Teachers' Attitude towards the Use of Information and Communication Technologies (ICT): Teachers Perspective in Rural Colleges

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Abstract

Worldwide, Information and Communication Technology (ICT) is being used for teaching-learning process in educational institutions. Information and Communication technology act as a catalyst for change in educational teaching-learning process. The Urban-Rural digital divide exists even in the developed countries in terms of access to technologies. This study mainly focuses on the teachers' attitude on ICT integration in teaching, use of ICT for teacher professional development and the use of ICT tools for teaching; especially the colleges located in rural areas. For this study, one of the rural districts in Tamil Nadu named Perambalur has been chosen. The study was conducted among the teachers working in both government and private colleges in this region. The questionnaires were issued to one hundred and thirty five teachers and one hundred and fifteen were received back. The result shows that the majority of the teachers' attitude towards ICT integration in teaching and willingness to learn ICT was positive and encouraging in spite of certain limitations.

Keywords: Information Communication Technology, Web 2.0, MOOC, ICT Integration.

Introduction

Technological advancement in any domain should enhance the existing process and should yield better results (Stephen Fallows & Rakesh Bhanot, 2002). An educational development is nothing but any novel action taken towards enhancing either teaching process or students' learning process or both. The ministry of Human Resource Development of India is taking greater efforts in providing "qualitative education through world class universities, colleges, and other institutions with the vision to realize India's human resource potential to its fullest in the higher education sector, with equity and inclusion" (https://mhrd.gov.in). In the modern education era, both technical resources and human resources are equally important and very vital in providing quality education (Dr. Keisham Shitaljit Singh, 2012). Incorporation of ICT in teaching would really enables the students' to understand the concepts more easily than traditional method of teaching. However it requires proper training for the teachers' on how to use ICT for teaching (Ana-Belen Sanchez & Juan-Jose Mena Marcos et al).

Information and Communication Technology (ICT) is a modern day

tool and it acts as a vehicle for bringing a positive change in teaching-learning process (Pelgrum, 2001). There are wide varieties of ICT tools to generate, spread, communicate and manage information (Blurton .C, 1999).

"Learning is complex work and like other forms of skilled and technical work, it requires that the person performing the job understand and be comfortable with his or her toolset" (Alberta, 2011). Nowadays everybody is having their own handheld ICT devices such as Laptops, PDAs, Smart Phones, Notebooks, etc and also they might have customised the devices with their preferred list of software and Apps for doing any activity related to their studies. As Alberta said, bringing their own devices to colleges and doing their regular activity will be easier for both students' and teachers' and moreover it is very comfortable for them to work with. This technology model is referred as Bring Your Own Device (BYOD).

Modern age students are sharp in learning how to use new technology but the same time they must be guided properly to use the technology productively for their studies. The Integration of ICT in teaching-learning has replaced the traditional Chalk and Talk method with interactive white boards (Barclay, 2001). Moreover ICT tools enable the students' to watch lectures while they are at home apart from their regular classes. It is very important that, creating awareness about the educational benefits that can be achieved through effective use of ICT among the educational institutions, administrative people, teachers' and students'. Though there is a progressive development in technology, still there is a gap in access to technology in urban and rural areas which is a biggest barrier in integration of ICT for teaching-learning (Stephen P. Heyneman, 2004). Hence the respective stakeholders like institution, administrative people and policy makers should ensure the required infrastructural facilities are made available to all (Jared Keengwe, Terry Kidd & Lydia Kyei-Blankson, 2009).

Previous studies in OECD countries reveal that ICT is being used in higher education for administrative works (Collis and Van der Wende, 2002). Also ICT tools are used for preparing course materials by the teachers and to access information by the students (Collis, 1999; Collis & Van der Wende, 1999). But the scenario has changed now ICT is directly used for teaching- learning by both students' and teachers'.

Many developed countries have adopted the next level of teaching-learning through online courses notably Massive Open Online Courses (www.mooc.org). MOOC not only provides online courses but also it is a means of making class material available for students by the teachers'. It provides range of courses including career development, acquiring additional skills, lifelong learning and corporate e-learning.

It is evident that the teaching learning process is powerfully driven by ICT. More importantly both teachers and students use ICT to gather, disseminate, communicate and store information (Cheol H.oh, 2003). María V. López-Pérez et al study result shows that the ICT tools facilitate students to understand their subject contents and concepts clearly. At the same time, students in rural and remote area believe that they are missing out on opportunities afforded to urban students. Many past researches reveal that most of the teachers are ready to use ICT for teaching (Ana-Belen Sanchez & Juan-Jose Mena Marcos et al, 2012).

Objectives

A number of studies were conducted at urban areas to investigate the views and attitude of teachers' towards the ICT integration in teaching. But the studies on the attitude of the teachers working in colleges located in rural areas are very limited. The main objective of this study is to investigate the teachers' mind set, willingness, interest on learning and use of ICT for teaching and professional development.

Research Questions

This research mainly focuses on the following questions:

1. What are the purposes of using ICT?

2. What is teachers' attitude on ICT integration?

3. Are teachers willing to learn and use ICT for professional development?

4. Whether teachers use ICT tools and resources for teaching?

5. Is there any relationship between teachers' willingness to learn ICT and use of ICT tools and resources?

Methodology

Sample & Data collection

Perambalur is one of the rural districts in Tamilnadu, India and there are seven arts and science colleges which includes both government and private colleges providing higher education. Data was collected through questionnaire method. The Questionnaire contains five sections; Section – A contains teachers demographic information such as name, sex, age, education, designation, college, department, experience, ICT access and college type , Section-B contains questions related to the purpose of using ICT which includes 11 items with Yes/No pattern, Section-C is about the attitude on ICT integration which

includes 16 items and scale was a 1 – to – 5 likert type scale from 5=Strongly Agree, 4=Agree, 3=Neutral, 2=Disagree, 1=Strongly Disagree, Section – D is related to ICT in teacher professional development which includes 6 items and scale is 5-point likert type, and the last section deals about the use of ICT tools and resources for teaching which includes 19 items and the scale is 5-point likert type. The questionnaires were issued to one hundred and thirty five teachers and one hundred and fifteen were received back.

Results

Use of ICT for administration

Mostly the teachers who are working in higher educational institutions normally have computer literacy but how well they know to use of ICT is an important question.

Table 1: Use of ICT Administration

Purpose of Using ICT	No. Of Respondents	Yes (%)	No (%)
Student Administration (Admission, Attendance, calendar etc...)	115	85	15
Staff Administration (Attendance, e-circular, performance appraisal etc)	115	75	25
General Administration (allocation of halls for exams, exam time table, students fee, students apply for university exams, display of results, make fee payments etc)	115	94	6
SMS / Instant Messaging (send SMS to the parents when the student is not at college)	115	50	50
Through email (sending news letter, fee details, results etc)	115	63	37
Through college website (Posting news letter, fee details, results etc)	115	77	23
Through YouTube (College programme videos / events videos can be shared via YouTube)	115	66	34
Through Social Networks (Create groups in Face book and communicate with parents)	115	50	50
Use of ICT in Research	115	84	16
Overall	115	71.56	28.44

Table -1 shows that majority of the teachers are using ICT for General Administration as overall 72% and students administration like maintaining admission details, attendance, etc which was identified as 85%; similarly staff administration was 75%, General Administration was 94%, Sending SMS/instant messaging to parents was 50%, sending news letter, fee details, results through e-mail was 63%, College events/programme videos sharing through YouTube was 66%, creating groups in face book etc was 50% and the use of ICT in research was 84%. Fig-1 shows the overall usage of ICT for general administration.

Using ICT for Administration and communication

28.44

71.56

■ Yes (%)
■ No (%)
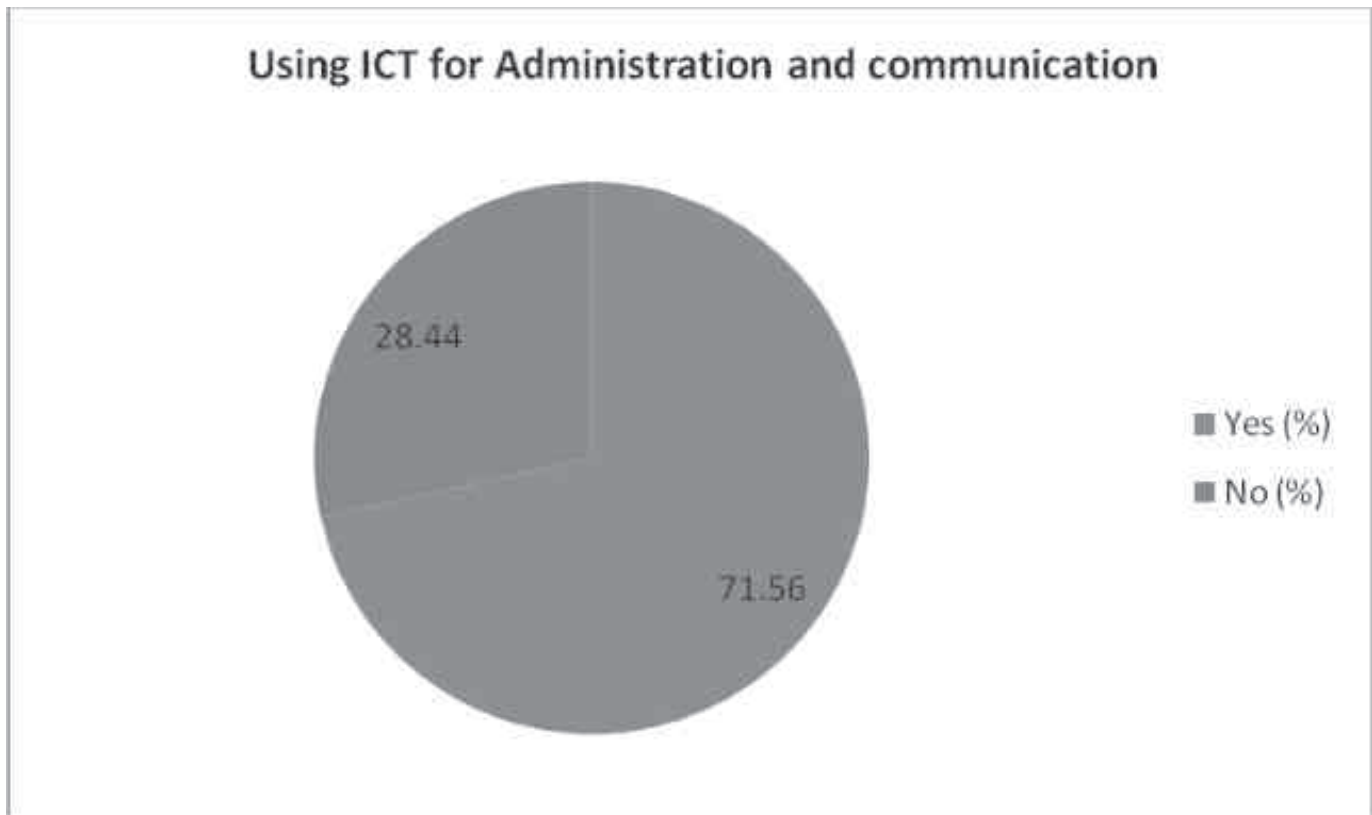
Attitude on ICT integration

Table-2 shows the clear picture about the teachers' attitude towards ICT integration for teaching. The distribution of mean scores and standard deviation has been given under three domains: 1. Affective, 2. Cognitive, and 3. Behaviour.

Table 1: Distribution of Mean Scores on the Teachers' Attitude on ICT Integration

Scale	%				
	SA	A	N	D	SD
Affective	40.675	50.2	7.2	1.3	0.675
Cognitive	40.86	46.24	7.28	4.7	0.88
Behaviour	32.36	45.74	13.4	6.1	2.44
Mean	37.97	47.39	9.29	4.03	1.33
Std.Deviation	4.85495	2.44347	3.55670	2.46847	0.96530

SA- Strongly Agree, A – Agree, N-Neutral, D-Disagree, SD-Strongly Disagree

The overall attitude on ICT integration was positive with the mean score 37.97% (Strongly Agree) and 47.39% (Agree) and the corresponding Std. Deviations 4.85 and 2.44 respectively. It shows the teachers' positive attitude with affective mean 40.67% (Strongly Agree) and 50.20 % (Agree), cognitive mean score is 40.86% (Strongly Agree) and 46.24 % (Agree) and behaviour mean score was 32.36% (Strongly Agree) and 45.74 % (Agree). From this statistics it is understood that the majority of the teachers opinion was, ICT is useful in teaching and it helps the students to understand the concepts clearly, helps to teach

subjects effectively and it improves the interactions among the students. Only 11.92% of teachers' opinions were like use of ICT scares me, ICT is not suitable to teach my subject and it is not easy to use.

ICT in teacher professional development

Table-3 shows that the predominant percentage of participants had learn to use ICT for teacher professional development ie. Overall 32.17% (Strongly Agree) and 46.96% (Agree) of teachers has accepted that they use ICT as a means for teacher professional development.

Table - 3 : ICT in Teacher Professional Development

ICT for Professional Development	%				
	SA	A	N	D	SD
I learn to use ICT for instructional planning	20.87	66.09	9.57	1.74	1.74
I learn to use ICT for facilitating learning	33.91	49.57	13.04	3.48	0
I learn to use ICT for students assessment	35.65	54.78	8.7	0.87	0
I learn to use ICT for college management	33.91	43.48	15.65	6.09	0.87
I learn to use ICT for inclusive classrooms	33.91	46.09	17.39	2.61	0
I Attend webinar web event, online seminar, webcast, web lecture and virtual event	34.78	21.74	32.17	9.57	1.74
Overall	32.17	46.96	16.09	4.06	0.73

SA- Strongly Agree; A – Agree; N-Neutral, D-Disagree, SD-Strongly Disagree

Most of the participant's opinion was; I use ICT for instructional planning 20.87% (Strongly Agree) and 66.09% (Agree), I use ICT for facilitating learning 33.91% (Strongly Agree) and 49.57% (Agree), I use ICT for student's assessment 35.65% (Strongly Agree) and 54.78%

(Agree), I use ICT for inclusive classroom 33.91% (Strongly Agree) and 46.09% (Agree) and I attend webinars, online seminars, webcast, etc. 34.78% (Strongly Agree) and 21.74% (Agree).

Table – 4 Distribution of Mean Scores on ICT in Professional Development

	N	Minimum	Maximum	Mean	Std. Deviation
I learn to use ICT for instructional planning	115	1	5	4.03	.731
I learn to use ICT for facilitating learning	115	2	5	4.14	.771
I learn to use ICT for students assessment	115	2	5	4.25	.647
I learn to use ICT for college management	115	1	5	4.03	.907
I learn to use ICT for inclusive classrooms	115	2	5	4.11	.781
I Attend webinar web event, online seminar, webcast, web lecture and virtual event	115	1	5	3.78	1.082
Valid N (list wise)	115				

Table-4 shows the descriptive statistics on ICT in teacher professional development. From the fact, we could infer that the majority of the respondents use ICT for teacher professional development with the mean between 4.03 and 4.25 and the standard deviation from 0.647 to 0.90 ie. Between strongly agree and agree.

ICT tools and resources

The participants have used a five point likert-type scale (ie 5=Strongly Agree, 4=Agree, 3=Neutral, 2=Disagree, 1=Strongly Disagree) to give their perception on thirteen question given under three categories namely i. Software and Hardware, ii. E-learning tools and technologies, iii. Web2.0 tools and technologies and the result is summarised in table – 5.

Table – 5 : Use of ICT tools and resources for teaching

Tools / Resources	%				
	SA	A	N	D	SD
I use application software for teaching to create slide show, lectures, seminar presentation, Documents	43.48	37.39	15.65	3.48	0
Build an Internet site or a blog	24.35	36.52	21.74	13.04	4.35
Use of Web resources for teaching (eg. NPTEL Lectures)	20	49.57	18.26	3.48	1.74
Create or use a e -portfolio (eg. Google Sites, Weebly, Google Slides, Seesaw, Seesaw)	45.22	31.3	18.26	3.48	1.74
Demonstration of concepts using ICT based video and audio files	29.57	45.22	18.26	6.09	0.87
Use of ICT for result analysis and record keeping	53.04	23.48	16.52	6.96	0
Use of different ICT devices (LCD, Scanner, Multimedia devices, Laptop, Tablet PC, Android Phone etc)	50.43	35.65	9.57	2.61	1.74
Use of educational software for teaching	44.35	37.39	13.04	3.48	1.74
Use of completed projects as examples	33.04	48.7	13.91	1.74	2.61
Use of research articles for teaching	39.13	40.87	17.39	0.87	1.74
Use of ICT allows greater engagement	28.7	35.65	20.87	13.91	0.87
Content creation tools	27.83	40.00	27.83	4.35	0
Delivery and Distribution tools	28.7	50.43	13.04	6.09	1.74
Communication and Collaboration tools	35.65	34.78	23.48	5.22	0.87
e-Learning systems	24.35	39.13	21.74	12.17	2.61
User tools such as browsers, media players, pdf reader	36.52	46.96	15.65	0.87	0
Hardware tools such	50.43	34.78	13.04	1.74	0
Wiki	25.22	28.7	26.09	19.13	0.87
Blog tools	23.48	34.78	20.87	18.26	2.61
Overall	34.92	38.49	18.17	6.68	1.37

SA- Strongly Agree, A – Agree, N-Neutral, D-Disagree, SD-Strongly Disagree

The result shows that predominant respondents were using ICT tools and resources for teaching and the overall positive response was 73.41% (34.92% -Strongly Agree and 38.49%-Agree). The positive responses for three major categories are as follows: i. Software and Hardware was 75.73% (37.39% -Strongly Agree and 38.34%-Agree). ii. E-learning tools and technologies was 74.92% (33.91% - Strongly Agree and 41.01%-Agree). iii. Web2.0 tools and technologies= 56.09% (24.35% -Strongly Agree and 31.74%-Agree).

ICT for professional development vs ICT tools and resources for teaching

Pearson Correlation analysis was carried out to find whether there is any relationship between the willingness of the teachers to learn ICT for professional development and the use of ICT tools and resources for teaching. Table-6 shows that there is a positive correlation between the two variables, r=0.260, N=115, p<0.01 level (2-tailed).

Table –6: Correlation Analysis on ICT for Professional Development and Use of ICT for Teaching

Correlations

		ICT for Professional Development	Use of ICT for Teaching
ICT for Professional Development	Pearson	1	.260**
	Sig. (2-tailed)		.005
	N	115	115
Use of ICT for Teaching	Pearson	.260**	1
	Sig. (2-tailed)	.005	
	N	115	115

**. Correlation is significant at the 0.01 level (2-tailed).

Teachers attitude vs use of ICT tools and resources for teaching

Pearson correlation analysis was conducted to investigate the relationship between the teachers' attitude towards ICT and the use of ICT tools and resources for teaching. Table-7 shows the correlation between two variables and it is evident that there is a positive correlation between them, r=0.218, N=115, p<0.05 level (2-tailed).

Table – 7: Correlation Analysis between Teachers' Attitude and Use of ICT for

Correlations

		Teachers Attitude towards ICT	Use of ICT for Teaching
Teachers Attitude towards ICT	Pearson	1	.218*
	Sig. (2-tailed)		.019
	N	115	115
Use of ICT for Teaching	Pearson	.218*	1
	Sig. (2-tailed)	.019	
	N	115	115

*Correlation is significant at the 0.05 level (2-tailed).

Discussion and Conclusion

We are living in the information era and we have so many tools and resources available for communication because of internet and related technologies. But at the same time, we have to accept the truth that there is a digital divide called "the urban-rural digital divide" (Sampath Kumar, B. T., & Shiva Kumara, S. U, 2018). i.e., the access to technology is not evenly poised across the country. Students who pursue higher education in colleges located in rural areas are provided with limited facilities in terms of technology access whereas in urban areas students get opportunity to use all new technologies once it is introduced.

Increasingly technologies are positively affecting our day to day life. Earlier we depend only on news paper, radio and television to get updated with current affairs but now we have many ways to do so such as news apps, internet TV, news groups, etc.

ICT helps to manage and administer various activities of an educational institution (Krishnaveni, D. R., & Meenakumari, J, 2010). It can be used for student administration, staff administration and for general administration. This study result reveals that as overall 75.56% of teachers are using ICT for the administration purpose.

Teacher is the key entity in any educational institution who brings positive impact on the quality of education (Nicoleta, N. S., 2013). This study result indicates that the majority of the teachers have accepted the importance of ICT integration in teaching and the overall percentage is 77.33. At the same time around 30% of teachers opinion was about the barriers (Bingimlas, K. A., 2009). i.e., use of ICT scares me, ICT is not suitable to teach my subject and this might be because of lack of training in ICT or confidence in ICT. If proper training is given to those 30% teachers then their confidence level would be increased and they will come forward to use ICT for teaching.

Professional development is a basic requirement for any teacher who is in service. Professional development is nothing but some kind of training being provided or attending a seminar or workshop or conference on any new technology or faculty development programme to enhance the teaching activity. ICT is one such beautiful technology for teachers to enhance their teaching ability (Jung, I, 2005). Unless the teachers are ready to learn and effectively use ICT, there cannot be a positive outcome on ICT integration in teaching. The main aim of this research is to investigate the rural college teachers' attitude on ICT integration in teaching and how well they use ICT tools and resources for teaching. The research result indicates that 79.13% of teachers have learnt to use ICT for professional development activity and it is a positive outcome.

Lot of ICT tools and resources are made available in the internet for free. Various tools like application software, e-learning tools and web 2.0. Web 2.0 allows individuals to collaborate with others and to contribute contents, to customize websites for their use and publish their thoughts for others also. Large number of web 2.0 tools available for teachers to use with their students such as weblog, wiki, social networks (face book, twitter), podcast (Hound bite, chirbit), audio discussion board (wimba voice, voice thread), video sharing (YouTube) and social bookmarking (Delicious, Diigo, Simpy) (Sánchez-García, A.-B, 2013). The result of this research reveals that 56.09% of teachers use web2.0 tools for teaching.

The summary of the study are as follows, though there are certain limitations in rural colleges in terms of access to technology and other support facilities, the teachers attitude towards ICT integration in teaching was highly positive and appreciable. Most of the teachers are much interested and willing to learn, develop knowledge on ICT use for professional development. But still training in ICT is required for some teachers to boost their confidence to use ICT for teaching. Also the infrastructural facilities in rural colleges need to be improved. Hence it is suggested that the institutions, administrative people and policy makers to concentrate more on facilities and faculty training.

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