too.

Data analysis

Descriptive statistics was used to analyze the quantitative data. Findings were interpreted in frequencies and percentages.

Data collection

The questionnaire was distributed among 20 teacher educators and 30 prospective teachers of MS education final year .After a weak respondent were requested to return the questionnaire.

Results

Results related to current use of ICT tools are presented in the form of percentages. From the participants in this research, 40% were teachers educators and 60 % were prospective teachers. Data analysis provides the answer to the following researchquestion: In what ways did teacher educators and prospective teachers use ICT? Generally both educators and prospective teachers responded that their ability to use ICT tools fluctuated between intermediate (82%) and expert (18 %) as depicted by Table 1. No one of these teachers considered themselves a beginner in the use of ICT tools. Majority from both cohorts rated their ability as intermediate while only 18% considered themselves as an expert in ICT use.

Table 1 Participants rating of their ability to use ICT tools

			Teacher educators	**Prospective teachers**	**Tot**
How would you rate your ability to use ICT tools?	Beginner	Count% Within cohorts	0 0%	0 0%	0 0%
	Intermediate	Count% Within cohorts	15 30%	26 52%	41 82%
	Expert	Count% Within cohorts	5 10%	4 8%	09 18%
Total			20	30	50

As Table 2 shows, nearly all these teachers (98 %) had a personal computer. All the teacher educators had a computer while a single prospective teacher reported that he had no computer at all.

			Teacher educators	Prospective teachers	Tot
I have a personal computer	Yes	Count% Within cohorts	20 40%	29 58%	49 98%
	No	Count% Within cohorts	0 0%	01 2%	01 2%
Total			20	30	50

Table 2 Number of teachers who have had personal computers

68%of them had owned their computers for 3 to 5 years, while 24 % had owned their computers for 1 to 2 years and only 8 percent had their computers for 6 to 10 years (see Table 3).

Table 3 Period of years that teachers owned their personal computer

			Teacher educators	Prospective Teachers	Total

For how long	1-2years	Count%	1	11	12

do you have one?		Within cohorts	2%	22%	24%
	3-5years	Count% Within cohorts	17 34%	17 34%	34 68%
	6-10years	Count% Within cohorts	2 4%	2 4%	04 8%
Total			20	30	50

Participants were also asked what ICT tools were available for them to use in their department. Table 4 (below) provides a list of the common ICT tools that were available for them in 2013 and also reports their most used ICT tool. Absence of Scanner, the important tool used for a variety of purposes is noteworthy fact. Similarly digital camera and laptop are used by teachers but they had their own.

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Table 4 ICT tools available in schools and mostly used

ICT Tools	Available	USED TE PE		
Digital Microscope	No	1	4	10%
Multimedia/ Overhead Projector	Personal	20	3	46%
Interactive whiteboard	No	20	26	92%
TV monitor/VCR/DVD Player	No	16	0	32%
Scanner	No	0	0	0
Digital Camera	Personal	9	19	56%
Printers	yes	20	5	50%
Laptop	personal	20	28	96%

Classroom computers	yes	7	11	36%

10% teachers of both cohorts reported that they use microscope. A science teacher informed that

Institute of education has no digital microscope but whenever I needed ,I had to go with my class to departments of botany or zoology. We use it for our experiments.

Data shows that 46% teachers of both cohort use multimedia prospective teacher said

We borrow multimedia from DrAffifa for our presentations who frequently uses it during her lectures.

Whiteboards not interactive white board, computers and printers were the only available ICT tools in the Institute of Education. Educators and prospective teachers significantly used them in their teaching learning process.

96% teachers of both cohorts informed that their most used ICT tool is

Laptop. It is not provided by the department but they had their personal Laptops. Majority of the teachers from both cohort got laptops from Chief Minister in recognition of significance of technology.

Teacher educators were asked about their applications of ICT use. The following table represents results.

Table 5 Applications of ICT Use(in %)

Administration	Communication	Lesson Planning & preparation	In the classroom	Evaluation and Assessment
Writing student reports 100%	Contacting colleagues via emails 40%	Reviewing resources 60%	Using curriculum-specific software 0%	Motivating students 10%
Recording student Grade 100%	Participating in online discussion 15%	Accessing the Internet 40%	Presentations 90%	Creating interactive test/quiz 35%

Checking student progress 65%	Collaborative development of units 35%	Producing lesson materials 50%	Teacher access to Internet during lessons	Give/get immediate feedback to/from students

			0%	of exam 10%
Checking school timetable or notices 5%	Accessing the Internet for professional reading, subject association news etc. 20%	Prepare students handouts and worksheets 45%	Teacher access to projector 25%	Analysis data statistically 25%

Regarding ICT tools use for administration, 100 percent of these teachers used ICT for recording student grades, 100% percent used ICT for writing students' reports and 25% percent for checking school timetables or notices. In the second category, communication, the high use of ICT was clearly indicated in Collaborative development of units. Teachers were somewhat interested in accessing information and knowledge through the Internet (20 %). Teachers in this study were also contacting colleagues via email to increase their knowledge (40 %), as well as participating in online discussions (15 %).This research found that a high percentage of teachers use ICT for lesson planning and preparation. Teachers used ICT for student

handouts and worksheets(40 %), for producing lesson materials (50 %), for accessing the Internet (40 %) and for reviewing resources (60 %).These teachers perceived ICT tools had opened opportunities for them for the evaluation and assessment as well as contributing to student motivation. Most of the teachers who were involved in this study were trying to evaluate and assess their students using ICT . 35 % educators applied ICT tools in creating interactive content test/quiz. Around 10 percent of teachers used ICT with their students to motivate them. Only 10 percent of teachers said they gave/received immediate feedback to/from students of exam lessons, using ICT for that purpose.

Conclusions

The findings of present mix method study indicates that teacher educators and prospective teachers in Institute of education of Lahore College for Women University has great potential to integrate ICT tools in teaching learning process in spite of the fact that Institute is not fully equipped with ICT tools. It is highly encouraging situation. Institute of education is the place where future teachers are prepared. During this study it was noted that majority of teachers effectively integrate ICT in classrooms which were ill equipped. Lack of sufficient number of desktops, training, course of action

and approach to how integration should be done were reported by the participants as hurdles in the way to implement ICT.

Teachers being change agent are responsible for the successful integration and implementation of technology in education. Institutes in Pakistan like rest of the world are becoming more technology focused in the education of their students. It is recommended that teacher educators should be trained in a more organized fashion. What exactly would be the most effective means to train the teachers of tomorrow? For prospective teachers to be successful and competent, educators need to be successfully trained in technology and its uses such as software applications, how to facilitate technology into the curriculum and so on. By cultivating extensive teacher development and through administrative support and funding, technology will be even more successful in the classroom which translates into more effective learning from the students. The case study of a female institute would be helpful to analyze and judge the current situation of ICT integration in Pakistani education system .Just desire is not enough for successful integration of ICTs, it is conditional to availability and access to these technologies. Gulbahar, Y.,

& Guven, I. (2008) reported the results of their study on ICT usage and the perceptions of social studies teachers as although teachers were willing to use

ICT resources and were aware of the existing potential, they were facing problems in relation to accessibility to ICT resources and lack of in-service training opportunities.

Being a developing country, Pakistan is trying to promote acceptance amongst the end-users of ICT. Two factors are involved the human factor and the technological factor. Teachers' lack of ICT usage skills and inadequate infrastructure behind ICT has become a barrier to technology use. For this, to endorse these skills as a precondition to delivering ICT facilities is necessary. The disparity between ICT and on hand curricula and the class-time frame are reported as important barrier too in reviewing literature. Providing ICT in institutes is not adequate to bring educational change. It demands same level of modernism in other areas of education. This responsibility is shared between both policymakers and teachers if government wants to involve teachers in the process of technology integration, then barriers perceived by the teachers should be address.

Suggestions

1. Modules based on latest technology should be developed for teachers. It would be useful for successful integration of ICT into their teaching

These modules should be based on classroom research and provide brilliant teaching thoughts and behavior for developing and strengthening students' concepts, skills and meta-cognition.

2. Teachers and researchers together have to establish strategies according to learning situations and for enhancing learning processes by using the technology.

3. Today focus is on equipping institutes with hardware, software and in service training to teachers which are not enough. In-service training must follow-up support and peer instruction for ensuring effective use of the new technologies.

6. Teachers should be involved in decision making process regarding implementations of ICT innovations in institutes, so that they may entrust the innovation with confidence. .

7. Teachers should have an easy access to ICTs related to the curricular resources and pedagogies. It would endow them with beneficial knowledge for teaching 8. Resourse centre should be established at least

at district level. Refresher courses, Workshops and in-service training should be conducted to encourage sharing of experiences and knowledge.

10. The maintenance of ICTs hardware and obtain new equipment and software are also barrier for technology integration due to its high costs. Technicians should be available to assist and solve the problems..

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