Impact of Demographics on Factors Affecting Information Communication Technology Enabled Teaching in School

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Abstract

Indian Education System has witnessed extensive use of computers in many areas of our schools. Teaching and learning process is the focal point in schools using ICT. Today computers are extensively used for teaching, learning, examination, result declaration, attendance management and office administration in schools. The use of technology, particularly information and communication technology, to support learning promises much. This technology helps the students to complete their studies in terms of place, time and pace, and most importantly, the ICTs provides teaching staff more opportunities to communicate with students without their physical presence. This study aims at identifying the usage of ICT in school education and its impact on the teaching and learning in schools.

Keywords : *Communication Technology, Education, Teaching*

Introduction

Indian education system has witnessed extensive use of computers in many areas on a daily basis. One of such area is teaching and learning process in schools. Today computers are extensively used for teaching, learning, examination, result declaration, attendance management and office administration in schools. Advancements in information technology innovations and computer usage have rapidly transformed work culture of school teachers. They cannot escape the fact that today's teaching must be aided with Information and Communication Technology (ICT).

In Indian society education has always been accorded an honoured high place. In the last few years improvement in the status of school education has been the prime focus of government. Use of ICT enabled technology has been a very helpful in this step. In 1980's India recognised the importance of ICT based school education when Computer Literacy and Studies in Schools Project was introduced.

Since then the use of ICT in teaching learning in schools has been increasing. In recent years blackboards have given way to projectors with interactive whiteboards. ICT enables interactive classrooms improve teaching and learning process. It has changed the way of teaching and learning of subjects like Mathematics, Science, Social Sciences and Languages etc. It allows a teacher to engage students in class more effectively by

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using audio visual means. Further enables them to create question papers, evaluation and analyse performance of in much better way. Science teachers can give a visual tour of entire laboratory in classroom with the help of ICT. Lesson plans can be easily captured and shared online enhancing the interaction with students. Concept dealt with the use of ICT based teaching methodology enables students to grasp them more effectively and quickly. With the help of ICT based learning teacher can easily make their teaching material and can spread that material to students. ICT based technologies is not restricted within four walls of classrooms. Teaching material can be spread with a single click and it depends on students when and where they want to access that material given by teacher.

The use of technology like ICT to support learning promises much. This technology allows students to learn without restrictions of four walls of classrooms. ICT provides facilities to teachers to communicate with students without restrictions of distance. ICT helps schools in managing student data like attendance, exam records, results etc which can be further they can share with the parents using websites.

Some of these advantages of ICT base teaching are:

Flexibility and control: students are not restricted by four walls of classroom or time constraint. Students decide when and where they want to access that material.

Reduced cost*:* Once teaching material has been developed by teachers than it can lasts for many years and they can easily make changes in to it as compared to hard copies.

Improved interaction: ICTs provide many ways to teachers and students to interact with each other. It can be face to face or if they are not same place than with the help of ICT based technologies they can interact with each other either live or in recorded video.

 Although use of ICT is very helpful in teaching and learning in schools but there are various problems associated with it. High cost of infrastructure, peripheral devices, networking and appropriate training of teachers are some of the issues that need to be properly taken care of before deciding upon using the same. Although this pedagogy is picking up in schools but prima facie it seems that the usage is more by private schools. Off late now government schools have also started using ICT based teaching but it is still not up to the mark. This study makes an attempt to identify factors affecting Information and Communications Technology enabled teaching by school teachers.

Review of Literature

Dellit, J. (2002). "The researcher says that ICT does not automatically add quality. To apply ICT in education system changed approaches by educators. ICT can contribute to quality in teaching, learning and evaluation through improvements in cognition, pedagogies, convergence, culture, and data. Destructive and immoral purposes of

ICT can waste students' time. Using ICT with intelligence, diligence, research and commitment in education can enhance quality of education."

Kelvin, O.O., Oghenetega, I. and Jackson, A. (2012). This reserch work explains that planning can help libraries to outline steps that must be taken to implement ICT which will be binding on all stakeholders, and accepted by all in line with the mission, objective and goals of the library and the university towards provision of information for its community. The researcher points out that over the years, many academic libraries in Nigeria have made attempts to deploy information and communication technologies (ICTs) to enable them manage their libraries and also to join the global information phenomena. The need for ICT planning in academic libraries also stems from the situational analysis of what is on the ground in the library, academic institution and the country at large in terms of ICT development.

Kumar, B.T. and Biradar, B.S. (2010). "ICTs in India have converted traditional libraries into knowledge centres and librarians have become information engineers. The purpose of this research work has been to analyse the use of ICT in 31 college libraries in Karnataka, India by investigating the ICT infrastructure, current status of library automation, barriers to implementation of library automation and also librarians' attitudes towards the use of ICT. The researcher says that application of ICT in Indian college libraries has not reached a very high level. Main constraints for not having an automated library lack of budget, lack of manpower, lack of skilled staff and lack of training are the . Even though library professionals have shown a positive attitude towards the use of ICT applications and library automation, they need extensive and appropriate training to make use of ICT tools. This research work is a comprehensive study on the use of ICT in Indian college libraries. Its findings should help college librarians, local government and also the University Grants Commission, New Delhi.

RESEARCH METHODOLOGY

Research Gap

Having done a thorough literature review teaching-learning process in India is more of class-room, laboratory, and presentation oriented, where teacher being its focal point. Students are required to listen to whatever the teacher is explaining and then understand it. A large number of researches conducted on students learning have outlined that in tradition methods many students are not comfortable due to their perceptions of the atmosphere and the circumstances leading to the unsatisfied learning experience. This approach has been in use for a very long period of time and despite of all its disadvantages the approach has delivered results. But it is slowly being taken off by ICT based system. It is now supplemented with audio-visual aids like the use of projectors, stereo systems and the projection of films. This new system is rapidly gaining popularity in higher education and also in school education. Indore being the

education hub of Indore both in higher and school education has rapidly adapted to changes in the education system. Although government is putting lot of importance on ICT based teaching and learning initiatives for school education but still lot needs to be done. This study makes and attempt to find out the current status of ICT based learning in schools in Indore.

Objectives of the Study

1. To identify the factors affecting the level of ICT for teaching and learning amongst teachers of Government and Private Schools of Indore.

2. The study the effect of demographics factors such as on the factors affecting the level of usage ICT by teachers and students of Government and Private Schools of Indore

Date Collection: Primary data was used for the purpose of this research.

Development of Survey Instrument

Extensive review of relevant literature and discussion with academicians and practitioner 36 items were developed. These 36 items were further circulated to a panel of experts possessing vast experience in the field of school teaching and research. The panel suggested certain changes which were incorporated finally leaving the total number of statements as 28. The questionnaire was made on Likert scale and responses were marked as 5 = Strongly Agree, 4 = Agree, 3 = Neutral, 2 = Disagree, 1 = Strongly Disagree.

Sample Size

The questionnaire was circulated to a sample of 175 school teachers from both government as well as private schools of Indore. Out of 175 questionnaires 145 were found to be appropriate for use. 30 questionnaires were rejected due to missing data.

Reliability

The reliability of an instrument refers to its ability to produce consistent results each time it is administered. The reliability of the questionnaire was calculated using split-half reliability method. The reliability was found to be 0.73.

Validity

The validity of the instrument was found to be very high. The validity was 0.632.

**Table 1 : Descriptive Statistics**			
S. No.	**Demographic**	**Numbers**	**Percentage**
1.	Gender	Male = 105 Female= 40	Male = 72.41 % Female = 27.58 %
2.	Age	20 - 30 = 56 31 – 40 = 41 41 – 50 = 30 50 – Above = 18	20 - 30 = 38.62 % 31 – 40 = 28.27 % 41 – 50 = 20.68 % 50 – Above = 12.41 %
3.	Teaching Stream	Science = 15 Maths = 25 Social Science = 37 Language = 42 Commerce = 26	Science = 10.34 % Maths = 17.24 % Social Science = 25.51 % Language = 28.96 % Commerce = 17.93 %
4.	Teaching Standard	Primary = 62 Secondary = 47 Higher Secondary = 36	Primary = 42.75 % Secondary = 32.41 % Higher Secondary = 24.82%
5.	School Category	Government = 81 Private = 64	Government = 55.86 % Private = 44.13 %
6.	Position	Lower Division Teacher = 62 Upper Division Teacher = 48 Principal = 35	Lower Division Teacher = 42.75 % Upper Division Teacher = 33.10 % Principal = 24.13 %
7.	Level of Education	UG = 64 PG = 57 Ph.D. = 24	UG = 44.13 % PG = 39.31 % Ph.D. = 16.55 %
8.	Education Background	Science = 17 Commerce = 26 Arts = 42 Others = 60	Science = 11.72 % Commerce = 17.93 % Arts = 28.96 % Others = 40.68 %
9.	M.Ed.	Yes = 74 No = 71	Yes = 51.03 % No = 48.96 %
10.	B.Ed.	Yes = 134 No = 11	Yes = 92.41 % No = 7.58 %
11.	Diploma / Certificate in Computers	Yes = 86 No = 59	Yes = 59.31 % No = 40.68 %

Statistical Tool Used

Factor analysis was used to find out factors affecting usage ICT by school teachers.

To study the impact of demographics on various factors affecting ICT based teaching and learning 48 hypothesis are constructed and tested using t-Test. For this purpose SPSS is used.

Factors Affecting Usage of ICT by School Teachers

The scale was administered on sample of 145 school teachers of Indore. The scores obtained were subjected to factor analysis and 6 factors were identified. Items whose load factor was less than 50% were ignored. (Refer Table 2)

Table 2		
Factor No	**Factor Name**	**Question No**
1	ICT Enabled Resources	7,8,9
2	Student Data Management	23,24,25
3	ICT based Teaching and Learning	1,2,3,4,5,6
4	Hands on Experience using IT	26,27,28
5	Knowledge Management using ICT	11,12,13
6	IT Supported Examination	18,19,21

Table 3: Rotated Component Matrix						
Ques-tions	**Factor 1** ICT Enabled Resources	**Factor 2** Student Data Man-agement	**Factor 3** ICT based Teaching and Learning	**Factor 4** Hands on Experience using IT	**Factor 5** Knowledge Management using ICT	**Factor 6** IT Supported Examination
Q7	0.81932					
Q8	0.801249					
Q9	0.711972					
Q23		0.822614				
Q24		0.756335				
Q25		0.616908				
Q1			0.777596			

Q2			0.711391			
Q3			0.685268			
Q5			0.844183			
Q4			0.824972			
Q6			0.6322			
Q28				0.779671		
Q27				0.764095		
Q26				0.722542		
Q13					0.769344603	
Q12					0.699578259	
Q11					0.517340563	
Q21						0.813078
Q18						0.819915
Q19						0.535475

Extraction Method: Principal Component Analysis

Rotation Method: Varimax with Kaiser Normalization

a. Rotation converged in 12 iterations.

Hypothesis Testing: Impact of demographic variables on factors affecting ICT enabled teaching in schools

Hypothesis	P Value	Analysis	Result
1. There is no significant impact of gender of teacher on use of ICT enabled resources.	0.229	Value is >0.05 No. Sig. effect	Accepted
2. There is no significant impact of gender of teacher on use of ICT for student data management.	0.329	Value is >0.05 Sig. effect	Accepted
3. There is no significant impact of gender of teacher on use of ICT based teaching and learning.	0.395	Value is >0.05 Sig. effect	Accepted
4. There is no significant impact of gender of teacher on hands on experience using IT.	0.251	Value is >0.05 Sig. effect	Accepted
5. There is no significant impact of gender of teacher on knowledge management using ICT	0.10	Value is >0.05 Sig. effect	Accepted

Hypothesis	P Value	Analysis	Result
6. There is no significant impact of gender of teacher on use IT supported Examination	0.289	Value is >0.05 No Sig effect.	Accepted
7. There is no significant impact of age of teacher on use of ICT enabled resources	0.078	Value is >0.05 Sig. effect	Accepted
8. There is no significant impact of age of teacher on use of ICT for student data management.	0.042	Value is <0.05 Sig. effect	Rejected
9. There is no significant impact of age of teacher on use of ICT based teaching and learning.	0.398	Value is >0.05 Sig. Effect	Accepted
10. There is no significant impact of age of teacher on hands on experience using IT.	0.000	Value is <0.05 Sig effect	Rejected
11. There is no significant impact of age of teacher on knowledge management using ICT.	0.014	Value is <0.05 Sig effect	Rejected
12. There is no significant impact of age of teacher on use IT supported Examination	0.054	Value is >0.05 Sig. effect	Accepted
13. There is no significant impact of teaching stream of teacher on use of ICT enabled resources	0.001	Value is <0.05 Sig. effect	Rejected
14. There is no significant impact of teaching stream of teacher on use of ICT for student data management	0.029	Value is <0.05 Sig. effect	Rejected
15. There is no significant impact of teaching stream of teacher on use of ICT based teaching and learning.	0.002	Value is <0.05 Sig. effect	Rejected
16. There is no significant impact of teaching stream of teacher on hands on experience using IT.	0.004	Value is <0.05 Sig. effect	Rejected
17. There is no significant impact of teaching stream of teacher on knowledge management using ICT.	0.750	Value is >0.05 Sig. effect	Accepted
18. There is no significant impact of teaching stream of teacher on use IT supported Examination.	0.328	Value is >0.05 Sig. effect	Accepted
19. There is no significant impact of teaching standard of teacher on use of ICT enabled resources.	0.088	Value is >0.05 Sig. effect	Accepted
20. There is no significant impact of teaching standard of teacher on use of ICT for student data management	0.955	Value is >0.05 Sig. effect	Accepted

Hypothesis	P Value	Analysis	Result
21. There is no significant impact of teaching standard of teacher on use of ICT based teaching and learning	0.214	Value is >0.05 Sig. effect	Accepted
22. There is no significant impact of teaching standard of teacher on hands on experience using IT	0.203	Value is >0.05 Sig. effect	Accepted
23. There is no significant impact of teaching standard of teacher on knowledge management using ICT	0.732	Value is >0.05 No Sig. effect	Accepted
24. There is no significant impact of teaching standard of teacher on use IT supported Examination.	0.002	Value is <0.05 Sig. effect	Rejected
25. There is no significant impact of school category of teacher on use of ICT enabled resources	0.786	Value is >0.05 Sig. effect	Accepted
26. There is no significant impact of school category of teacher on use of ICT for student data management	0.861	Value is >0.05 Sig. effect	Accepted
27. There is no significant impact of school category of teacher on use of ICT based teaching and learning	0.202	Value is >0.05 Sig. effect	Accepted
28. There is no significant impact of school category of teacher on hands on experience using IT.	0.401	Value is >0.05 Sig. effect	Accepted
29. There is no significant impact of school category of teacher on knowledge management using ICT	0.561	Value is >0.05 Sig. effect	Accepted
30 There is no significant impact of school category of teacher on use IT supported Examination.	0.049	Value is <0.05 Sig. effect	Rejected

From hypothesis no 1 to 6 it can be inferred that gender does not have any effect on factors affecting ICT enabled teaching in school. Gender of teacher is immaterial when it comes to usage of ICT enabled resources for teaching. Both male and female teachers make use of ICT enabled resources in teaching. Similarly student data management is also not affected by gender. Maintaining of student data using ICT is done by both male and female teachers alike. ICT is used by both male and female teachers for Teaching and Learning. Now a days' teachers provide Hands on Experience using IT and this is irrespective of their gender. Gender is immaterial when we talk about Knowledge Management using ICT. IT Supported Examination is also not affected by gender, which means the both male and female teachers use IT supported examination.

From hypothesis no 7 to 12, it can be inferred that age does not have any effect on ICT enabled teaching in school. Age of teacher is immaterial when it comes to usage of ICT enabled resources for teaching. Teachers of all age make use of ICT enabled resources in teaching. IT Supported Examination is also not affected by age, which means teacher belonging to any age use IT supported examination. Student data management is affected by age. Teachers from higher age group do not use of IT for providing Hands on Experience in their teaching process and in Knowledge management.

From hypothesis no 13 to 18 check significant impact of teaching stream on factors. Teaching stream has effect on ICT enabled teaching in school. Few streams in schools does not support ICT enabled teaching because many streams in schools required practical knowledge or laboratory session etc which cannot be provided using ICT. Teachers from non IT background make less use of IT based student data management, ICT based teaching and learning, hands on experience using IT. Knowledge management using ICT and IT supported examination.

From hypothesis 19 to 24, said that teaching standard does not have any effect on factors affecting ICT enabled teaching in school. Teaching standard of teacher will improve when it comes to usage of ICT enabled resources for teaching. Similarly student data management is also not affected by teaching standard. ICT is used by schools teachers for Teaching and Learning for enhancement in their knowledge. Now days' teachers provide Hands on Experience using IT and this is irrespective of their teaching standard. Knowledge Management using ICT and IT Supported Examination is also not affected by teaching standard. The only factor is dominated by teaching standard that is IT supported examination.

From hypothesis 25 to 30, said that school category does not have any effect on factors affecting ICT enabled teaching in school. Usage of ICT dependent upon IT based resources available in school. Schools category doesn't affect student data management using IT. Schools are appraising use of ICT in student data management to handle data easily and appreciating paper less working. School category has no effect on ICT based teaching and learning. Hands on experience using ICT and Knowledge management using ICT is also not affected by school category. IT supported Examination is the area where it is affected by school category because this factor is dependent upon available resources of IT.

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