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ICT FUNCTIONAL ABILITIES AMONG TEACHER EDUCATORS AND BARRIERS IN USING ICT IN THEIR TEACHING

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Abstract

Information and communication technology has provided the panoramic view to the marginalized human vision in concerned knowledgeable society of educators. It has touched every realm of our life and has geared the world into the new era of digitalization. Continuing the realm, teachers are the builders of the nation. The teacher shares the knowledge to society formally and informally. He enroots the seeds of knowledge that leads in the development of information, sprouts into the new sapling which are fully capable of making knowledge learned society. But the position of a teacher has changed accordingly to the present situation of time. Teacher now too acts as a facilitator and ICT acts as catalyst to enhance the reaction of teaching-learning process. ICT enables a teacher to transmit more information to a larger number of students in shorter time In the present study the researcher focus attention on the teacher educators as they are to who will become future teachers. The study is quantitative, where researcher has checked the functional ability and various kinds of barriers faced by them by using Percentage analysis and t-test. The result shows that their no gender biasness on the functional ability of using ICT.

Keywords: *ICT, Functional Abilities, Barriers in using ICT, Teacher Educators*

In modern era, ICT (information and communication technology) arrival has given a panoramicview to our vision. It has touched every realm of our life and has geared the world into

a new era of digitalization. Most of the countries see ICT as potential tools for change and innovation in education (Eurydice, 2001; Papanastasiou & Angeli, 2008) and, thus, they strive to make investments in ICT. We are living in the age of information and communication technology. We cannot kept ourselves aside by the impact and role of technology in enhancing the process of education. ICT is a combination of information technologies (IT) and communication technologies (CT) and presently involves a variety of computer and Internet technologies and related software and applications (Marcelle, 2000; UNESCO, 2007). Information and communication technologies (ICTs) which include radio, television and newer digital technologies like computers and Internet have proven to be potentially powerful tools for educational change and reform. Different ICTs can be used to expand access education, strengthen the relevance of education and raise educational quality by connecting teaching and learning process with real life.

Information and Communication Technology is very useful in the field of education. It is useful for teachers, students, counselors, administrators, planners and researchers. In the field of education, ICT provides the opportunity to gather, store, retrieve, process, analyze, and transmit information. It is becoming a challenge to the people who are not techno friendly but on its contrary, it's a boon for those who are familiar with technology.

Technology enables the teacher to transmit more information to a larger number of students in a shorter time. By effective use of ICT there is huge change in school culture. Technology has caused teachers to change their methods and strategies of teaching.

The teacher's role in an ICT environment is that of a facilitator instead of being a source of knowledge.This transformation from the old to new methods of delivering knowledge is a global phenomenon. The modern teacher in the ICT era is no longer described as 'a sage on the stage' but a 'guide by the side' (Krish & Zabdi, 2007).

Functional ability in ICT is broadly related to three skills: using ICT system, finding & selecting information's and developing, presenting & communicating information. Functional ability in ICT means interaction with ICT for a purpose, finding information from ICT based source, entering & editing information, identifying & correcting simple errors, using text message, voicemail & on screen information, keeping information secure by using Password, Labeling on image, Receiving & opening electronic messages i.e. using ICT based

communication i.e. Reading, sending & receiving emails, using contacts. Functional ability in ICT is related to the use of computer hardware, using software application, using correct procedure to start & shut down an ICT system, use input & output devices. The importance of the application of ICT in teacher education programme cannot be over emphasized. ICT skilled teachers should help learners cope with the rapid changes taking place all over the world by providing the learners with functional, sustainable & effective guidance.

Technology has extended the ability of teachers to image and spread knowledge and provided new opportunities for students to enhance the new knowledge in various aspects (Chai, et. al., 2010). Functional Ability in ICT has many aspects some of the most important dimensions are Knowledge Level, Ease of handling and Working Proficiency.

Significance Of The Study

ICT has become an inseparable part of education now. Everyone, whether student, teacher or teacher educator, have to update ourselves and gear up for this change. Teacher education programmes in India are largely methodology based. So, we need teacher educators who can integrate technology in teacher preparation methods effectively. Technology has the capacity to promote and encourage the transformation of education from a teacher directed enterprise to one which supports more student-centered models.

There were predictions that new teaching and learning technology would replace teachers and teacher educators, textbooks and even school. But the role of teacher educators has only changed. Today teacher educator must have competence for making future teachers more efficient in using ICT. That's why teacher educator should have the ability to handle technology. Knowledge to relate simply means to know i.e. t have familiarity with facts, information, description and skills which we perceive through our senses or by education. But indepth it means what we perceive and how we reflect it through our thought process which adds a meaningful dimension to our vision. Teacher educator's knowledge towards ICT helps them to motivate the prospective teachers to use technology. Working efficiency helps future teachers to enhance the learning of students. Similarly, ease of handling ICT equipments makes teachers more confident to present content matter in front of students. Students show their interest in learning through different techniques. Teacher educator's working proficiency effects the entire teaching learning process. As teacher becomes more efficient in working with ICT, students also

get motivated to use ICT in their learning. These students in teacher training institutions are our future teachers, so they should strive to use ICT equipments more in their teaching. The functional ability of teacher educators affects our future teacher's development too. To know the ICT functional ability among teacher educators and the barriers they face in using ICT in teaching learning Process, the present study has been conceptualized.

Review Of Previous Work

Some researchers (Shaw & Giacquinta 2000; Mumtaz 2000; Mistter-jackson & Songer 2000; Mitra et. al 2000; Newton 2000; Snoeyink & Ertmer 2001; Bitner & Bitner 2002; Yuen 2002; Mouz 2002; Zhao et al. 2002; Newhous 2002; Murphy 2003; Lloyd & Yelland 2003; Hennessy 2003; LaVelle et al. 2003; Eriksen 2004; Nagarkoti 2004; Schuldman 2004; Gomes 2005; Sicilia 2005; Wong et al. 2005; Balanskal et al. 2006; Wozney et al. 2006; Mokhtar et al. 2007; Lokken et al. 2008; Al Barakat & Bataineh 2008; Cox 2008; Sipila 2008; Rekabdarkolaei & Amuli 2008; Gulbahar &Gven 2008; Ilomaki et al. 2008; Tearle & Golder 2008; Wintz 2009; Redmann & Ktrilik 2009; Bingmlas 2009; Duran et al. 209; Sang et al. 2009; kargiban & Siraj 2009; Gill & Dalgarna 2010; Agnes & Wallace 2010; Yucel et al. 2010; Adeyemo 2010; Naz Awan 2011; Qiao &Wang 2011; Hammond et al. 2011 Jones 2012; Hatlevik & Arnseth 2012; Hismanoglu 2012; Chang et al. 2012; Wong et al. 2013; Ayesha et al. 2013; Giavrimis & Papanisc) studied on functional ability of teachers among their knowledge, self-pacing and efficiency to use ICT in education where as some researchers (Bitner & Bitner, 2002; Zhao, Pugh, Sheldon & Byers, 2002; Guha, 2003) investigated the barriers to successful computer implementation into schools. Ertmer (2005) showed that teachers less likely to use computer in their classroom because they adopting traditional method. Researcher (Cox 2008) investigated attitudes towards the use of technology in learning style. Some researchers found Resources as barrier at Teacher level: Lack of appropriate software (Fabey & Huggs 1997; Ertmer, 1999; Pelgrum,2001); Lack of time for training computer-aided (Murphy & Greenwood 1998; Scrimshaw, 2004; Sewanyana & Busler, 2007; Bingimlas,2009) Lack of technical support (Nawana 2012; Hennessy et al. 2010); Lack of hardware/absence of ICT tools/insufficient ICT equipment (Beggs 2000; Guha 2000; Snoeuynk & Ertmer 2001; Cuban et al. 2001; Newhous 2002; Obsborne & Hennessy 2003)Old or poorly maintained hardware (Herzig 2004; Kula 2004; Scheopp 2005; O giegbaen & Iyamu 2005) Lack of suitable educational software (Keong et al 2005; Wee & Bakar 2006; Alghazo 2006; Toitur et

al 2006; Wells & Wells 2007; Ozden 2007) Absence or lack of technical support staff (Hudson et al 2008; Tilvawala et al. 2009; Sang et al 2009;Su2009) Lack of main streaming into school's strategy/school planning (Goktas et al 2009; Afshari et al. 2009; Vajargah et al. 2010; Ghasemi et al. 2011; Unal & Ozturk 2012; Yakin 2012; Chen et al. 2012; Khan et al. 2012; Touray 2013; Raflee 2013; Alkawaldeh; Hattangoli & Ghosh) were studied on difficulties of ICT integration into teaching.

Objectives:

- To find out the functional abilities of teachers educators towards various ICT equipments
- To identify various barriers encountered by teachers educators in using ICT in teaching learning process.

Hypotheses:

- There is no significant difference between male and female teacher educators as far as their functional abilities towards various ICT equipments are concerned.
- There is no significant difference between the ICT functional abilities of humanities and science background teacher educators.

Assumption:

- The barriers encountered by teacher educators in using ICT in teaching learning process can be identified.

Methodology:

Population:

The present investigation was conducted on teacher educators working in Colleges of Education situated in Ambala Division of Haryana State. Ambala Division is one of the four divisions of HaryanaState of India. The division comprises the districts of Ambala, Kaithal, Kurukshetra, Panchkula and Yamuna Nagar. Therefore all the teacher educators working in the Colleges of Education situated in Ambala Division of Haryana State in India constituted the population forthe present study.

Sample and Sampling Technique:

Keeping in view the need of adequacy and representativeness of the sample, multi stage stratified random sampling technique was used. In the first phase of sample selection, all the five districts

of Ambala Division i.e. Ambala, Kaithal, Kurukshetra, Panchkula and Yamuna Nagar were selected. At the second stage, all the teacher educators working in 15 Colleges of Education situated in urban areas of Ambala Division (Kurukshetra University, 2010) were selected by using purposive random sampling technique. At the third stage of sample selection, 35 Colleges of Education out of 57 Colleges of Education situated in rural areas of Ambala Division (Kurukshetra University, 2010) were selected by using lottery method of random sampling technique. At the fourth stage, all the teachers working in these selected colleges were selected. At the fifth stage of sample selection, keeping in view the adequate representation of various groups, these teacher educators was classified in to various groups on the basis of their gender, locality, basic stream, types of organization and experience of the teacher educators. On the basis of above mentioned selection process of sample, 400 teacher educators working in the Colleges of Education in Ambala Division were selected.

Instruments Used:

In order to collect the data, ICT functional ability scale (3 dimensions and 40 items) and ICT Barriers Inquiry Schedule (3 dimensions and 38 items) developed and standardized by the researchers were used. ICT functional ability scale is a likert type scale and has 40 items spread over 3 dimensions whereas ICT Barriers Inquiry Schedule has 38 ‘yes’ ‘no’ type items spread over 3 dimensions.

Analysis Of Data:

The collected data were analyzed with the help of mean, SD and ‘t’ test and percentage.

Table – 1. Mean and SD Scores of Male and Female Teacher Educators on ICT Functional Ability Scale

Gender	N	Mean	SD	't' value (df =398)
Male	154	116.84	14.76	
Female	246	119.03	16.66	1.37(n.s)

n.s (not significant)

A perusal of table-1 shows that the female teacher educators have scored higher mean value on ICT functional ability scale then there counterpart male teacher educators. On its contrary Nagarkoti (2003) found that male teacher educators were having better functional ability then the female teacher educator on modern hardware educational technology.

Table –2. Mean and SD Scores of Humanities and Science Stream Teacher Educators on ICT Functional Ability Scale

Stream	N	Mean	SD	't' value (df =398)
Humanities	282	155.53	22.60	
Science	118	166.26	20.21	4.67*

**Significant at 0.01 level of significance*

The data presented in table –2, depicts that teachers of science stream have scored higher mean value than their counterpart teachers of humanities stream on ICT Functional Ability Scale. Hathi (1994) supported this finding and revealed that the number of teacher using audio-visual aids in education in the subject of science was higher while it was lower in the languages.

Table-3. Views of Teacher Educators Working in Colleges of Education Situated in Ambala Division on Barriers in Using ICT in Their Teaching

(N=400)

S. N	**STATEMENTS**	**%age**
1	Lack of Sufficient funds for purchase of ICT equipments	74.75
2	Unavailability of appropriate software	66.75
3	Lack of training in computer-assisted instructions	74.75
4	Lack of technical support for teachers	70.75
5	Unavailability of separate ICT labs	50.75
6	No specialists are being appointed in schools to handle ICT related issues	63.00
7	Old or poorly maintained hardware	66.50
8	Resistance to technology intervention	70.50
9	lack of planning regarding the use technology in classroom teaching	69.75
10	Lack of knowledge of various ICT skills	73.25
11	Lack of basic knowledge of the functioning of ICT equipments	65.50
12	Lack of training programs for handling the ICT equipments	72.00
13	Feeling that the teachers are overburdened by using ICT in classrooms	70.50
14	Inappropriate teacher training practices in colleges	70.25
15	Gender differences in ICT use	45.25
16	No knowledge about ICT integration into teaching	54.25
17	Frequent technical faults with ICT equipments	70.00
18	Limited experience and exposure of teachers to ICT use	72.75
19	Lack of sharing among institutions about various uses of ICT in education	64.75
20	Lack of confidence regarding proper handling of ICT equipments	70.00

21	Unwillingness of teachers to change their teaching styles	74.00
22	Unawareness about the advantages of using technology in teaching	65.75
23	Pre-existing attitudes and beliefs of teachers about ICT and its use	66.50
24	Difficulty in planning technology-based tools in evaluation	69.75
25	Comfort in using the traditional teaching methods	69.25
26	No special incentives for teachers who use ICT in education	63.00
27	Lack of computers and other equipments in classrooms	70.00
28	Lack of good role models for prospective teachers	67.75
29	Lack of particular, clear and concise ICT guidelines for teachers	68.00
30	Increased workload of teacher after the advent of CCE in schools	67.00
31	Negative experiences with ICT equipments in the past	47.50
32	Views and opinions of society about ICT hinders its use in teaching	52.00
33	Colleagues' negative views and experiences	48.00
34	Misconception that technical qualifications are required to use ICT	58.25
35	Operating ICT equipments independently	66.00
36	Lack of workshops & seminars on ICT use in teaching	74.00
37	Lack of hands-on-training in ICT	70.75
38	Lack of cooperation from colleagues	64.50

A glance at table-3 shows that more than 70 percent teacher educators working in Colleges of Education situated in Ambala Division found lack of sufficient funds for purchase of ICT equipments and lack of training in computer assisted instructions and Unwillingness of teachers to change their teaching styles (74.75 percent), Lack of knowledge of various ICT skills (73.25 percent), Lack of training programs for handling the ICT equipments (72.00 percent), lack of technical support for teachers and lack of hands-on-training in ICT (70.75 percent), Feeling that the teachers are overburdened by using ICT in classrooms, Resistance to technology intervention and Lack of technical support for teachers all are (70.75 percent), Inappropriate teacher training practices in colleges (70.25 percent), Lack of computers and other equipments in classrooms (70.00 percent). Table further depicts that more than 50 percent teacher educators working in Colleges of Education situated in Ambala Division found lack of planning regarding the use technology in classroom teaching and Difficulty in planning technology-based tools in evaluation (69.75 percent), Comfort in using the traditional teaching methods (69.25 percent), Lack of particular, clear and concise ICT guidelines for teachers (68.00 percent), Lack of good role models for prospective teachers (67.75 percent), Increased workload of teacher after the advent of CCE in schools (67.00 percent), , Old or poorly maintained hardware (66.50 percent), Lack of basic knowledge of the functioning of ICT equipments and Pre-existing attitudes and beliefs of teachers about ICT and its use (66.50 percent), Unavailability of appropriate software

and Unawareness about the advantages of using technology in teaching (65.75 percent), Lack of sharing of ideas among institutions about various uses of ICT in education (64.75), Lack of cooperation from colleagues (64.50 percent), No specialists are being appointed in the schools to handle ICT related issues (63.00 percent), Teachers' misconception that technical qualifications are required to use ICT in teaching (58.25 percent), No knowledge about ICT integration into teaching (54.25 percent), Views and opinions of society about ICT hinders its use in teaching (52.00 percent), Unavailability of separate ICT labs (50.75 percent) barriers in using ICT in teaching by teacher educators.

Table-4. Top Ten Barriers in Views of Teacher Educators Working in Colleges of Education Situated in Ambala Division in Using ICT in Their Teaching

S.N	STATEMENTS	%age
1.	Lack of Sufficient funds for purchase of ICT equipments	74.75
2.	Lack of training in computer-assisted instructions	74.75
3.	Unwillingness of teachers to change their teaching styles	74.00
4.	Lack of workshops & seminars on ICT use in teaching	74.00
5.	Lack of knowledge of various ICT skills	73.25
6.	Limited experience and exposure of teachers to ICT use	72.75
7.	Lack of training programs for handling the ICT equipments	72.00
8.	Lack of technical support for teachers	70.75
9.	Lack of hands-on-training in ICT	70.75
10	Resistance to technology intervention	70.50
	Feeling that the teachers are overburdened by using ICT in classrooms	70.50

An analysis of table-4 infers that the teacher educators working in colleges of Education situated in Ambala Division accepted that lack of sufficient funds for purchase of ICT equipments (74.75 percent), lack of training in computer-assisted instructions (74.75 percent), unwillingness of teachers to change their teaching styles (74.00 percent), lack of workshops &

seminars on ICT use in teaching (74.00 percent), lack of knowledge of various ICT skills (73.25 percent), limited experience and exposure of teachers to ICT use (72.75 percent), lack of training programs for handling the ICT equipments (72.00 percent), lack of technical support for teachers (70.75 percent), lack of hands-on-training in ICT (70.75 percent), resistance to technology intervention (70.50 percent), feeling that the teachers are overburdened by using ICT in classrooms (70.50 percent), inappropriate teacher training practices in colleges (70.25 percent) were the most crucial barriers faced by the teacher educators in their teaching.

Findings:

- There does not exits significance difference between male and female teacher educators on ICT Functional Ability scale.
- There exists significance difference between teacher educators of science stream teachers of humanities stream on ICT Functional Ability Scale.
- More than 70 percent teacher educators working in Colleges of Education situated in Ambala Division found lack of sufficient funds for purchase of ICT equipments and lack of training in computer assisted instructions and Unwillingness of teachers to change their teaching styles (74.75 percent), Lack of knowledge of various ICT skills (73.25 percent), Lack of training programs for handling the ICT equipments (72.00 percent), lack of technical support for teachers and lack of hands-on-training in ICT (70.75 percent), Feeling that the teachers are overburdened by using ICT in classrooms, Resistance to technology intervention and Lack of technical support for teachers all are (70.75 percent), Inappropriate teacher training practices in colleges (70.25 percent), Lack of computers and other equipments in classrooms (70.00 percent) whereas Gender differences in ICT use (45.25 percent) was found to be the least barrier in using ICT in the teaching of teacher educators.
- Most crucial barriers faced by the teacher educators during their teaching were lack of sufficient funds for purchase of ICT equipments, lack of training in computer-assisted instructions, unwillingness of teachers to change their teaching styles, lack of workshops & seminars on ICT use in teaching, lack of knowledge of various ICT skills, limited experience and exposure of teachers to ICT use, lack of training programs for handling the ICT equipments, lack of technical support for teachers, lack of hands-on-training in ICT,

resistance to technology intervention, feeling that the teachers are overburdened by using ICT in classrooms and inappropriate teacher training practices in colleges.

Discussion:

Information and Communication Technology is very useful in the field of education. It is useful for teachers, students, counselors, administrators, planners and researchers. As we found there is no significance difference between male and female teacher educators towards functional ability which shows both have ability to handle the ICT equipments effectively. Also we found there is significance difference between humanities and science background teacher educators towards functional ability which shows science background teacher educators were familiar these ICT equipments in their study period so they used all these things confidently in their teaching. But both male & female and science & humanities background teacher educators face many barriers in using ICT in their teaching learning process. The most important barrier is insufficient fund for ICT. Also teacher educators attitude towards ICT effects the use in classroom. They feel overburden by using it. So this study helps to motivate teacher educators for better use of ICT in their teaching in classroom.

Conclusion:

Information and Communication Technology is very useful in the field of education. It is useful for teachers, students, counselors, administrators, planners and researchers. In the feild of education ICT is the requirement for betterment of students and enhancement of teacher educators for future. It gives more enthuasium for doing different things in different ways. If the functional ability of teacher educators are not good and not up-to-date which give no benifits for future teacher educators. In this study we stress on functional ability of male & female teacher educators which helps future teacher educators to enhance their capability to use ICT in their teaching learning process. If teacher educators initiate with full confidence and handle the equipments properly and working on ICT equipments continuously, students also follow them because as they see they do same. Humanities background teacher educators show their interest in using ICT in their teaching which motivate other teacher educators as well as students get to know how ICT use in languages n other subjects which have no practical work.Science background teacher educators help them for better use of ICT.

As we know for doing different things we face some problems same here. There are many types of barriers in using ICT in teaching learning process. Like if there is insufficient fund then how they use all these things. So university or managements provide such much funds which is necessary for all of these. Teachereducators training programm will be arrange time to time to motivates them for using new software in their teaching.Managements will give good incentives to those who use ICT more in classroom which encourage other teacher educators. Creativity of teacher educators by using different ICT equipments make the environment relaxing and refreshing.

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