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SUMERA IRUM*
DR. PARVEEN MUNSHI**

APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICTS) IN TEACHING AND LEARNING AT TEACHER TRAINING INSTITUTIONS

Abstract

Twenty first century is the century of technology; and it is being used in every sphere of life including education. For spreading technological knowledge many developed countries of the world have introduced technology in their whole educational system and those countries are now reaping the fruits of technology integration. The purpose of this study was to evaluate the competencies and frequencies of use of MS-Office and Internet, in teaching learning process by the prospective teachers and Teacher Educators, of GECEs in Sindh Pakistan. The research design was descriptive survey. Data was collected through closed-ended questionnaires from teacher educators and prospective teachers. Data was analyzed through percentages. Findings of the study showed that teacher educators and prospective teachers had admitted that they had good knowledge of MS-Word and MS-PowerPoint, but use of MS-Word, MS-PowerPoint was not very frequent, MS-Access and MS-Excel were most negligible software, no one used them. However,, Internet was being used on regular basis mostly by prospective teachers. It was recommended that administration should ensure that before joining the class every prospective teacher should have sufficient knowledge of these tools, and teachers should be bound to use those softwares in the class. In this way they may merge these software in teaching learning process. From facilities point of view situation is better in GECEs and majority f GECES had

* *Assistant Professor, Faculty of Education University of Sindh, Hyderabad*
** *Professor & Dean, Faculty of Education University of Sindh, Hyderabad*

good infrastructure, and facilities. But the only deficiency was the proper use.

Key terms:
M-learning, effectiveness, Perceptions, quality education, teacher educators.

Introduction

Ours is the era of digital technology. Information and Communication Technology (ICT) is not only an essential part of our daily life, but may also enhance education at standards. ICT integration is therefore, playing a vital part in the professional development of teachers around the globe and introduction of ICT in teacher training programs has resulted in enhancing the quality of education. Due to this importance, all institutions of the world are introducing ICT in their teaching-learning process, and also introducing technology literacy courses as compulsory subjects, successful integration required knowledge of the subject along pedagogical knowledge, so that the prospective teachers can integrate it properly. For this proper training is required for their professional development.

The use of ICT as a learning tool provides opportunities to the students to extend their learning in other subjects in the curriculum. Introducing ICT in education has enormous advantages; with the help of ICT everyone can get education everywhere, ICT can help students to get 21st century skills. Students acquire higher order thinking skill; boost independent learning, create problem-solving skills, collaborative learning, cooperative learning and the last but not the least simulation, (make the complex learning experience easier to understand). Many universities of the world are using ICT's in their teaching learning process. Developed countries have introduced technology-based curriculum by replacing traditional curriculum

in their teacher education institutions where full support is provided to teacher educators to integrate technology into their everyday teaching practices and therefore they are able to produce better task force that uses ICT tools effectively in their teaching learning process. (Bhasin,2013; Choudhary, 2013; &Patail, 2013).

But due to the awareness of the importance of using ICT in education and admitting the positive impact of using ICT on students' achievement in the use of ICT is also gaining popularity in the developing world. Many research studies show the no existent use of ICT in education, Pakistan is also not far behind in this race of becoming technology sufficient in the region. The government of Pakistan has taken many initiatives in incorporating technology in the system. After the establishment of Higher Education Commission, the government has allocated billions of rupees to the flourishing IT sector, and very high priority is being given to it. Dr Atta-ur-Rehman announced IT policy in the year (2000) and IT Action plan was developed." For the implementation of this plan National Information and Communication Technology (NICT) strategy was built up in 2003 to improve the quality of education in Pakistan through the integration of modern technology at all levels of education including teacher education programs with the purpose that ICT will help to enhance the quality of teaching Learning.

The pivotal role of Teachers Training Institutions are to trained the best professional Teachers so that they can serve the nation best, ultimately the quality of Teacher Training Institutions' depends on competences and skills of teachers' educators. "Otherwise the teachers will outdated in the coming future and this is the main cause of decline in the quality of teacher education" (Polly, 2010). In the National Educational Policy (2009) of Pakistan, it is clearly stated that "ICTs shall be utilized to strengthen the quality of teaching and educational management."

Due to poor professional competence of teachers, the whole policy has failed to produce task force that can contribute in the Scio-economic conditions of the country.

The best way to encourage teachers to use ICT in the classroom was to increase the level of competency. Teacher education programs have struggled with selecting and implementing the most effective strategies on how to prepare pre-service teachers to integrate technology in their future lessons (Goktas, 2008). Most curriculum documents state the importance of ICT and encourage school teachers to use them. However, teachers need to be specifically trained in order to integrate ICT in their teaching (Markauskaite, 2006). Therefore there is a need that competencies of teacher educators and prospective teachers should be identified and enhanced.

Statement of the Problem

There are many research studies conducted on the use of ICT in teacher training institutions, both nationally and internationally but still many issues need to be explored and discussed. Specially, in Government Elementary Colleges of Education in Sindh. In current curriculum of ADE, very much emphasis is given to ICT and ICT integration in education, for the proper implementation of that curriculum, teacher educators and prospective teachers have been facing many problems, issues and challenges. So the current topic entitles "Application of ICT in Teaching Learning Process of Government Elementary Colleges of Education in Sindh" was selected to explore the competence and frequencies of use of Ms.Office by the Prospective Teachers and Teacher educators, in Government Elementary Colleges of Educations, affiliated with university of Sindh, in the Province of Sindh, Pakistan.

Objectives of the Study

The objectives of the study were:

i. To assess the level of competency in usage of ICT in teaching learning process by teacher educators and prospective teachers
ii. To assess the frequency of usage of ICT in teaching learning process by teacher educators and prospective teachers.
iii. To suggest measures for effective use of ICT technology in teaching learning process in GECEs.

Research Questions

i. What are the level of competencies of teacher educators and prospective teachers about the use of ICT in teaching learning process?
ii. What is the frequency level usage of ICT in teaching learning process by teacher educators and prospective teachers?

Delimitation of the Study

This study was limited to the teacher educators and prospective teachers of Government Elementary colleges of Education (Men/Women) affiliated with university of Sindh.

Method

It was survey type of study, form of descriptive research. Quantitative research design was adopted. With the help of literature, questionnaire was developed for assessing the actual use of ICT in Teaching Learning Process, especially, the level of

competencies and frequencies of usage of MS-Office & Internet. The questionnaire contained twelve (12) statements;

Section-I of the questionnaire, contained six statements covering competencies of using MS-Word, MS-Excel, MS-PowerPoint, MS-Access and Internet, this required teacher educators and prospective teachers to rate themselves on the rating scale ranging from v. good, good, normal, low competency and no competency. Section No. II, of the questionnaire was comprised of six statements covering frequency of using these software on a rating scale ranging from very regularly, regularly, occasionally, rarely, never. Reliability of the questionnaire was calculated through Cronbach coefficient alpha that came out to be 0.85 and validity was determined through expert panel. The questionnaire was pilot tested. After piloting revised questionnaire was administered personally. Data analysis was done through frequencies and percentages.

Population

Population of the study comprised of total number of male, female and co-education Government Elementary Colleges of Education in the Sindh province, affiliated with the University of Sindh, Jamshoro, their teacher educators and prospective teachers.

Table. No. 1 Population of the Study

Names	Colleges	Teacher Educators	Prospective Teachers
GECES (Man)	5	125	309
GECES (Women)	5	41	208
GECES(Co-Education)	2	10	103
Total	**12**	**176**	**620**

Source: http://www.bcews.gos.pk/ (official website Bureau of Curriculum and Extensions Wing Sindh Hyderabad @ Jamshoro)

Sample

For sampling, random sampling technique was used to select the sample from the population. 75% teacher educators and 50% prospective teachers were selected for the study.

Table No. 2 Sample of Study

Names	Number of Teacher Educators (75%)	Number of Prospective Teachers (50%)
GECES (Man)	83	154
GECES (Woman)	26	104
GECES(Co-Education)	7	51
Total	**116**	**310**

Data Analysis

Objective 1: To assess the level of competency in usage of ICT in teaching learning process by teacher educators and prospective teachers.

Objective 1 covered the statements from 1-6.

Table No. 3

S. No	Objective 1	Level of expertise			
		Teacher		student	
		High	Low	High	Low
3.1.	Word processing software(MS. Word)	45.69%	3.45%	30.97%	7.10%
3.2.	Spreadsheet software(MS. Excel)	34.48%	12.07%	29.68%	13.85%
3.3.	Presentation software(MS. Power Point)	33.62%	8.62%	27.42%	10.00%
3.4.	Database software(MS. Access)	40.52%	11.21%	32.26%	11.29%
3.5.	Email. Create an account, send and receive emails.	30.17%	10.34%	32.26%	7.10%
3.6.	Internet for searching or downloading.	29.31%	10.34%	54.84%	6.45%

Table No.3.1, shows that the most of the teacher educators (34.48%) and prospective teachers (29.68%) rate themselves good in using MS-Word whereas (3.45%) teacher educators and (7.10%) prospective teachers viewed that they never use MS-Word. Hence it is concluded that both teacher educators and prospective teachers have same competency in using MS-Word.

Table No. 3.2, shows that the majority of the teacher educators (34.48%) had opinion that they possessed normal skills of MS-Excel and prospective teachers (29.68%) rate themselves having low competency of using MS-Excel. whereas (12.07%) teacher educators and (13.85%) prospective teachers viewed that they never use MS-Excel. Hence it is concluded that both teacher educators and prospective teachers have different skills of using MS-Excel.

Table No. 3.3, shows that majority of teacher educators (33.62%) and prospective teachers (27.42%) rate themselves good in using MS-PowerPoint, whereas (8.62%) teacher educators and (10%) prospective teachers viewed that they never use MS-PowerPoint. Hence it is concluded that both teacher educators and prospective teachers have same competency in using MS-PowerPoint.

Table No. 3.4, shows that majority of teacher educators (40.52%) and prospective teachers (32.26%) they did not have skill of operating MS-Access. whereas (11.21%) teacher educators and (11.29%) prospective teachers viewed that they can use MS-Access. Hence it is concluded that both teacher educators and prospective teachers have no competencies to use MS-Access.

Table No. 3.5, shows that majority of teacher educators (30.17%) and prospective teachers (32.26%) possessed good skill of sending and receiving E-mail. whereas (10.34%) teacher educators and (07.10%) prospective teachers viewed that they did not have skill

to send and receive E-mail. Hence it is concluded that both teacher educators and prospective teachers have same competency in using Internet for communication through mail.

Table No. 3.6, shows that most of the teacher educators (29.31%) and prospective teachers (54.84%) possess good skill of browsing. whereas (10.34%) teacher educators and (06.45%) prospective teachers viewed that they did not have skill to browse internet for searching relevant material. Hence it is concluded that both teacher educators and prospective teachers have same competency in using Internet for searching and downloading.

Objective 2: To assess the frequency in usage of ICT in teaching learning process by teacher educators and prospective teachers.

Table No. 4 (frequencies of use)

S. No	Objective 2	Frequencies of use			
		Teacher		Prospective	
		high	low	High	Low
4.1.	Word processing software(MS. Word)	42.24%	2.59%	30.97	6.45
4.2.	Spreadsheet software(MS. Excel)	35.34%	11.21%	29.03%	9.68%
4.3.	Presentation software(MS. Power Point)	28.45%	8.62%	28.06%	9.35%
4.4.	Database software(MS. Access)	47.41%	10.34%	49.68%	7.10%
4.5.	Email. Create an account, send and receive emails.	31.90%	14.66%	38.71%	3.23%
4.6.	Internet for searching or downloading.	30.17%	8.62%	38.39%	7.74%

Table No. 4.1, shows that the majority of the Teacher Educators (42.24%) viewed that they used MS-Word regularly. While (30.97%) of Prospect teachers viewed that they use MS-Word occasionally, However (2.59%) Teacher Educators and (6.45%) Prospective Teachers never use it. Hence it is concluded that

Teacher Educators use MS-World more frequently than Prospective Teachers.

Table No. 4.2, shows that the majority of the Teachers Educators (35.34%) and Prospective Teachers (29.03%) viewed that they had used MS-Excel occasionally. The lowest percentage (11.21%) Teacher Educators and (9.68%) Prospective Teachers were used MS-Excel very regularly, while 11.29% and (13.23%) of teacher educators and Prospective teachers were never used MS-Excel. Hence it is concluded that majority of the respondents were used MS-Excel Occasionally.

Table No. 4.3, shows that the majority of the Teachers Educators (28.45%) and prospective Teachers (28.06%) viewed that they used occasionally while (8.62%) and (9.35%) of the respondents never use MS-PowerPoint. Hence, it is pathetic condition that MS-PowerPoint is commonly used software for presentations only.

Table No. 4.4, shows that the majority of the Teachers Educators (47.41%) and prospective Teachers (49.68%) viewed that they never use MS-Access. The lowest percentage of respondents (10.34%) of teacher educators and (7.10%) of prospective teachers use MS-Access. Hence it is concluded that majority of teacher educators and prospective teachers never use MS-Access.

Table No. 4.5, shows that the majority of the Teachers Educators (31.90%) and prospective Teachers (38.71%) viewed that they use email regularly, while only 14.66 % of teacher educators and (3.23%) of prospective teachers never use Internet for email. Hence it is concluded that both teacher educators and prospective teachers use Internet for e-mail regularly.

Table No. 4.6, shows that the majority of the Teachers Educators (30.17%) viewed that they use the Internet for searching &

downloading regularly ,whereas (38.39%) prospective Teachers use very regularly, while (8.62%) and (7.74%) of the respondent never use internet for searching and downloading. Hence it is concluded that prospective teachers use Internet more frequently than teacher educators, for searching and downloading.

Discussion

it is concluded that teacher educators perceived themselves good in using MS-Word and prospective teachers perceived themselves having low competencies whereas Teacher Educators use MS-Word regularly while Prospective Teachers use occasionally. These findings indicate that teachers require more skills to use MS-Word because in their daily academic assignments they use MS-Word. Safder (2010) in his research on university students and teachers skills to use MS-Office and Internet found that "majority of the respondents had good skills and they were frequent user of e-mailing, word-processing and Internet browsing. He further found that considerable number of teachers were not frequent users of spreadsheets. Therefore their students also had in-sufficient skills to use these technologies".

The Teacher educators possess normal skills and prospective teachers assess themselves having low competencies in using MS-Excel. But majority of the both of the respondents use MS-Excel occasionally .Although MS-Excel is very useful software for preparing results, attendance sheets and budgeting etc. but Teacher Educators and prospective teachers use MS-Excel occasionally despite having normal skills.

The Teacher educators and prospective teachers rate themselves good in using MS-PowerPoint but they use it occasionally. Although MS.PowerPoint is very commonly and frequently used

software for presentations but in GECEs teacher educators and prospective teachers did not use frequently despite having good skills. Blankson (2004) in his study on use of technologies in university and found that "most of the faculty perceived themselves expert in Word Processing software, PowerPoint and internet (e.g., sending emails, searching for information)".

MS-Access is database software and only used by professionals in Pakistan. So Teacher educators and prospective teachers do not use it frequently as they have no competencies to use it.

Teacher Educators and Prospective Teachers have good skills in using internet for emailing; searching and downloading so they use it frequently. But in comparison to Teacher Educators, prospective teachers use internet more frequently because Prospective Teachers are digital native, and possess inborn skills of using technologies, therefore they use it more frequently than their teachers. According to Chainda (2011) "student perceptions in teacher training institutions and found that 45% students possess excellent skills in word processing software and internet, while only 26% possess excellent skills in using spreadsheet software"

Recommendation

- As the use of ICT in teaching learning process is essential for the enhancement of students' learning. So the policy makers and administration should give priority to ICT inclusion in teaching learning process at GECEs

- In the mission and vision statements of all GECEs ICT use in the system should be highlighted by the administrators.

- Prospective Teachers and Teacher Educators should be provided facilities like computers/laptops with high speed or uninterrupted internet connection.

- Teacher Educators who use ICT in their teaching process should be encouraged and motivated by awarding them letter of appreciation and special awards.

- The administration of the GECEs should organize training workshops related to use of hardware, software and websites for Teacher Educators in order to enhance their proficiency in the application of ICT in the teaching process.

- Zero semesters should be introduced before the start of every new academic session at GECEs. Remedial English and basic computer related subjects should be taught for improving the efficiency of Prospective Teachers in English language and computer application.

- Training programs should be organized for selected Teacher Educators in the areas of pedagogical and technological knowledge by Bureau of Curriculum BoC. The trained Teacher Educators should further work as Master trainers to train all Teacher Educators of their respective institutions for effective integration of ICT in classrooms.

- For sharing the view and ideas websites and students' portals should be created where everyone can write his/her success stories or difficulties related to application of ICT in teaching learning.

- Teacher Educators should work as role models for Prospective Teachers by using ICT in their subjects.

- ICT knowledge should be mandatory for the appointment of Teacher Educators.

- Students guide and teacher guide related to use of ICT in teaching learning process should be prepared by BoC for proper guidance of teachers and students to use technology in the classrooms.

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