

ICT Competency Of Teacher Trainees

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Abstract

This research paper enquired about the ICT competencies of the prospective teachers. A sample of four hundred trainees responded to this study. The data was processed using percentage analysis and 't' test. The result reveals that the teacher trainees have moderate competency in ICT. The male and female trainees significantly differ in basic computer skills and Internet knowledge. The trainees significantly differ in ICT competency and its dimensions with respect to their age. ICT competency is an essential competency for the teacher to meet the challenges in this new millennium. It is the basic requirement for to achieve global competency.

KEYWORDS: ICT Competency, B.Ed trainees

INTRODUCTION

21st century learning is the process whereby digital natives utilise the power of modern technology to learn anything, anytime and anywhere. Classrooms are no longer necessarily defined by rigid walls, as hybrid learning models blend the virtual with the physical into a truly engaged and collaborative educational experience. Effective teaching in the 21st century must be student centered and must infuse technology into the learning experience for both rigour and relevance and emphasise higher order thinking skills.

TEACHER AND TECHNOLOGY

The new millennium was ushered in by a dramatic technological revolution. Living in an increasingly diverse, globalised and a complex, media-saturated society 21st century education is flexible, creative, challenging and complex.

It addresses rapidly changing world filled with fantastic new problems as well as exciting new possibilities within the sound education setting. The teacher can enable students to the technology to become better information seekers, analysers, problem solvers and communicators. Government, experts and practitioners in the education sector increasingly recognize that the Information and Communication Technology (ICT) can play an important role in supporting educational improvement and reforms.

IMPACT OF ICT ON THE LEARNING ENVIRONMENT

ICT is a mediator of learning as a component of the learning environment. Schools and educational systems must provide the infrastructure and support for students and teachers, and the maintenance of constructivist learning environments in which ICT is used.

Research has consistently shown that a few schools and teachers implement computer support to a degree where the potential benefits are likely to be realised.

There are a number of significant problems which impede and prevent teachers from achieving the full advantage offered by computer applications.

ICT Competency for Teachers

Today's classroom teachers must be prepared to provide technology-supported learning opportunities for their students. Being prepared to use technology and knowing how that technology can support student learning must become integral skills in every teacher's professional repertoire.

Teachers must be prepared to empower students with the advantages of technology. Schools and classrooms, both real and virtual, must have teachers who are equipped with technology resources and skills and who can effectively teach the necessary subject matter while incorporating technology, concepts and skills. Real-world connections, primary source material, and sophisticated data-gathering and analysis tools are only a few of the resources that enable teachers to provide unimaginable opportunities for conceptual understanding.

Traditional educational practices no longer provide prospective teachers with all the necessary skills for teaching students, who must be able to survive economically in today's workplace. Teachers must teach students to apply strategies for solving problems and to use appropriate tools for learning, collaborating, and communicating. The problem is not necessarily lack of funds, but lack of adequate training and lack of understanding of how computers can be used to enrich the learning experience.

STATEMENT OF THE PROBLEM

“ICT Competency of Teacher Trainees”

NEED FOR THE STUDY

The International Society for Technology Education has released its Educational Technology Standards for teachers. These standards include 21st century skills such as finding and managing resources, publishing on the web and connecting with colleagues, students, parents and local and global communities. In this line quality teachers must be provided with quality teacher education by enhancing ICT competency. Because ICT competent teachers are needed to develop ICT competent students to face the emerging challenges such as global warming, famine, poverty, health issues, global population explosion and other environmental and social issues. These issues lead to a need for these future citizens to be able to communicate, function and create change in personality, socially, economically and politically on local, national and global levels. Therefore quality of a nation depends upon the quality of its citizens. The quality of the citizens rests upon the quality of their education. The quality of their education depends upon the competency of the teachers.

BACKGROUND OF THE STUDY

Existing literature on the application of ICT in classrooms is substantial. Prior to 2006, several studies suggested inadequate, insufficient or unsatisfactory teacher education for ICTs. Several of these studies base their conclusions on survey of teacher and student perception.

Amutha (2008) reported that ICT knowledge among prospective teacher educators. They recommended that teacher education institutions should play a new role in the coming years in promoting the use of information and communication

technology in their education through a variety of teacher education programmes. Singaravelu (2007) reported that the full benefit of technology skill of faculty and students ensuring adequate system support and providing the funds necessary to build a new academic frame work around the new resources. Silla et al. (2008) identified that e-learning resources to support teachers of disabled children. They suggested that educational institutions in developing countries need to recognize the specialized support available to special education teachers in the developed world so that they might replicate such practice locally. Paily (2006) suggested that the education sector and teacher education in particular need to take a leadership role in the transformation of educational processes to reap the full benefits of ICT.

OBJECTIVES

- To find the level of ICT competency of B.Ed., trainees with reference to background variables such as Gender, Age, Subject, Qualification, Type of Institution and Nature of Institution.
- To find the significant difference between B.Ed., trainees in ICT competency and its dimensions with reference to background variables.

HYPOTHESIS

There is no significant difference between B.Ed., trainees in ICT competency and its dimensions with reference to background variables.

TOOL DESCRIPTION

To assess the perceived competency towards ICT of student teachers of secondary teacher education, the investigator developed a tool known as ICT competency scale. This scale consists of 5 dimensions namely basic computer operation skill, word processing, spreadsheet, power point presentation and internet knowledge. The items have five responses namely not aware, little experience, occasional usage, regular user, confident and explain.

Dimension (1) Basic Computer Operation Skills

One of the most relevant issues in classrooms today is the incorporation of technology, specifically computers, into classroom instruction. Hence in order to measure the level of basic computer operation skills of student teachers of secondary teacher education students the following aspects are included.

- Running a programme in a computer system
- Using of CD Based softwares
- Organising the files into a folder
- Searching a file in the computer system
- Copying filed from CD to Computer
- Creating backup files onto various media types (CD, DVD, USB, Hard Drive)
- Printing a file
- Connecting the various parts of the computer
- Using a scanner for copying images
- Using a Digital Camera to take photographs

Dimension (2) Word Processing

Today's classroom teachers need to be prepared to provide technology-supported learning opportunities for their students. Being prepared to use technology

and knowing how that technology can support student learning have become integral skills in every teacher's professional repertoire. In order to evaluate the level of student teachers' skill on word processing the following statements were included in the tool.

- Creating a new document file in Microsoft Word
- Using simple Editing in MS-Word e.g. bold, italics, etc.
- Applying Spell check in MS-Word
- Inserting an image in a word document
- Using Header and Footers
- Setting the margin of a page
- Saving a document file in different format like HTML
- Creating tables in a word document
- Inserting page numbers to a word document
- Adding a new column to an existing table in MS-Word

Dimension (3) Spreadsheet

A **spreadsheet** is a computer application that simulates a paper worksheet. It displays multiple cells that together make up a grid consisting of rows and columns, each cell containing either alphanumeric text or numeric values. A spreadsheet cell may alternatively contain a formula that defines how the contents of that cell is to be calculated from the contents of any other cell (or combination of cells) each time any cell is updated. Spreadsheets are frequently used in the field of education especially on marking scheme. The following statements were added in the ICT competency scale to find out the spreadsheet skill of distance mode student teachers.

- Inputting data in rows and columns of spreadsheet
- Sorting the data in ascending or descending order
- Adding few numbers of a column using formulae
- Cell-referencing in a spreadsheet
- Protecting a spreadsheet through password

Dimension (4) power point presentation

Microsoft PowerPoint is a presentation program developed by Microsoft. It is part of the Microsoft Office suite, and runs on Microsoft Windows and Apple's Mac OS X computer operating systems. PowerPoint is widely used by business people, educators, students, and trainers and among the most prevalent forms of persuasive technology. The following aspects were included to measure the skill of distance mode B.Ed. student teachers in power point presentation.

- Creating a basic presentation package
- Adding clip arts within the slides
- Modifying the colours of the text and lines
- Introducing animation onto slides
- Modifying transition between slides
- Rearranging the slides within the presentation
- Produce appropriate hand out formats
- Using of LCD projector for presentations

Dimension (5) Internet Knowledge

The Internet, a global network of networks connecting millions of computers and computer users, is a relatively new resource for educators. The Internet is a valuable aid and a resource invariably could be used by the teachers in the teaching learning process. In these aspects the followings statement were included in the toll.

- Accessing the World Wide Web using web site address
- Using search engines to find information
- Downloading files from the internet
- Saving text and images from web pages
- Sending and receiving of e-mails
- Attaching files to outgoing e-mails
- Forwarding e-mails to selected contacts

NUMBER OF ITEMS

Table No. 01

	Dimensions	Number of Items
1	Basic Computer Operation Skills	10 items
2.	Word Processing	10 items
3.	Spread sheet	5 items
4.	Power point Presentation	8 items
5.	Internet knowledge	7 items
	Total	40 items

SCORING PROCEDURE

Table No. 02

Responses	Scores
Not aware of	1
Little experience	2
Occasional usage	3
Regular user	4
Confident and can explain	5

POPULATION AND SAMPLE

The population for the present study is the B.Ed., trainees from Colleges of Education in _____ Tirunelveli District, Tamilnadu.

A sample of 400 teacher trainees was drawn through simple random sampling technique.

STATISTICAL MEASURES

To analyse the data, percentage analysis and 't' test have been used.

ANALYSIS

Table No. 03

ICT Competency of B.Ed Trainees

Background Variables	Categories	Low		Average		High	
		Count	%	Count	%	Count	%
Gender	Male	35	18.4	119	62.6	36	18.9

	Female	40	19.0	131	62.4	39	18.6
Age	25 & below	66	20.5	198	61.5	58	18.0
	26 & above	14	17.9	46	59.0	18	23.1
Subject	Arts	24	19.5	72	58.5	27	22.0
	Science	55	19.9	167	60.3	55	19.9
Qualification	UG	48	18.4	165	63.2	48	18.4
	PG	24	17.3	87	62.0	28	20.1
Type of Institution	Aided	52	19.0	172	62.8	50	18.2
	Self financing	20	15.9	80	63.5	26	20.6
Nature of Institution	Autonomous	38	19.0	124	62.0	38	19.0
	Affiliated	36	18.0	124	62.0	40	20.0

The above table gives a clear picture that majority of the trainees have Average competency in all the dimensions with reference to all the background variables such as Gender, Age, Subject, Qualification, Type of Institution and Nature of Institution.

Table No-04

Difference between B.Ed trainees in ICT Competency with reference to Gender

Dimensions		Mean	S.D.	't' Value	Remark
D1	Male	51.23	10.78	2.33	Significant
	Female	48.89	9.13		
D2	Male	49.60	9.93	0.78	Not Significant
	Female	50.36	10.08		
D3	Male	50.11	9.62	0.21	Not Significant
	Female	49.90	10.36		
D4	Male	50.13	10.27	0.25	Not Significant
	Female	49.88	9.77		
D5	Male	50.25	10.26	2.39	Significant
	Female	48.87	9.64		
Total Sample	Male	50.54	10.04	1.03	Not Significant
	Female	49.51	9.96		

(At 5% level of significance value = 1.96)

From the above table it is evident that the 't' values for D1 and D5 are significant. So male and female trainees significantly differ in Basic Computer Operation Skill and Internet Knowledge. Male trainees are better competent than the female.

Table No-05

Difference between B.Ed trainees in ICT Competency with reference to Age

Dimensions		Mean	S.D.	't' Value	Remark
D1	25 & below	49.47	9.31	1.82	Not Significant
	26 & above	52.18	12.29		

D2	25 & below	50.15	9.69	0.55	Not Significant
	26 & above	49.39	11.25		
D3	25 & below	49.80	9.86	0.78	Not Significant
	26 & above	50.83	10.59		
D4	25 & below	49.75	9.61	0.92	Not Significant
	26 & above	51.04	11.48		
D5	25 & below	49.92	9.87	0.33	Not Significant
	26 & above	50.35	10.59		
Total Sample	25 & below	49.80	9.45	0.70	Not Significant
	26 & above	50.82	12.06		

(At 5% level of significance value = 1.96)

The calculated 't' values are not greater than the table values at 5% level of significance. So age does not play a significant role in deciding the competency level of B.Ed trainees.

Table No-06

Difference between B.Ed trainees in ICT Competency with reference to Subject

Dimensions		Mean	S.D.	't' Value	Remark
D1	Arts	48.19	9.44	2.50	Significant
	Science	50.81	10.15		
D2	Arts	47.19	10.55	3.66	Significant
	Science	51.25	9.50		
D3	Arts	48.23	9.71	2.40	Significant
	Science	50.79	10.04		
D4	Arts	48.14	9.11	2.62	Significant
	Science	50.83	10.28		
D5	Arts	47.91	9.31	2.91	Significant
	Science	50.93	10.17		
Total Sample	Arts	47.42	9.95	3.47	Significant
	Science	51.15	9.82		

(At 5% level of significance value = 1.96)

The table gives a clear picture that the calculated 't' values are greater than the table values. Hence there is significant difference between Arts and Science trainees in their ICT competencies. The Science students teachers are better competent than the Arts student teachers.

Table No-07

Difference between B.Ed trainees in ICT Competency with reference to Qualification

Dimensions		Mean	S.D.	't' Value	Remark
D1	UG	48.30	8.98	4.50	Significant
	PG	53.19	11.02		
D2	UG	48.94	10.03	2.96	Significant
	PG	51.99	9.66		

D3	UG	49.03	9.56	2.61	Significant
	PG	51.83	10.57		
D4	UG	48.39	9.29	4.33	Significant
	PG	53.02	10.61		
D5	UG	48.27	9.43	4.75	Significant
	PG	53.25	10.25		
Total Sample	UG	48.28	9.45	4.73	Significant
	PG	53.23	10.24		

(At 5% level of significance value = 1.96)

The above table is an evident that the calculated 't' values are greater than the table values. There fore there is significant difference between UG and PG qualified trainees in there ICT competency. Trainees with PG qualification are better competent than UG trainees.

Table No-08

Difference between B.Ed trainees in ICT Competency with reference to Type of Institution

Dimensions		Mean	S.D.	't' Value	Remark
D1	Aided	50.24	9.91	0.70	Not Significant
	Self finance	49.48	10.21		
D2	Aided	50.70	9.65	2.01	Significant
	Self finance	48.47	10.61		
D3	Aided	49.96	9.80	0.10	Not Significant
	Self finance	50.08	10.46		
D4	Aided	50.01	10.08	0.03	Not Significant
	Self finance	49.98	9.86		
D5	Aided	51.10	9.96	3.30	Significant
	Self finance	47.62	9.71		
Total Sample	Aided	50.55	9.72	1.58	Not Significant
	Self finance	48.80	10.53		

(At 5% level of significance value = 1.96)

The above table it is learnt that the calculated 't' values for D2 and D5 are greater than the table values. Hence the trainees of aided colleges and self finance colleges significantly differ in their competencies in Word Processing and Internet Knowledge. Trainees of aided colleges have better competencies than the trainees of self financing colleges.

Table No-09

Difference between B.Ed trainees in ICT Competency with reference to Nature of Institution

Dimensions		Mean	S.D.	't' Value	Remark
D1	Autonomous	50.31	9.92	0.63	Not Significant
	Affiliated	49.69	10.09		
D2	Autonomous	50.42	9.65	0.83	Non Significant
	Affiliated	49.58	10.35		
D3	Autonomous	48.90	9.39	2.21	Significant
	Affiliated	51.10	10.48		

D4	Autonomous	49.48	9.91	1.05	Not Significant
	Affiliated	50.52	10.09		
D5	Autonomous	51.33	9.96	2.69	Significant
	Affiliated	48.67	9.88		
Total Sample	Autonomous	50.25	9.75	0.46	Not Significant
	Affiliated	49.75	10.26		

(At 5% level of significance value = 1.96)

The 't' values for D3 and D5 are greater than the table values. Therefore the trainees of affiliated and autonomous colleges significantly differ in D3 and D5.

MAJOR FINDINGS AND DISCUSSIONS

Majority of the B.Ed., trainees have average ICT competency. Rogers (2009) reported that teachers believed that sufficient training was not being available to them, however they rate themselves average when it comes to implementing and utilizing technology in their classroom. Amutha (2008) found that the ICT knowledge of the prospective teacher educators was below average. Dash (2007) reported that it is essential to integrate ICT in curriculum of teacher education so as to prepare teachers for the future.

Comparing mean scores based on 't' values, significant difference is found in (D1) Basic Computer Operation Skill (2.33) and (D5) Internet Knowledge (2.39) with reference to Gender. Male trainees are more competent than the female in these two dimensions. This might be due to the fact that male teacher trainees get ample time to use these technologies and they develop their competency without any inhibition. This interpretation draws support from the previous findings of Vinay Jagga (2008) report that male and female students differ in their average time spent on Internet.

There was no significant difference found in all the dimensions of ICT competency with reference to age. The trainees in colleges of education undergo a similar programme and they are also provided a little training in use of computers, since they do not significantly differ in ICT competency with reference to age. Arts and Science teacher trainees significantly differ in ICT competency considering the 't' values (i.e. D1-2.50, D2-3.66, D3-2.40, D4-2.62, D5-2.91) tested at 5% level of significance. Science students are better than arts students in their ICT competency. It is concluded that PG student teachers are better than the UG trainees in their ICT competency based on the 't' test values (D1-4.50, D2-2.96, D3-2.61, D4-4.33, D5-4.75)

The trainees of the aided colleges are better in (D2) Word Processing (2.01) and (D5) Internet Knowledge (3.30) than the trainees of self-financing colleges. Amutha (2008) concluded that prospective teacher educators do not significantly differ in use of word processing.

Trainees of affiliated colleges are better than the trainees of autonomous colleges in the (D3) Use of Spread Sheet (2.21). But trainees of autonomous colleges are having better (D5) Internet Knowledge (2.69) than the trainees of affiliated colleges. On the other hand, Amutha reports that the prospective teacher educators of Bharathidasan University and its affiliated colleges do not differ in their ICT knowledge.

CONCLUSION

Balasubramanian (2002) stressed the need for making computer education as a part of the teacher training curriculum he called upon the teachers to develop suitable software packages for the students. The future teachers may be provided with needed training and infrastructure facilities to develop a positive attitude, since attitude breeds enthusiasm. Because the problems teachers have with the use of computers may be viewed in terms of access to adequate infrastructure, and access to support for implementation in using that infrastructure. Research has consistently shown that few institutions and teachers implement computer support to a degree where the potential benefits are likely to be realized. It is increasingly imperative to reach a critical mass to teachers who are capable of using ICTs and teaching multi-literacy in order to equip 21st century citizens with the necessary skills for functioning fully in a global society.

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