# Effect of ICT Skills on the Job Satisfaction of Teacher Educators: Evidence from the Universities of the Sindh Province of Pakistan

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Received: July 17, 2017 Accepted: July 30, 2017 Online Published: August 7, 2017

doi:10.5430/ijhe.v6n4p122 URL: https://doi.org/10.5430/ijhe.v6n4p122

**Abstract**

This research paper is a reflection of the results of collected data from Teacher Educators (TEs) regarding their skills and expertise in Information and Communication Technologies (ICT). Seven themes were inductively identified and called, 7Es like as: (a). Expertise in use of windows programmes; (b). Expertise in use of security measures; (c). Expertise in use of hardware instruments; (d). Expertise in use of internet; (e). Expertise in creating accounts; (f). Expertise in installation of softwares; and (g). Expertise in use of softwares. All extracted themes reveal the utility of the study and thematic analysis.

**Keywords:** Teacher Educators (TEs), Information and Communication Technologies (ICT), Professional life, Thematic analysis, Evidence based information

## 1. Introduction

Information and Communication Technologies (ICT) are becoming popular in most of the world's societies. They have not only reached in to the lives of every person living in developed nations but also in to the lives of people in developing nations too. The difference between developed and developing nation, in regards to ICT is having a quick and slow access respectively. ICT are essential for educators, for their working knowledge of media and its influence on performance and engagement (Zhang & Martinovic, 2008). In the last 30 years, ICT has emerged as an important topic, place in the field of education. Studies are showing the importance of ICT in teaching learning process and achieving its outcomes. Many scholars with their studies have witnessed that the knowledge, conceptual understanding, problem solving, team working skills, etc. of students are important for their success (Culp, Honey & Mandinah, 2005; Zhou, Brouwer, Nocente & Martin, 2005). That is why most of the documents especially related to curriculum, state the importance and utility of ICT and encourage all stakeholders to use them efficiently and properly for maximum benefits and lifelong learning. For this purpose, teachers are to be trained to integrate ICT into their daily teaching (Batane, 2004; Jacobsen, Clifford & Friesen, 2002; Markauskaite, 2007; Mitchem, Wells & Wells, 2003; Yildirim, 2000). ICT are incorporated into educational curriculum to promote and bridge with the digital world. That's why a huge number of computers are required by different educational institutions in most of the world's countries, as the availability and exposure of computers influenced career choices and demanded for staff training, in regards to the need of teachers, students and staff (Wims & Lawler, 2007) to connect with the modern world. Because ICT is necessity of life that children enjoy to learn and use in daily life (Hepp, Hinostraza, Laval & Rehbein, 2004) as ICT unlock the doors to education while education unlocks the doors to development (UN, 2003).

### *1.1 ICT, Curriculum, Teachers and Their Competencies and Skills*

ICT are used by key persons, known as teachers and teacher educators in educational setting productively in order to get the maximum benefits for their students and integrate ICT into the curriculum and its implementation (Usun, 2009). Therefore, it can be accepted that teachers are vital players to improve the teaching and learning processes at schools, colleges, teacher education institutes and universities to achieve their goals on a large scale. The use of ICT in education is considered a vehicle to improve the existing curricula and management processes in educational organization (Makau, 1990) that affects personal skill development and economic development (Kenya Government, 2004a). The workers must learn the new skills related to ICT (Hawkins, 2002) as they become part of the main

workforce to provide potential benefits to the economy at large and earn their employment as potential candidates. ICT has the greatest potential role in pre- and in-service teacher training programs (Unwin, 2004). Furthermore, ICT can help to counter many negative factors such as high student-teacher ratios; shortage of instructional materials; poor physical infrastructure; etc. that has a strong positive impact on student achievement and classroom practices (Leach, 2003).

Teaching is becoming one of the most challenging professions **(**Perraton, Robinson & Creed, 2001**)** due to expansion of knowledge and demands to learn modern technologies to use in teaching-learning process (Robinson & Latchem, 2003). ICT can provide more flexible and effective ways or methods for the professional development of teachers to maintain their jobs (Carlson & Gadio, 2002), improve their competencies and connect them to global teacher community (Jung, 2005). ICT aims to improve the performance of teachers and students that increases the effectiveness and efficiency of the teaching-learning process. The teachers of primary, secondary and tertiary levels are being trained to use ICT in education with varying degrees and scopes in almost all countries of the Asia Pacific region (UNESCO, 2003). The importance of ICT adds value to the process of learning, assists with the organisation and management of learning institutes and cuts across all aspects of economic and social life. However, the adaptation of ICT is only possible with sound understanding of the principles and concepts therein. These developments are rapid and their implementations are to be taken into account when designing ICT curricula (UNESCO, 2002). Malaysian teachers have a high level of ICT competency and confidence that means the teachers are able to use ICT tools effectively such as using computers, preparing slides to present their lessons, searching the internet for updated information, designing simple web sites etc. and they are able to integrate these tools into their teaching process to create high levels of satisfaction toward ICT training programmes. This tool provide them with sufficient knowledge about ICT, which in its role, satisfies them and makes them more encouraged and motivated (Tasir, Abour, Halim & Harun, 2012). Furthermore, the employee data and the analysis of workplace employment relation survey (2004) shows striking differences in the levels of their overall job satisfaction among occupational groups. The detailed illustration and specification showed that the main source of bundling effect was ICT and computer professionals were on the top (Rose, 2007). Many pre-service teachers had little experience with commonly used programs but had good practice on Word software (Sheffield, 1996), while, use of ICT-related pedagogical practices demonstrated that a small percentage of teachers have adequate skills to use ICT in their daily classes (Hakkarainen, Muukonen, Lipponen, Liomaki, Rahikainen & Lehtinen, 2001). However, responsible teacher educators must prepare themselves and their students for the future, therefore ICT must be a part of the educational landscape (Murray & Kinnick, 2003), through integration of technology in educational environment at wider context and specifically in the classroom context in order to acquire positive attitudes for great success (Kosakowski, 1998). Furthermore, the level of a teacher's satisfaction toward ICT influences that teacher's competency and helps him to easily improve his capabilities of using ICT. It also increases the pleasure among teachers because students enjoy attending the ICT program and try to get help and answers for their questions (Lee, Teo, Chai, Choy, Tan & Seah, 2007; Tasir, et al., 2012). In this regard, the universities should cultivate a closer link between the industry and market to improve their chances of finding the proper balance between current technology and future directions for teachers (Hagan, 2004).

*1.2 Need of ICT Skilled Teachers for Educational Success and Future Development*

The ICT literate and expert teachers is the need of the time in all type of educational institutions for their success. As, ICT skills of teachers enhanced their teaching theoretically and practically in vocational education specifically and tertiary education generally (Khan & Markauskaite, 2017). There is a growing demand to incorporate ICT in the mainstream of teaching in vocational education (Bliuc, Casey, Bachfischer, Goodyear & Ellis, 2012; Khan 2015) to have positive effects on teaching and learning (Tamim, Bernard, Borokhovski, Abrami & Schmid, 2011), which are defined approaches as the strategies adopted by teachers for their effective teaching (Postareff & Lindblom-Yla ̈nne, 2008) and achievement of students. These approaches placed into two broad categories such as technology-focused and student-focused approach. First approach defines ICT as media for delivering information and managing teaching activities, while second approach focuses ICT as media to engage students in knowledge building (Ellis, Hughes, Weyers & Riding, 2009) process. This process consists of the maximum use of ICT in teaching across different disciplines (Lindblom-Yla ̈nne, Trigwell, Nevgi & Ashwin, 2006) in order to prepare students for professional work such as technical and social professions through active engagement (Gonza ́lez, 2012). All stakeholders in universities need to continue to focus on broad knowledge and understanding and be flexible enough to learn new technologies (Hagan, 2004). It is a basic need and requirement of newly appointed (or beginning) teachers and lecturers at schools or universities to be assisted and supported for the first three years of their profession. As such, 17% respondents focused and stressed on the communication between universities and

employers that the industry should play a vital role in course and curriculum designing, as university teachers stay in touch with what is happening in the industry and market in the sense of current methodologies (Hagan, 2004) that will lead them towards high success and future employment.

*1.3 Purpose of the Study*

The purpose of this study is to acquire a greater understanding of TEs-perception, experience, skills and attitudes to job, job satisfaction and ICT. These last two are important issues and indicators of success for the world's educational organisations that continue to grow with the passage of time. The implications of significant quality are also directly connected and lead towards the fulfilment of gaps in the available literature, exploring the ideas and factors influencing the organisational culture of teacher education institutions and the economic development in the country.

## 2. Literature Review

ICT was first introduced, in teacher education and training around the world in 1957, when the need was felt amongst the teacher education institutes in USA to improve the professional development of an in-service training programs and teacher through technology. Afterwards, in 1995, the integration of ICT in teacher preparation programs was done on the requirement of the national standards, which have been developed by the International Society for Technology in Education (ISTE) and adopted by the National Council for Accreditation of Teacher Education (NCATE). Furthermore, the ISTE recognizes that educational computing and technology foundations are essential for all teachers, and the ISTE has created the National Educational Technology Standards (NETS), which were initiated to facilitate school improvement in the United States. Then, the NETS Project worked to define standards for students, integrating curriculum technology, technology support, and standards for student assessment and evaluation of technology use. These standards are used widely in several countries and serve as the National Educational Technology Standards (NETS) for the United States of America (Altun, 2007). In USA, those standards are based on four major competencies of teachers, like Pre-requisite Technical Skills, Technical Skills, Instructional Uses, and Teachers' Professional Roles (Moore, Knuth, Borse, & Mitchell, 1999). After the USA, UK's pre-service teacher training program was shifted to the ICT paradigm and found on a competency-based model focusing on core skills (Denning & Selinger, 1999) and the courses of ICT were made compulsory and integrated with other subjects in Belgium and Norway too (Eurydice, 2001). But the ICT trainings are often general and depend on an organisation's contents of subjects and time to be allocated and devoted to it (Balcon, 2003), especially the structure, delivery and the time allocation, which are the prime areas connected with an individual institution's decision (UNESCO, 2005). In this connection, the official recommendations for the use of ICT for participation of future teachers have been made in many countries in Europe, like Belgium, Denmark, France, Netherlands, Austria, Finland, United Kingdom, Latvia and Slovakia. In Germany, Italy and Bulgaria the ICT are made up of core curriculum options in teacher training programs (Eurydice, 2004). In Japan, ICT are included in pre-service and in-service teacher training programs in order to increase the importance of the Educational Media at bachelor's course to carry out teaching-learning process through learning by doing methods in order to create effective communication between teachers and learners. Students' acquire theory and practice through verbal, non-verbal and the proper utilization of media (Hayashi, 2003).

*2.1 ICT in Different Companies and Organisations*

All companies and organisations have a need for computer-literate personnel at all levels to manage their day-to-day activities (Zhao & Alexander, 2002) in order to meet their needs and demands. In this connection, the Federal Government and Ford Motors Company invest in expensive training and grant programs of ICT (Brown, 2000; McManus, 2000). The positive relationship between a teacher's confidence level and satisfaction toward ICT training programmes was found from the study conducted on Malaysian teachers (Tasir, et al, 2012). Their vigorous expansion has been enjoyed by ICT for more than 50 years, and employment has appeared to be secure, interesting, career progressing and full of opportunities (Rose, 2005c, 2005d). That is why some rewards in teaching have improved in the last couple of years. Teaching professionals are now close to the top of the UK job satisfaction league (Rose, 2007). The prospective teachers developed their ICT skills throughout the learning process, supported by problem-based learning (PBL) were actively involved in the learning process and solved real problems. The role of ICT was recognized automatically as a method of learning (Gulsecen & Kubat, 2006). The teacher also has a central role in the implementation of change in educational process through the integration of ICT into the teaching-learning process. That change depends on the thinking of teachers, for this the International Society for Technology in Education (ISTE) presented the standards for ICT teacher competencies through its National Educational Technology Standards (NETS) project to direct, improve and enhance the teaching practices in USA

(ISTE, 2004). The minimum standards, related to the use of ICT in education, have been published by the departments of education in Australia (Martin, 2001). The Teacher Training Agency (TTA) in the UK has developed specific skills tests, related to ICT, to recommend the best teacher for the award of Qualified Teacher Status (QTS), on the basis of ICT skills, and the Institute for Information Technologies in Education (IITE). UNESCO presents a list of international standards for ICT-competencies of teachers (Knierzinger, Rosvik & Schmidt, 2002).

### *2.2 ICT in Teacher Education*

As per the World Bank Report, the ICT in teacher education was identified as a key issue especially in preparation for inspiring teachers. ICT is at the first zenith for those who prepare educators for the effective use of ICT (Kirschner & Woperies, 2003). So, it is observed and concluded from the recent studies that Germany, USA, UK, Japan, Turkey and many other countries have recognized the need and the future of ICT - that's why they are developing strategies and models to integrate ICT into their education and teacher education systems (Usun, 2009). Now, they are much more concerned with the utilization of hardware and software to support their teaching-learning process through the support of skilled teachers and building ICT infrastructure in schools first and then teacher education institutions (Altun, 2007). ICT must be used to meet the educational objectives of lessons and programs, and the teachers and teacher educators must be engaged and wired, as the members of same community with provision of a role model of good ICT practices, learn to share and build knowledge, understand the implication of the ICT and discuss its impact on society for self and teacher satisfaction, too. Because, as long as teachers are trained well, computers can create a better teaching and learning atmosphere at the institutions (Akkoyunlu & Orhan, 2001).

The best practices in the field of ICT in teacher education are in six different developed countries: Australia, Canada, Finland, Netherlands, Northern Ireland, and USA are all found as the critical knowledge and skills that are included and considered as pedagogic benchmarks for future ICT teacher education (Kirschner & Davies, 2003). Furthermore, it can be said that the specific context and culture of the teachers and their institutes also affect the learning of ICT a lot. The individual accountability, evaluation, career development and formal qualifications of the teachers also play a vital role in enhancing the ICT skills that can create and maintain the link between ICT, the curriculum, teachers' needs and professional development within a planned policies framework (Morel & Filliol, 1996). There are even a few schools in Northern Ireland and England that adhere to ICT policies (Selinger & Austin, 2003), but there is an urgent need to link ICT strategies to the growth of educational institutions and communities, which requires the development of specific policies (Niemi, 2000; 2003). After analyzing 18 international teacher education case studies, it has been concluded that an alarming number means most of the half educational institutions pay no attention to the critical step in their policy implementation (Kirschner & Woperies, 2003). That is why very specific focus role of principal towards the planning, development and management of ICT was described in the governmental ICT policy paper of Ireland (Irish Department of Education and Science, 2003).

## 3. Research Methods

### *3.1 Methodology, Philosophical Assumptions and Research Questions*

The study followed by qualitative design that was depending on philosophical assumptions, epistemologies and ontologies (Crotty, 1998), underpinned by the interpretivism that ontological relativism, i.e., reality is multiple, created and mind-dependent, and epistemological constructionism, i.e., knowledge is constructed and subjective (Creswell, 2009). The ethical approval and letters were gained for data collection from the office of Dean, Philosophical faculty, university of Eastern Finland, Joensuu. The data was collected from TEs through semi-structure interview with taking the consent of TEs at their departments, institutes and faculties of education at the universities of the province of Sindh, Pakistan.

### *3.2 Research Questions*

For this study, four research questions were constructed: (a). What are the perceptions of TEs about ICT and its use in education? (b). What are the level of knowledge and skills of TEs in ICT? (c). What is the relationship between knowledge, skills of ICT and job requirement? (d). How the knowledge and skills of ICT effect on the JS of TEs?

### *3.3 Participants*

Participants were recruited, and the sample was created through the sample of friends of the friends as to collect in-depth, true and real data in order to increase the utility of the study. For this qualitative data, the snowball and purposive sampling techniques were used to select the sample (n = 40) of teacher educators. There were total 06 professors (01 – male and 05 – female), 01 male associate professor, 19 assistant professors (08 – male and 11 – female) and 14 were lecturers (09 – male and 05 – female). The age of the participant's group was from 28 to 58

years, with the mean average of 45 years. For this purpose, the friends were requested for participation in interview and suggested their friends from any other department, too, after having their consent for participation. The collected data were analyzed and categorized by content analysis, the qualitative techniques. The data and identity of all participants and their interviews were kept highly confidential and protected. The nature of content studies is connected with both epistemological and methodological (Shaw & Gould, 2001), as the qualitative research is better suited to delineate the personal meanings of the verbal sentences and experiences of the participants without losing the richness and genuineness of the responses (Flick, 1998; Strauss & Corbin, 1998).

An interactive process between the researcher and the participants was intended with the participants' words and observable behaviour to be used as the primary data (Marshall & Rossman, 1999). Through the process of elicitation and interpretation of verbal sentences, expressions and behaviours, the perception of male and female TEs were investigated deeply. In employing these assumptions, the authors aimed to explore, explain and describe the similarities and differences among male and female TEs' ideas, understanding and feelings towards perception, importance, expertise and skills of ICT and its impact on their job satisfaction.

### *3.4 Procedure of Data Collection*

Data collection was started from TEs as per their consent, as they were reluctant for audio recording, so the themes and important sentences were recorded on papers of interview protocols during their interview. After every interview, the important observations were recorded in detail on the last pages given in the same interview protocol pro forma, as well as the transcription. The main aim of the conducting the in-depth, semi-structured interviews was to explore the level of expertise and skills of ICT and its impact on the job satisfaction of TEs. The consent form, contents, questions and interview guide were developed, reviewed and piloted. As it is said that content analysis of structured interview is easy to analyse and is fairly objective (Hitchcock & Hughes, 1989), the average duration of the interview was 40 minutes.

### *3.5 Data analysis and Validity*

An inductive thematic analysis was conducted on transcripts using a six-phase procedure (Braun & Clarke, 2006). All phases were performed well and finally, the identified potential themes and relevant data were merged, and all transcripts, themes and data were reviewed, refined and combined into larger themes. For validity, the study was guided by a relativist approach, which means the criteria for judging the quality of qualitative research can be drawn from an ongoing list of the characterizing traits (Sparkes & Smith, 2009, 2014), such as: topic's worthiness, the significance and contribution of work, rich rigor, appropriate and purposeful sample selection, data generation for meaningful and significant claims, coherence of research in terms of the purpose, methods and its results (Tracy, 2010).

## 4. Results

The perception of the majority (85%) of TEs was found to be very clear about ICT and its role in their job and job satisfaction. They described ICT as the expert use of computer and stated that its related instruments, like softwares and hardwares, were needed in daily professional life in the field of education at any classroom in any institution. TEs know the importance of computers, and their related applications have a pivotal role in their job, as teaching, training and research are their main duties and responsibilities of their profession. They said that, in this modern era of 21$^{st}$ century, no university teacher could survive without having knowledge and skills in ICT, whether in developed and developing countries. Due to the use of ICT, many updated electronic resources are available in the universities; those are found very helpful at every stage of teaching and training, generally, and authentic for academic research, specifically.

The level of knowledge and skills of TEs in ICT is divided into four levels as per merged and modified into six levels of ICT literacy assessment criteria of the national assessment program (NAP), as follows: customized, altered, aliened, compared, matched and assembled. These are added with findings of the study revealed from the data and its analysis such as: (i). very high level of competency (ii). high level of competency (iii). moderate level of competency and (iv). low level of competency. The (15%) TEs were found with very high level of competency, while (22.5%) TEs had a high level of competency, (32.5%) TEs had a moderate level of competency and (30%) TEs had a low level of competency in ICT. The majority of assistant professor and lecturer TEs were found with very high and high level of ICT competencies, while the majority of professors and associate professors were found with moderate and low levels of ICT competencies. The majority of TEs of small and newly established universities were found with very high and high level of competencies, while the majority TEs of large universities was found with moderate and low levels of ICT competencies. The majority of male TEs were found with very high and high levels of ICT

competencies, while majority of female TEs were found with moderate and low level of ICT competencies. The following Themes were identified from the interviews of TEs and are settle down into broader themes, as follows:

*4.1 Expertise in Use of Windows Programmes (MS Office, Power Point, Excel, etc.)*

The majority (77.5%) TEs were found to be satisfied with their ICT competencies in using Ms Office (Word), making PowerPoint and using Excel, as per their need required in their professional lives. TEs use Office and PowerPoint in their daily professional and personal lives as per their need because all assignments and work are done in an office and class presentations in PowerPoint. Excel is used rarely in their professional lives.

Table 1. Following statements are extracted from the interviews of TEs:

| Expertise | Statements of participants |
|---|---|
| **MS Office** | MS Office is the key need of every person to do his or her professional assignments. We cannot survive without it in our profession because we type everything in it to send to concerned stakeholders. We also write our notes, assignments, articles, theses, and many more things in MS Office. Therefore, it can be said that Office works in the professional lives of TEs like a blood circulates in the body. (Interview 3) |
| **Power point** | PowerPoint is a very important tool to share knowledge and information in classrooms with our student teachers. It provides the colorful, live and active life in classroom, full with attraction, attention, and sharing of ideas. It is the best tool to acquire the full attention of the audience. Because everyone likes colors and colorful life - that's why colors have much more importance in human life. (Interview 35) |
| **Excel** | Excel is used rarely because it is needed very rarely during teaching-learning process. It is needed when some tables are to be converted into diagrams and charts. It is directly linked with many works of administration when they compile data and some different types of information. (Interview 39) |

*4.2 Expertise in Use of Security Measures (Keeping Passwords on Computers/Laptops, External Hard Drives, Programs, Folders, etc.)*

The majority (65%) TEs were found to be satisfied with their ICT competencies in using computers and having security measures. They keep passwords on their desktops, laptops, hard drives, etc. to protect their data from leakage because most of their data consists of their research work, teaching, personal bio data and office documents.

Table 2. Following statements are extracted from the interviews of TEs:

| Expertise | Statements of participants |
|---|---|
| **Security measures and passwords** | Keeping security measures are essential for professional life. We keep passwords on our computers, laptops, external drives or hard drives, programs, folders, etc. (Interview 2) |
| | We keep securities where we want and want to keep our things secure so they can be saved from every type of leakage of documents. (Interview 18) |

*4.3 Expertise in Use of Hardware Instruments* (Using Printers, Multimedia, Scanners, Digital Cameras, etc.)

The majority (52.5%) TEs were found to be satisfied with their ICT competencies in using computers and hardware instruments. They use printers on a daily basis to take prints from the printers and Photostat machines for their selves: for lectures, meetings and sometimes for their student-teachers (prospective students). They use multimedia in their classes and in meetings, too, as per their need to present their topic (that is also dependent on the nature of the topic). Scanners are also used to scan personal and official documents. Most of the time TEs scan few papers from any book or document related to their subjects and send them to their student-teachers in advance, for the related material of their upcoming classes. Digital cameras are also used by them to take photographs and make movies or short video clips of different curricular and co-curricular activities inside and outside of the class. Most of the time cameras are used to record different practicum activities of the student-teachers and use them at the time of annual or final semester assessment and evaluation. The same recorded practicum activities are also used as resources for student-teachers of coming batches.

Table 3. Following statements are extracted from the interviews of TEs:

| Expertise | Statements of participants |
|---|---|
| **Use of Printers** | Printers are of very much importance in the daily life of TEs. Most of the time, we use them on a daily basis for printing notes, presentations, pictures and other many things, as per our need related to the topic of teaching and assignment. (Interview 28) |
| **Use of Multimedia** | Multimedia is used when we show PowerPoint presentations, movies, video lecture and inspirational video clips. However, the activities are to be done as per planning of the course, the need of the student teachers and the availability of material with TEs. (Interview 16) |
| **Use of Scanners** | Scanners are very much helpful to make copies of different documents, especially some pages or chapters of books to send to students through email or upload on LMS and CMS. (Interview 30) |
| **Use of Digital cameras** | Digital cameras are used during presentations, trainings, micro teaching activities, and practicum activities to record the lectures of the different experts and student teachers. Good recordings of lessons delivered during practicum in classrooms are to be used and shared with new student teachers, as they learn through these videos and get inspiration. (Interview 1) |

*4.4 Expertise in Use of Internet (Searching, Downloading, Uploading, etc.)*

The majority (80%) TEs were found to be satisfied with their ICT competencies in using the internet to search, download, upload, etc. Most of the time, the TEs use the internet for checking their email accounts, searching materials on different topics related to the subjects and research topics they teach in different classes and doing research in their different degrees, like doctorate and masters. They also download motivational, informative and lecture videos related to their topics to show their student-teachers in their related classes. Additionally, they use it to download book material, lecture material, research papers, research reports, magazine material and much more, as per their need. They also upload the attendance, marks of mid- and final-term examinations to their given websites of their institutes and universities.

Table 4. Following statements are extracted from the interviews of TEs:

| Expertise | Statements of participants |
|---|---|
| **Internet Searching** | Searching on the internet is an all-time activity that enhances, increases and strengthens the knowledge, material development and resource availability to every TE. Most of the time, we search the needed items for preparation of coming topics, check emails, chat with friends, etc. (Interview 17) |
| **Downloading** | We download the required items, print them, read them and use them to understand the information to increase the knowledge. (Interview 30) |
| **Uploading** | We upload the materials, instructions and results on LMS and CMS. (Interview 4) |

*4.5 Expertise in Creating Accounts (Email, Face Book, Skype, Academia, LinkedIn, etc.)*

The majority (67.5%) TEs were found to be satisfied with their ICT competencies in creating different online accounts to connect with the scholars, researchers, field experts and other related people to education, teacher education, pedagogy, educational leadership and management, etc. These TEs have different accounts, like emails on Gmail, yahoo, and Hotmail. They also use Skype, Face book, Academia, LinkedIn, Research Gate, Google Scholar, Twitter (on their computer in their daily professional life); and Viber, WhatsApp, Face book Messenger, etc. on their mobiles or cell phones, too. They further said that most of the tools are used to download related books and material for their lecture preparation, research papers and research reports for using in doing their research studies, magazine material and much more, as per their professional need. They also used these tools to connect online with their parents, relatives, colleagues and friends.

Table 5. Following statements are extracted from the interviews of TEs:

| Expertise | Statements of participants |
|---|---|
| **Creating different accounts** | We have good experience of creating email accounts on Google, like Gmail, Yahoo, Hotmail, Face book, Skype, Academia, etc. (Interview 34) |
| **Use of accounts for official purpose** | Because it is a need to connect with officials, higher authorities, heads, colleagues, students, friends, family and the rest of the world. (Interview 38) |
| **Use of accounts for teaching and research purpose** | These accounts also help to connect with other researchers throughout the world, especially to those who are very active and cover the authoritative place in their fields. (Interview 31) |

*4.6 Expertise in Installation of Softwares (Installations of Windows, and Other Important Softwares)*

Only (17.5%) TEs were found satisfied with their ICT competencies in installations of different softwares on their computers. Sometimes, they also help their friends and colleagues to install some software on their computers, too. Most of the softwares they used they installed themselves, but sometimes, when they have any difficulties, they get help from Information Technology (IT) expert available in the university. However, the majority of TEs have no knowledge, exposure and experience to install any software, except for the installation of windows.

Table 6. Following statements are extracted from the interviews of TEs:

| Expertise | Statements of participants |
|---|---|
| **Installation of windows** | Installation of Windows is easy as compared to other softwares. (Interview 25) |
| **Installation of softwares** | We do install windows all of the time but very rarely tried to install the other softwares. (Interview 8) |
| **Knowledge and expertise** | Remained unsuccessful to install, due to having less knowledge and no expertise. (Interview 13) |
| **Training and experience** | No training course attended and no exposure or experience of working with the softwares and computer experts. (Interview 15) |

*4.7 Expertise in Use of Softwares (SPSS, NVIVO, ENDNOTE, MENDELEY, REDCAPE, AMOS, ATLAS, etc.)*

The only (10%) TEs were found satisfied with their ICT competencies in use of softwares like SPSS, NVIVO, ENDNOTE, MENDELEY, REDCAPE, AMOS, ATLAS, etc., on daily basis in their research work and reports writing. Very few know these all softwares, but some ratio of TEs knows how to use SPSS for the analysis of their data and research work. The majority of TEs used to get help from their friends or hire (IT) expert in SPSS to analyse their research data in their professional lives.

Table 7. Following statements are extracted from the interviews of TEs:

| Expertise | Statements of participants |
|---|---|
| **Importance and scope of softwares** | Softwares are very much important for research work that helps to save time, energies and improves the credibility, authenticity, validity and transparency of research. (Interview 29) |
| **Usage of software on regular basis** | Unfortunately, we know and have an expertise hardly in two softwares to use, like SPSS and AMOS. (Interview 22) |

## 5. Discussion

The majority (53%) of the TEs were found satisfied with having knowledge, skills and expertise in ICT, as the teacher's competency, confidence level and satisfaction toward ICT are correlated among each other. Teaching professionals with highest score among professionals took highest rankings among all occupational groups. ICT professionals who said they were either very satisfied or satisfied with each of the eight job facets mentioned are shown as teaching professionals. ICT professionals reported a much lower level of work-related pressure than normal teachers (Rose, 2007). Furthermore, like the Malaysian teachers have a high level of competency in using ICT tools, such as computer, internet, designing home pages, projectors, etc., they also integrate these tools and knowledge into their teaching process. The research findings also indicate that teachers' satisfaction toward ICT is a very important factor that increases the levels of competency and confidence (Tasir, et al., 2012).

The majority (53%) of TEs were found satisfied to use ICT in their daily lives and show their knowledge and interest in technology that support Altun's study; as said, the majority of the teachers are at the early stages of technology adoption and pedagogical integration of ICT, even though there was an improvement in the use of technology, in general, (Altun, 2002). While the World Bank supported project for Globalization in Education 2000, a very important step began for the Turkish Educational System, with the aim to use ICT at each level of the education system in order to create a society with adapted information and technology standards (Akkoyunlu & Orhan, 2001). The teachers, having high confidence levels, will be satisfied, motivated and encouraged to improve their competencies of using ICT to solve technological problems faced by them during their job assignments. The results of the study support the research findings of Becker, William and Tasir (Becker & Riel, 2000; Tasir, et al., 2012).

Out of these 53% TEs, only 20% are able to use ICT frequently, confidently and successfully in their classrooms for teaching in their daily professional lives; they keep in consideration and do planning in advance to use ICT instruments, like multimedia, etc. In this regard, the TEs keep and plan in advance to check and ensure that all facilities are available and working well, especially the use of projector: Is the projector on its proper operation? Does practice of setting up the equipment till the mastery? Set everything in well advance; check the life of projector bulb; bring a spare bulb; check the color combination of your presentation; and check the font size, as proper text size for distance or the farthest viewer (Laskowski, 1997). Furthermore, these 20% TEs use ICT on a daily basis in their day to day routines and classes, frequently with expertise only to get maximum benefit and to learn effectively for their student-teachers also minimize their burden of workload that increase their efficiency, saves time and also gives them happiness through the inspiration they get from their work through feedback of student-teachers. They use PowerPoint presentations, video clips, lectures of renowned scholars and movies in their classes, as per the needs and requirement of the level of their students and topic they taught. ICT has a pervasive role and presence in educational milieu to shape all aspects of our lives. It is believed that teachers are key agents to bring any change in educational system, through the incorporation of ICT skills and knowledge, as there is no choice except the adaptation of ICT to bring radical reforms to meet the challenges of globalization and the knowledge-based economy in the world (Abuhmaid, 2011).

The use of ICT can improve the quality of teaching and learning in any tertiary institution, as its rapid development has transformed human society from ICT age to the knowledge age (Galbreath, 2000). In fact, ICT has become a natural part of man's daily life, especially its use in education by teachers. However, teachers need to become comfortable with using ICT, as they ensure to accomplish their everyday task. In this regards, proper training will be found supportive to motivate and create trust among teachers to use ICT. Further, it is said that the trust of teachers also increases the motivation and willpower to learn the sufficient knowledge about ICT; when teachers believe that ICT training programmes meet their needs and are of high quality, that will enable them to conduct their teaching processes effectively and without any fear or anxiety (Tasir, et al., 2012). Then, there will be consistency between teacher-training programs, their outcomes, and trained teachers to do use of ICT in their courses. Because, ICT awareness and experience can be used, too, in practical teaching or professional life after training (Lemke, 2003). The practising teachers' uptake that the ICT that influence their decisions to use ICT in their classroom: access to resources like quality of software and hardware, ease of use, incentives to change, support and collegiality in their school, school and national polices, commitment to professional learning, computer training background, teachers' beliefs about teaching and learning with ICT and its integration (Mumtaz, 2000), as teachers believed that the proper use of ICT helped them to reduce the workload and make them more productive. The great access to ICT facilities at home, school and department increase the daily use of ICT in professional life but also increases confidence (Selwood & Pilkington, 2005) to lead them towards work satisfaction.

## 6. Conclusion

It is concluded that 53% TEs were found to be with good ICT competencies and skills, but it is a matter of regret that only 20% TEs use ICT efficiently on a daily basis; but the other TEs were not able to incorporate ICT into their teachings. The TEs of newly establish or small universities were found having good ICT skills because they have appointment conditions with every staff member to have good computer literacy to apply for job. Thus, it is suggested to induct the new faculty with the competencies of using ICT and integrate them in their instructions (Moursund & Bielefeldt, 1999). Because, newly inducted teachers retain more, record higher students' achievement and test scores, higher quality teaching with increased teacher effectiveness, maintain purposeful and positive learning environments, stronger classroom management skills, ability to deal with behaviour and discipline problems more effectively, have increased job satisfaction, lower stress, anxiety and frustration (Brewster & Railsback, 2001).

The majority of the 20% TEs who use ICT efficiently on a daily basis were also found good in their research activities and having master's and doctorate degrees, too. It is concluded that research is a systematic attempt to find out the proper solution of the problem or any question- the process of describing, predicting and controlling the events (WAIER, 1991). That is why, it is said that no field of research will be left untouched by the potentials of ICT, like science touched theory and experiment, but ICT has touched computer simulation, which is linked with the first two components of research (Colwell, 2000). The value of ICT is very much important in research and its process; like in research design, its implementation in experimental and descriptive studies, statistical analysis, data production and storage and dissemination of research information like e-books, e-journal, websites, digital video, audio, software simulation, interactive softwares, etc. to bring dynamism in describing the method of reporting the results (Middleton, 2000).

As it has already discussed that no proper and authentic ICT training system was found in all universities of the province, but few universities and degree-awarding institutes have requirement of basic knowledge of ICT at the time of selection and recruitment of the faculty. The responses of teachers indicate the significant impact of ICT training on their personal attitudes and skills. However, it was more stressed that the trainings should be very much relevant to the needs of teachers and related to the context of classroom practices that also affect the overall system of educational organization, such as the access to resources, curriculum, time and environment (Karagiorgi & Charalambous, 2006). ICT trainings are to be designed for TEs to support the evolution of their classroom, school, region and trainers, too (Davis, Preston & Sahin, 2009). In this regard, the applied research addressed the issues of development of appropriate content, effective methods of training for TEs, use of cognitive technologies in teaching, identification of the strengths and limitations of several cognitive tools for different learning situations and the factors affecting implementation of ICT innovation in education (Orhun, 2003). The perceived ability, resources available in ICT and use in teaching is considered to make lessons more interesting and enjoyable for student motivation and teacher satisfaction with ICT (Cox, Cox & Preston, 1999). Because low levels of job satisfaction of teachers is closely related to high workloads, it is being affected by a web of accountability, (Hargreaves, 2002), contributing to low morale that signalled the effect of the de-skilling of teachers and the removal of their professional autonomy (Hargreaves, 1994; Campbell & Neill, 1994).

**Acknowledgements**

We are highly thankful to all teacher educators and the heads of the departments of teacher education of the universities of Sindh province of Pakistan for their active participation in this study.

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