ISSN (Print): 2278-0793
ISSN (Online): 2321-3779

KNOWLEDGE AND LEVELS OF ICT USE AMONG TEACHER EDUCATORS IN TEACHER TRAINING COLLEGES

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Abstract
ICT has brought many challenges and opportunities and influenced the world like no other invention in the recent past. The field of education has also got greatly influenced by ICTs, which certainly altered whole education process. Hence, Teacher educators are required to have adequate knowledge and use of ICT in educational process in case they wish to utilize current techniques and technologies effectively for prospective teachers. The purpose of this study was to investigate the knowledge and levels of ICT functioning among teacher-educators in teaching training colleges. A three-point Likert scale constructed by the researcher was used in the present study. A random sampling technique was employed in the selection of the sample of as many as 60 teacher-educators working in teacher-training colleges in the State of Punjab, India. Normative survey method was used in the present investigation. The results showed that no significant difference was found regarding knowledge and levels of ICT usage among teacher-educators in the teacher training colleges. The finding of the study revealed that knowledge of ICT significantly formed to develop an attitude of teacher-educators towards the usage of ICT tools in educational process. It was found that strong relationship of ICT training in making teaching-learning process effective and there was significant role of knowledge of ICT, levels of ICT tools' usage, attitude towards ICT and training of ICT on improving the ICT skill in teaching-learning process by teacher-educators.

Keywords: attitude, Information and Communication Technology (ICT), teacher educators, teacher-training colleges

Introduction

Today's knowledge of our society has influenced the world in different facets of life be it social, economic, political or cultural. In order to ensure that education does not deviate from the right direction, it has become imperative that appropriate changes are incorporated in education particularly teacher training colleges as teachers are the torchbearers for the future society. Consequently, a number of nations invest great deal of their valuable resources and endeavors for enhancing the value of their education systems for the purpose of measuring up to the demands of the age of the information and communication technology (ASTC, 2010; Barell et al., 2010; Mishra & Kereluik, 2011, p. 21).The venture in teacher education colleges supports to advance teaching learning process efficiently and brings about a method of influencing the accomplishment related to prospective teachers (McKinsey Report, 2007).

Undoubtedly, ICT has brought many challenges and opportunities and influenced the world like no other invention in the recent past. The sphere of education has also got greatly influenced by ICTs, which certainly altered whole education process. (Yusuf, 2005). Hence the challenge for teacher training colleges is to create a new generation of prospective teachers capable of employing a variety of technology tools into all phases of the educational process. It is only possible when teacher educators in teacher training colleges have enough knowledge of ICT and the knowhow of successfully implementing ICT's tools and devices in all areas of teacher education program efficiently. Teacher educators are required to have adequate knowledge and use of ICT in education process in case they wish to utilize current techniques and technologies effectively for prospective teachers. (Kalogiannakis, 2010**).**

Teacher educator is one who educates teachers. Consequently, teacher educators are the indispensable in assisting both new and experienced teachers who need to acquire and improve teaching-skills in order to be effective in the classroom. Hence, teacher educator plays a very vital role for raising the level of future teachers. Instructions and training to prospective teachers start the moment they enrol in a teacher education program in various teacher training colleges. Thus, it is highly

ISSN (Print): 2278-0793
ISSN (Online): 2321-3779

important to recognize the knowledge and levels of teacher educators in ICT is absolutely indispensable for the purposes of producing efficient prospective teachers. (McCarrick & Li, 2007). For the purpose of teaching and learning, the present-day technologies are fundamental tools. For the purpose of using the aforesaid tools successfully and efficiently, teacher educators require visualizations of the technologies' prospective, occasions of applying them, training and timely help, apart from enough time to experiment. Therefore if teacher educators are confident to apply ICTs tools and devices intelligently to teacher education program only then teacher training colleges can produce efficient prospective teachers. (Bowes, 2003).

Numerous studies are the centre of attention of the issues concerned with the combing of ICT and the absorption of inventive pedagogy by educators and scholastic genius of various schools and college. (e.g., Hall & Hord, 1987; Sandholtz, Ringstaff, & Dwyer, 1997; Siemens & Tittenberger, 2009). However, limited research reviews have paid attention to teacher educators and teacher training establishments responsible for making future teachers joining the profession. Research studies show that quite a few amongst teacher educators have incorporated ICTs with all areas of teacher education programs but not effective results have been found yet. (Bransford et al., 2000). In response to the aforesaid matter, teacher educators in teacher education colleges often delay the adoption of technological innovations in their teacher education program. This so owing to the shortage of knowledge, guidance, support, enthusiasm and owing to the nature of the technological devices use in teaching learning process (Goktas, Yildirim, & Yildirim, 2009). Many hindrances have been stated in surveys, and problems faced by teacher educators in teacher training colleges about their pedagogical convictions and insights, management of time and wealth, lack of training/ workshops and a supportive specialized and pedagogical framework (Brzycki & Dudt, 2005; Goktas et al., 2009; Gomez, Sherin, Griesdorn, & Finn, 2008; Maltz & DeBlois, 2005; Moser, 2007).

Need and Scope of ICT in Teacher Training colleges

These followings point explains the requirement and scope relating Information and Communication Technology (ICT) in teacher training colleges.

- Admission to multiplicity of knowledge resources
- Urgency relating to information
- Anytime education
- Anywhere education
- Combined education
- Multimedia mindset about education
- Genuine and latest enlightenment
- Admittance to online libraries
- Teaching of diverse subjects made motivating
- Instructive data storeroom
- Distant education
- Admittance to the source of information
- Manifold communication channels-e-mail, chat, medium, blogs, etc.
- Admittance to open course-material
- Better access for children having disabilities
- Decreases time on a lot of regular assignments
- Better accesses to children with disabilities

However the current study is described for the purposes of assessing the knowledge and levels of ICT use among teacher educators who are there with any teacher training college, at the same by considering the way and extent of ICT utilization about pedagogical points by the teacher-educators. The stated study is a significant for the purposes of evaluating the knowledge and levels of ICT usage among teacher educators which carries trailblazing and shortest sway on future teachers' aptitude to expand and devise ground-breaking educational insights (Gronseth et al., 2010). All over the planet, so many teacher training organization have developed models and they are implementing ICT to the whole education process (Bullock, 2004; Collier, Weinburgh, & Rivera, 2004; Dawson, 2006; Granston, 2004; Kay, 2006). But they are lacking to give a technical and pedagogical framework, knowledge, support, enthusiasm, and motivation to adapt ICT by teacher educators in teacher education programs.

Considering the aforesaid state of affairs, the primary purpose of the present study is to explain the issues influencing teacher educators for putting together ICT in teacher

ISSN (Print): 2278-0793
ISSN (Online): 2321-3779

education program, and the mode of implementing the ground-breaking pedagogy in teacher education program for raising the teaching and learning level of prospective teachers. Hence, the objective of this present study is to recognize the knowledge and levels of ICT functioning among teacher-educators in teacher education colleges in the state of Punjab. The sample of the present study comprises 50 teacher educators selected from a range of teacher training colleges in the state of Punjab.

Review of Related Literature

The conquest of any educational practices rests on the understanding and familiarity of teacher educators towards the efficient use of ICT in whole education process. Understanding the knowledge and levels of teacher educators towards ICT matters a lot and is very essential. Also vital is to know the levels of technological tools or devices used in teaching learning process to make efficient prospective teachers (Huang and Liaw, 2005).

During the last twenty-five years, quite a few studies have been carried out about local, national and international possibilities about incorporating ICT in whole learning process. Developing the properties of teacher training through technology and (Cox, Preston, & Cox, 1999; Cavas, 2005) level of resources, teachers' pedagogies and trainings (Watson, 1998), and the consequences of computers and technology on students' attainment (Cox, Preston, & Cox, 1999; Cavas, 2005). Still, some recent studies in this area have neglected knowledge and stages of ICT use amongst teacher educators in teacher training colleges for producing effective prospective teachers.

However, research studies also show that the psychological individual description have been examined to a partial extent (Braak, 2001) and behaviour feature that may add to teachers' willingness towards ICT have been mainly ignored (Karpati, Torok, & Szirmai, 2008). Fresh conclusions propose that among the individuality changeable that forecast objective of teachers about utilizing technology in the teaching learning process are teachers' readiness to modify (Perkmen & Cevik, 2010; Rachel & Fordham, 2004), all-purpose and particularly scientific farsightedness and sociability. (Braak, 2001a, 2001b), while attention is considered to be optimistically concerned with the teachers' inspiration (Perkmen & Cevik, 2010). Furthermore, it is known that those apprentice teachers, adoptive in a social situation, broad-minded and welcoming present elevated level of ICT capability, with regard to the attainment of positive attitudes on the way to talent of technology, and making high-quality utilization of ICT tools and processes (Karpati, Torok, & Szirmai, 2008).

Some studies also point to that teachers' approach about technology carries substantial inferences for their behaviours in the employment of technology devices for teaching and learning purposes. (McCarrick & Li, 2007). However studies show that most of the teachers in US are well aware of ICT use in teaching learning process but a lot of them do not employ it efficiently during classroom instructions. (Gray et al., 2010). Still teachers possessing substantial technological capability and self-assurance depended on a usual teacher-centred vision(Prestridge, 2012).The successful utilization of ICT allows teacher educators to make easy and regulate their teaching learning process to maximize students' education (Teo, Lee, & Chai, 2008). With regard to this matter, at the time of taking teachers' position and action into account, it is significant to be acquainted with teachers' information in the direction of technology in teacher education programs for future teachers (Erkan, 2004; Rohaan, Taconis & Jochems, 2010). Hence, changes in teaching style, as might be necessary by functioning with technology, may require alteration to teachers' outlooks (Albion & Ertmer, 2002).

In addition, it has been shown that those apprentice teachers who are socially robust, forbearing and welcoming show a great level of ICT capability, with regard to the matter of acquiring optimistic approaches about skills of technology, and enabling high-quality utilization of ICT tools and means (Karpati, Torok, &Szirmai, 2008).

Research Studies also identified that attitudes towards ICT and its use in teaching learning process proved barriers for the teachers. A research (Fabry & Higgs 1997) separated approaches into three clusters: self-assurance with ICT, perceived significance of ICT, and inventiveness. While approaches to a degree depend on personality (Guha 2000), the significance of preceding technology

ISSN (Print): 2278-0793
ISSN (Online): 2321-3779

knowledge is extensively acknowledged (Snoeyink & Ertmer 2001). Depressing know-how influence perceptions of the comfort of use and significance of ICT, reducing confidence and increasing anxiety. Technology nervousness and nervousness about alteration are vital aspects restraining teachers' attitude towards utilization of technology (Larner & Timberlake 1995). Highlighting these anxieties are panic of discomfiture at the time of using ICT in teaching learning process (Russell & Bradley 1997) and dread of falling specialized status through a relegation of classical pedagogical skills (Fabry & Higgs 1997).

Yuksel et al (2013) categorised these blockades in outside and inner barriers. The outside obstacles contain hardware and software insufficiency, and being short of technical knowledge and time. The inside barriers contain approaches, philosophy and perceptions about utilizing the uses of equipment and technology in education, and the teaching learning practices.

Similar investigative studies have also described many ICT barriers at the time of teachers' trying to put into practice ICT and its tools or devices into the teaching learning process. Obstruction has been called a situation that does not shore up the success of purposes (Schoepp, 2005). Diverse groups of blockades have been explained by investigators that delay educators from functioning of ICT in teaching learning course. (Leggett & Persichitte 1998). A number of researchers categorize blockades to triumphant performance of ICT in two classifications: Extrinsic and inherent barriers. Extrinsic factors are concerned with shoring up, admittance to reserves and time. Whereas intrinsic aspects relate to attitudes, beliefs, observations, rehearsals and confrontation regarding ICT (Ertmer, 1999). In addition, previous barriers can be connected with deficiency of finance, lack of reserves to accesses, insufficient teachers' training, and want for of internet connectivity (Ch, et al, 2015). The other main hindrances that thwart teachers from utilizing ICT efficiently are: a) shortage of time for ICT training b) pitiable replicas for practice while ICT training and c) Deplorable schools management. Laaria (2013) and Kipsoi et al (2012).

(Tsou, Wang & Tzeng, 2006) Technologies have performed a dominating function in the whole teaching process. Investigators have indicated that technology mixed into teaching learning procedure supports higher-level education and thinking skills amid students. It has been established to have positive effects in language education and it becomes as an essential part of education and adds as teaching equipment in the language classroom. There is a substantial amount of curiosity to study more about the possible use of ICT in education practices. Pelgrum (2001) recognized several causes why technologies have become important to education process because of lowering the price of education, following the computer industry, organizing students for work effectively and living in a machinery savvy world.

For the moment, quite a few studies indicate that the triumphant implementation of ICT in teaching learning process builds educational practices more creative and give a better learning commitment experiences. (Leask & Pachler, 2014). On very apt use, ICT has high prospective to enhance teaching and learning, and will offer good chances for teachers to advance their ICT expertise. (Haddad & Draxler, 2002; Oliver, 2005)

Research Gaps / Questions

Research gaps are also called the research questions or problems which have not been answered appropriately or at all in a given field of study. Previous researchers have studied the utilization of ICT in teacher guidance colleges, many researchers have studied also the attitude of teachers towards the utilization of ICT in teaching learnig procedure but nobody worked regarding the following areas relating teacher educators regarding the Knowledge and Stages of ICT utilization in teacher education program.

1. Knowledge of teacher educators about the awareness of ICT.
2. Levels of ICT tools and devices used by teacher instructors in teacher education programs.
3. Perception of teacher educators about ICT can not improve teaching and learning process.
4. Which ICT equipment is there to help teacher educators to use ICT in teacher education program and what barriers prevent them to use these tools?

ISSN (Print): 2278-0793
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5. Fear of losing specialized status through a relegation of traditional pedagogical talents.
6. Technology anxiety and anxiety about changing trends in education field through ICT.
7. How ICT and its tools and devices use in teacher training colleges influences the prospective teachers?
8. How can ICTs be effective for prospective teachers and what are the implications of such impact?

Objectives of the Study

- To find out the knowledge of ICT among teacher educators in teacher training colleges.
- To study the Knowledge of ICT in developing attitude of teacher educators in teacher education programs for effective prospective teachers.
- To ascertain lack of technical support and training of ICT among teacher educators in teacher training colleges.
- To explore the teacher educator's perception towards Knowledge of ICT, Levels of ICT tools use, Attitude and ICT training do not enrich teaching learning process in teacher training colleges.

Hypothesis of the Study

1. Knowledge and Levels of ICT use among teacher educators in teacher training colleges is low.
2. Knowledge of ICT does not have significant role to develop an attitude of teacher educators towards the use of ICT in teaching learning process.
3. ICT training does not play significant role in making teaching learning process effective.
4. There is no significant difference between Knowledge of ICT, Levels of ICT tools use, Attitude towards ICT, training of ICT in improving ICT skill in teaching learning process.

Research Methodology

The followings research methodology was used by the researcher in the present research:

Sample

Random sampling method was employed for gathering of data. The research participants were the teacher educators of different teacher training colleges in the state of Punjab. The sample of the study was confined to 60 teacher educators from Government, Government Aided and Self financed B.Ed colleges under Punjabi, Panjab and Guru Nanak Dev University of the Punjab State.

Procedure

In this present study, a survey was employed to gather data. A three point Likert scale constructed by researcher was used to collect data from 60 teacher educators of teacher training colleges in the State of Punjab. The format of three point rating scale constitute (0 = Never, 1 = Sometimes, 2 = Often).

Tool Used

The following tool was used

- A three point Likert scale constructed by researcher was used to study the Knowledge and Levels of ICT use among teacher educators in teacher training colleges.

Statistical Tools Used

Multiple Regression Analysis, ANOVA test were used.

Analysis Procedure

After collecting the data from 60 teacher educators in teacher training colleges in the State of Punjab, the data was evaluated by using Statistical Package for Social Science (SPSS) program. SPSS program was used to interpret data and produce results of the present study.

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RATING SCALE

Thanks for your kind cooperation and sharing valuable information. This information will help to raise the level of teacher training colleges in the state of Punjab. If you don't mind sharing your email and contact

Note: A dear respondent, this rating scale is used to assess the knowledge and levels of ICT use among teacher educators in teaching training colleges. Kindly spare your precious time to fill this honestly on the basis of your knowledge & experience. Responses will be confidential. Tick any **ONE** against the question asked.

Name of Respondent : **Age :** **Sex:**
Qualification: **Designation :**
Name of College: **Name of University :**

Sr/ No.	Questions	Often	Sometimes	Never
1.	Do you use Internet explorer for accessing internet?			
2.	How often do you download video clips from YouTube?			
3.	Do you use Chart Wizard in excel to create chart?			
4.	Do you consider yourself an experienced ICT user?			
5.	Using MS-Word, do you work with cut, copy, paste, font, paragraph and mail merge options?			
6.	Do you use Facebook, Twitter or other social networking sites for work?			
7.	Do you use laptop, projector during teaching?			
8.	How often do you facilitate learning by using web conferencing and virtual classrooms?			
9.	How often do you use ICTs tools and devices during teaching learning process?			
10.	How often do you use computer laboratory for practical work?			
11.	Do you feel comfortable using online journals and digital library?			
12.	Do you feel confident to use technology during teaching-learning process?			
13.	Do you think ICT help students to learn effectively & helpful for future teachers?			
14.	Do you enjoy computer/ technology tools/devices during teaching?			
15.	Do you feel excited about the introduction of new technologies in teaching learning process?			
16.	Do you attend any ICT related training, workshops organised by management of the colleges, universities?			
17.	How many times have you attended ICT-related training covering your all topics by the management of institutes?			
18.	Do you think lack of ICT training impact on your teaching learning process?			
19.	Do you think, poor infrastructure, limited funds, lack of technical support, enthusiasm, and motivation proves as barriers to integrate technology with education process?			
20.	Do you think proper ICT training to teacher educators can give efficient result in teaching learning process?			

for future reference.

E-mail: _____ **Contact:** _____

Interpretation of Data Analysis

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The present investigation aims at studying the Knowledge and Levels of ICT Use among Teacher Educators in Teacher Training Colleges. For this purpose, a scale was administered to 60 Teacher Educators of different B.Ed, Colleges in the State of Punjab. The data was collected and processed by SPSS software which shows the following results.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Knowledge_Of_ICT is normal with mean 6.250 and standard deviation 3.19.	One-Sample Kolmogorov-Smirnov Test	.200[1,2]	Reject the null hypothesis.
2	The distribution of Level_of_technology_Use is normal with mean 5.550 and standard deviation 2.94.	One-Sample Kolmogorov-Smirnov Test	.200[1,2]	Reject the null hypothesis.
3	The distribution of ICT_Attitude is normal with mean 4.633 and standard deviation 3.22.	One-Sample Kolmogorov-Smirnov Test	.200[1,2]	Reject the null hypothesis.
4	The distribution of ICT_Training is normal with mean 3.050 and standard deviation 3.35.	One-Sample Kolmogorov-Smirnov Test	.200[1,2]	Reject the null hypothesis.
5	The distribution of Total_Score is normal with mean 19.333 and standard deviation 10.68.	One-Sample Kolmogorov-Smirnov Test	.200[1,2]	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

[1] Lilliefors Corrected

[2] This is a lower bound of the true significance.

Fig. 7.1: Showing the Kolmogorov-Smirnov tests hypothesis Test for Normality.

The above figure shows the Hypothesis Test For Normality shows that the result of the Kolmogorov-Smirnov tests indicates the five variables Knowledge of ICT, Level of technology use, ICT Attitude, ICT training and Total Score are indeed normally distributed.

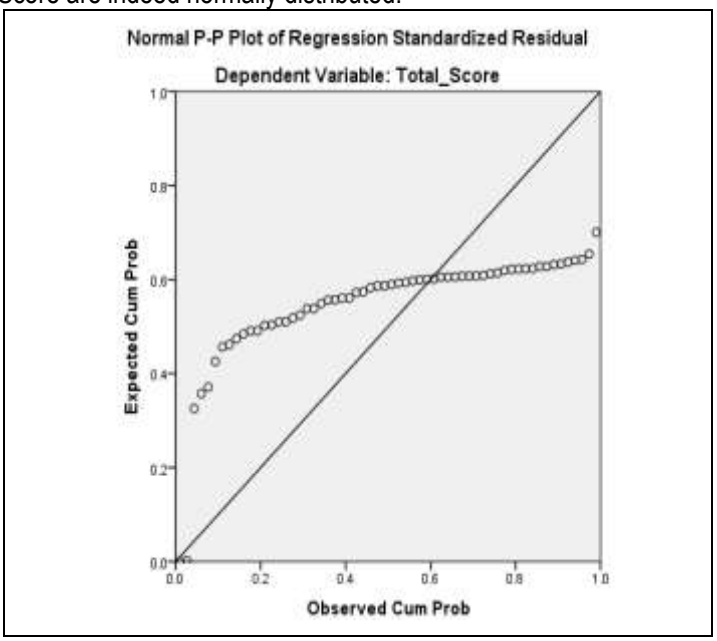

Fig. 7.2: Normal P-P Plot Regression Standardized Residuals

Figure: 7.2 Normal P-P Plot Regression Standardized Residuals, shows that the small circles are near to the straight line, which provides evidence that the residuals (error terms) are indeed normally scattered.

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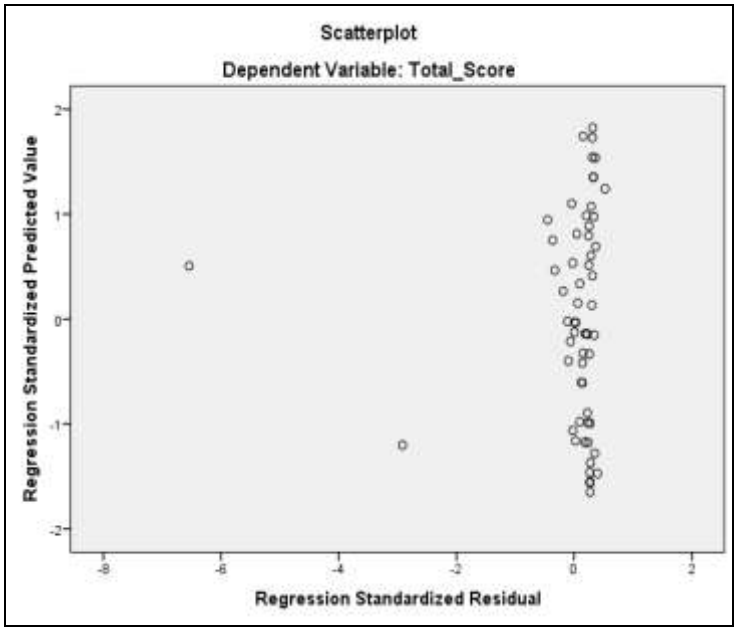

Fig. 7.3 Scatter Plot of Residuals

Figure: 7.3 Scatter Plot of residuals shows that small circles follow no pattern hence we assume equality of variances. There are numerous appearance that figure 7.3 may take on that would indicate unequal variances.

Table 7.4: Showing the Model Summary of Independent and Dependent variables.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.997[a]	.994	.993	.873

a. Predictors: (Constant), ICT_Training, Knowledge_Of_ICT, ICT_Attitude, Level_of_technology_Use
b. Dependent Variable: Total_Score

The above table gives us information regarding the strength of relationship between our variables. The value .997 shown in the "R" column of the Model Summary table shows a strong multiple correlation coefficients. It represents the correlation coefficient when all four independent variables (Knowledge of ICT, Level of technology use, ICT Attitude and ICT The value .994 shown in the "R Square" column of the Model Summary table shows that 99.4% of the variance in total score (dependent variable) can be interpreted by the four independent variables (Knowledge of ICT, training) are taken together and compared with the dependent variable (Total Score). The model summary shows that the amount of deviation in the dependent variable (Total Score) is attributed to the four independent variables (Knowledge of ICT, Level of technology use, ICT Attitude and ICT training).

Level of technology use, ICT Attitude and ICT training). It is safe to say that we have a "good" predictor. Also Adjusted R Square 99.3% shows that the model is fit.

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Table 7.5: Showing the ANOVA Table Indicating a Significant Relationship

Enova

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6683.429	4	1670.857	2193.049	.000[b]
	Residual	41.904	55	.762		
	Total	6725.333	59			

a. Dependent Variable: Total_Score
b. Predictors: (Constant), ICT_Training, Knowledge_Of_ICT, ICT_Attitude,Level_of_technology_Use

The above ANOVA table indicates that the mathematical model (regression equation) can accurately explain variation in the dependent variable (Total Score). The value of .000 (less than .05) provides evidence that there is low probability that the variation explained by the model is due to chance. We conclude that the changes in the dependent variable (Total Score) result from changes in the independent variables (Knowledge of ICT, Level of technology use, ICT Attitude and ICT training). Hence, changes in Knowledge of ICT, Level of technology use, ICT Attitude and ICT training resulted in significant changes in Total Score.

Table 7.6 Showing the Coefficients Table

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.307	.263		-1.166	.249
	Knowledge_Of_ICT	.999	.068	.298	14.713	.000
	Level_of_technology_Use	1.035	.088	.285	11.819	.000
	ICT_Attitude	1.041	.055	.314	18.981	.000
	ICT_Training	.929	.049	.291	19.022	.000

a. Dependent Variable: Total_Score

The above coefficients table provides the essential values for the prediction equation. The prediction equation holds the following form:

Y = a+b1x1+b2x2+b3x3+b4x4

Y= -.307+ (.999 X Knowledge_of_ICT) + (1.035 X Level_of_technology_Use) + (1.041 X ICT_Attitude)
+ (.929 X ICT_Training)

The above coefficient table is most important when writing and using the prediction equation. In SPSS, we can use this prediction equation to make new prediction by using Computer Variable Window under Transform button in SPSS.

Findings of the Study with Relevant Data Analysis

Main findings of the study with relevant data analysis are discussed under the following headings.

Hypothesis (1): Knowledge and Levels of ICT usage among teacher educators in teacher training colleges is low.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Knowledge_Of_ICT	60	0	10	6.25	3.187

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Level_of_technology_Use	60	0	10	5.55	2.943
ICT_Attitude	60	0	10	4.63	3.221
ICT_Training	60	0	10	3.05	3.347
Valid N (listwise)	60				

Showing Knowledge of ICT calculated (total 10 marks), which showing mean score 6.25, which shows that the teacher educators in teacher training colleges have above average level of knowledge and Levels of ICT.

Hence the above hypothesis (1) is rejected because above table shows knowledge and Levels of ICT use among teacher educators in teacher training colleges is not significantly low.

Hypothesis (2): Knowledge of ICT does not have significant role to develop an attitude of teacher educators against the use of ICT in educational process.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.457[a]	.208	.195	2.890

a. Predictors: (Constant), Knowledge_Of_ICT

b. Dependent Variable: ICT_Attitude

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.750	.827		2.116	.039
	Knowledge_Of_ICT	.461	.118	.457	3.909	.000

a. Dependent Variable: ICT_Attitude

The Model summary table shows the value .457 shown under the "R" column. It means 45.7% variance on ICT_Attitude is attributed to Knowledge_of_ICT. It further explains that there are some other variables that are to be considered to predict a significant change on ICT_Attitude of teacher educators.

Further Coefficients table shows significant p-value .000 (less than .05) explain that knowledge of ICT significantly impact on ICT_attitude of teacher educator.

Hence the above hypothesis (2) is rejected because above tables shows that Knowledge of ICT significantly impact to develop an attitude of teacher educator against the use of ICT in educational process.

Hypothesis (3): ICT training does not play significant role in making teaching learning process effective.

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.307	.263		-1.166	.249
	Knowledge_Of_ICT	.999	.068	.298	14.713	.000
	Level_of_technology_Use	1.035	.088	.285	11.819	.000
	ICT_Attitude	1.041	.055	.314	18.981	.000
	ICT_Training	.929	.049	.291	19.022	.000

a. Dependent Variable: Total_Score

The above table shows value of variable (ICT_Training) .929, which shows that the strong relationship of ICT_Training in making teaching learning process effective.

Hence the above hypothesis (3) is rejected because (0.000 < 0.05) and coefficient of ICT_training is (.929) which shows strong

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ISSN (Online): 2321-3779

relationship of ICT_training in making teaching learning process effective.

Hypothesis (4): There is no significant difference between Knowledge of ICT, Levels of ICT tools use, Attitude towards ICT, training of ICT in improving ICT skill in teaching learning process

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Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.997[a]	.994	.993	.873

a. Predictors: (Constant), ICT_Training, Knowledge_Of_ICT, ICT_Attitude, Level_of_technology_Use

b. Dependent Variable: Total_Score

The above table gives us information regarding the strength of relationship between our variables. The value .997 shown in the "R" column of the Model Summary table shows a strong multiple correlation coefficients. It represents the correlation coefficient when all four independent variables (Knowledge of ICT, Level of technology use, ICT Attitude and ICT training) are taken together and compared alongside the dependent variable (Total Score). The model summary illustrates that the sum of change in the dependent variable (Total Score) is determined through the four independent variables (Knowledge of ICT, Level of technology use, ICT Attitude and ICT training).

The value .994 shown in the "R Square" column of the Model Summary table shows that 99.4% of the deviation in a total scores (dependent variable) can be interpreted by the four independent variables (Knowledge of ICT, Level of technology use, ICT Attitude and ICT training). It is safe to say that we have a "good" predictor. And further Adjusted R square 99.3 % show that the model is fit.

Hence the above hypothesis (4) is rejected because Model Summary clearly show that there is a significant role among Knowledge of ICT, Levels of ICT tools use, Attitude towards ICT, training of ICT on improving ICT skill in teaching learning process.

Conclusion

In conclusion, teacher-educators lack necessary skills of ICT and how effectively usage of ICT in teacher training program. The study also revealed that they also have lack of training and technical support from the government as well as management of the teacher- training colleges. Teacher-educators in teacher training colleges also lack of attitude against ICT and its components benefit in teacher education program, lack of interest, lack of confidence towards ICT and perception about ICT can never enhance teaching-learning process. Since knowledge, training, attitude and accessibility to ICT resources have been established to be demanding factors for ICT integration in teacher training colleges by teacher-educators. Hence ICT-training programs, seminars, ICT resources, positive attitude towards ICT by arranging ICT workshops, adequate time and technical support need to be implemented to teacher – educators in teacher training college for the efficiently usage of ICT in teacher training programs. No one factor in itself is enough to produce efficient teaching for prospective teachers. However, the presence of all factors raises the possibility of skilful integration of ICT and ICT tools as well as devices use in teacher education program by teacher educators in teacher training colleges.

Suggestion for further study

The current study is conducted against teacher-educators of teacher training colleges. This study can also be repeated on teachers and lectures of schools, degree colleges and other professional colleges. The present study was to be restricted to 60 teacher-educators of education colleges in the State of Punjab. In further study large sample can be taken up even on the different state and national level.

ISSN (Print): 2278-0793
ISSN (Online): 2321-3779

The same study can also be conducted on students of schools, colleges and pre-service teachers.

Advantages of the study

With the advent of ICT, there has been a move from general Literacy to ICT Literacy. Now a days ICTs tools and devices have their utility in almost every sphere of life. The world of education has also been inclined by the increase use of ICT in education. However following points show the advantages or benefits of knowledge and levels of ICT usage among teacher-educators in teacher-training colleges.

- Creation of a new generation of prospective teachers skilled of employing a variety of technology tools and devices into all phases of the educational process.
- Enhance instruction whereby interaction and immediate feedback can be supplied to support skill practice.
- Tool for teaching and learning itself, the medium through which teachers can teach and learners can learn.
- Used to illustrate real-world relevance through highly visual presentations that stimulate learning powers of the students as well as create greater enthusiasm for learning.

Hence it is essential for the teacher educators in teacher-training colleges to become technology literate so that they can teach effectively to prospective-teachers and also provide the latest knowledge to them for their better development and compete with this electronic era.

Limitations of the study

The above study reveals that the one of the major limitation for the cause of ICT-integration not reaching its full potential in the foundation stage is teacher's attitude. Some see it as a potential tool to aid learning whereas others seem to disagree with the use of technology in teaching-learning process. Some people may have the opinion that the teachers who had not experienced ICT throughout their learning tend to have a negative attitude towards it, as they may lack the training in that area of the curriculum. Some are of the views that over-reliance on ICT tools and devices limits student's critical thinking and analytical skills. As well as use of ICT may be difficult for weaker students, because they may have problems with working independently and may need more support from the teacher

Application of the study

- Introducing ICT subject as compulsory subject in the curriculum of teacher education program.
- Arranging ICT- related seminars and conferences in the teacher-training colleges to improve the ICT skills among teacher-educators which in turn beneficial for prospective-teachers.
- Providing ICT training, technical support to teacher-educators by the government as well as management of the teacher training colleges.
- Providing ICT resources, proper infrastructures including well-equipped laboratory with high speed internet connection by the government and administration of the teacher training colleges.
- Identify the teachers who are lacking basic knowledge of ICT and arranging in-service ICT-courses for improving their skills by the government as well as management of the teacher training colleges.
- Efficiently scrutinize teachers during the process of interview of ICT teachers in teacher training colleges.

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