

# ICT AND HIGHER EDUCATION: TEACHERS TECHNOLOGICAL DRIVEN ECOSYSTEM AND A PARADIGM SHIFT IN LEARNING ENVIRONMENT

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## Abstract

*Many teachers use ICT to support traditional learning methods, for example, information retrieval in which students are 'passive learners of knowledge instead of 'active producers able to take part in the learning process. Teaching and learning with ICT can promote educative skills. In the pace of new technological development adoption of innovations and improvements lead to the betterment of students learning. The present study aims to measure the awareness, usage and skill level of Information and Communication Technology for Teaching and Learning among teachers in Higher education. A case study at PSGCAS, Coimbatore suggests that teachers' abilities are satisfied in promoting e learning because of the students' involvement in ICT; it gives way to easy access, storage, usage etc. There is a need for professional development activities. Regular monitoring and evaluation and feedback loops should be established. The adoption and usage of ICT tools pave way for an effective ICT learning environment and also make them to work in groups with students and researchers.*

## Keywords:

*ICT Teaching and Learning, Learning Environment, Professional Development, E-Learning, Higher Education*

## 1. INTRODUCTION

"The calling of the teacher". There is no craft more privileged. To awaken in another human being powers, dreams beyond one's own; to induce in others a love for that which one love; to make of one's inward present their future; that is a threefold adventure like no other" (George Steiner) [5].

The words of George Steiner throw a striking radiance on the advancement and the achievement every teacher focuses in life. Teachers play an ardent role in encouraging, motivating and inspiring a child in all its spheres. The utmost responsibility of creating the civilized citizens lies within the hands of the teacher who would graciously improve the spirit in the students. Teachers aim at shaping the better individuals. The prime aim of any teacher is to attract the students by employing varied tactics in teaching and thereby to instill the immediate ideas and thoughts. Teachers use different approaches to gain the attraction of the students and also to make their classes interesting.

As the man evolved with different innovations, the practice of teaching arose with new developments. The improvements were very fast the teacher student relationship in ordinary classrooms became more of two ways teaching where there is a wide space for the interaction of the students. Teachers use practical oriented methods for the effective participation of the students. But now the innovation had taken the teachers to a different turn to engage the classes with a more oriented and modernized method of teaching. They try to take up the traditional teaching environment to a more polished new outlook in the present scenario with the

advent of Information and Communication technology. Teachers presume ICT as the applicable way of teaching in the current scenario for the modern students. This dissertation intends to analyze the paramount teaching method and the effective teachers are the ICT users in education.

Browning, has indicated his view on ICT teaching learning method. "ICT in Education is important! Information and Communication technology (ICT) has quickly become one of the basic building blocks of modern society. ICT supports learners but more importantly, it extends the reach of the population in ways we have yet to imagine; "Ah but a man's reach should exceed his grasp, or what's a heaven for?" [2]

"ICT in education is the key to unlocking the skills and knowledge of our future generations of young people. It is the tool for learning the twenty first century." - Kate McKenzie [7].

"Future generations will thank us for the fight we are undertaking to promote ICT and ensure we have a world class workforce who can compete in a digital world."-Kate McKenzie [7].

Teachers use Information and communication technology tools that carry the conventional learning methods, for example, students are becoming active to take part in the learning process and also Teaching and learning with ICT can promote educative skills.

The reasons in the wake of increasing the ICT usage in higher education is that it can change the lesson's pace and enable the students to develop sufficient potentials and skills to take full advantage of opportunities that ICT offer. The technological tools can enhance the quality of teaching and learning, and so help learners to achieve better outcomes.

## 2. LITERATURE REVIEW

ICT enhances teaching learning method. There are various experts around the globe who had proclaimed the significance of ICT in teaching process and literature review has been taken into account to substantiate the role of ICT in education purposes. Few of the academic members had outwitted their views on ICT education. "ICT is not only the future of our children's education it is the present; and we need to make the investment in ICT now!" [8]. The values, talents, abilities, use of technology, proper guidance, necessary skills, employability, credibility, honesty, quest of knowledge and respective approach should be efficiently instilled in the students in the form of ICT to use it their future. If the valuable investment is done right now the results will be outstanding for the betterment of both the teachers and the learners. "ICT in education is the key to unlocking the skills and

knowledge of our future generations of young people. It is the tool for learning the twenty first century.” [7].

“Future generations will thank us for the fight we are undertaking to promote ICT and ensure we have a world class workforce who can compete in a digital world.” Almost, most of the western countries are using ICT since 1950s. It is a great effort by the present generation of teachers to take up the education level to a world class status. In this modernized digital world the developments and influence in every field counters with the each other country. The competition is very challenging in every aspect. So people are striving to be superior to others and also to raise the level of the country’s status to the other developed nations. ICT is one such involvement to raise the standard of the nation. So for the hard work and efforts invested at present will be appreciated by the future generations. It is the platform for the youngsters to achieve a world class success in the desired field.

Len Daniels exclaims that Over many years that I.C.T. brings to all in education the 3 ‘Rs’-Raising levels of achievement for all, Reducing exclusion and Reducing the workload on teaching staff. The various facets of progress are helpful in promoting ICT in education. The positive outcome of using ICT is the people attain more success compared to the other methods. It helps to integrate more developments and progress in various fields.

The significant advantage of using ICT is it has varied tools to teach the students. The E-portfolios form the basic evident method in teaching through ICT. Web is the source for all the teaching learning pedagogy. Learning records are closely related to the learning plan, an emerging tool that is being used to manage learning by individuals, teams, communities of interest and organizations [10]. E-portfolios, like traditional portfolios, can facilitate students’ reflection on their own learning, leading to more awareness of learning strategies and needs.

ICT teaching learning method understands that ICT and mastering the basic skills and concepts of ICT as part of the core of education, alongside reading, writing and numeracy are inevitable part of learning in the present scenario. Worldwide research has shown that ICT can lead to improved student learning and better teaching methods [11]. A report made by the National Institute of Multimedia Education in Japan, proved that an increase in student exposure to educational ICT through curriculum integration has a significant and positive impact on student achievement, especially in terms of “Knowledge, Comprehension”, “Practical skill” and “Presentation skill” in subject areas such as mathematics, science, and social study.

ICT and education related studies all stress the need for ICT in education, its significance, its cause and effects, its impacts and also the results in the performance of the students. Thus from the review, ICT can be best regard as the very effective and efficient means of teaching learning process. It not only facilitates good output for students, it is the best teaching method for teachers which imparts a ground for learning new things for teachers. The effect of better teaching learning process results in successive nation building as well.

From the above analysis of review of literature from various disciplines it is very evident that the significance of ICT in literature. This assessment is set out to identify and evaluate relevant strategies in national and international research and initiatives related to measuring and demonstrating the effective use of ICT for education with regard to teaching learning process;

ICT and quality and accessibility of education; ICT and learning motivation, ICT and learning environment and ICT enhance the academic performance [1].

## 2.1 OBJECTIVES OF THE STUDY

In the pace of new technological development PSGCAS is an institution ready to accept and adopt with new innovations and improvements. Whenever there is a new invention related to the education, the institution takes up the measure to implement among the syllabus for the betterment of students’ welfare. That is the case of ICT teaching method. The students are very fast in capturing the ideas in this modern trend and within a very short span of time it is difficult for the teachers to lecture all the thoughts. So ICT approach makes the teachers work very easy and approachable. They could easily trace out all the points to be taken in the form of anyone of the virtual or audio medium so that students can use it for future reference also. Teachers are comfortable and stress free in indicating this method of teaching process. Though they are to do homework and maintain a stratum to teach the students it is even time consuming. Nowadays in colleges, teachers and students prefer ICT method of teaching because of its credibility and sustained. No errors could be committed from the teacher’s side. They have to be very precise in conveying the points and also no points can be missed out, and there is less area to reduce the errors or wrong information. During lecture there is a chance for missing out important points or making mistakes in factual information. In that case ICT helps out in reducing such unknowing errors. The teachers take pain to check out the information so many times and try to produce it perfectly. Teachers recognized that technology could bring a great support in creating new interesting and attractive learning environments. Since the teachers should be familiar with the new innovations in technologies and computer networks ICT method of teaching is a new ground break for the teachers to learn the technology related methods to impart the lecture with the help of it. So it forms a learning platform for both the students and the teachers. This method even makes them stress free to lecture at a stress for three to four hours without rest. This is a great substitute for the teachers in the evolving trend. It increase teachers’ efficiency in planning and preparation of work due to a more collaborative approach between teachers and the can use ICT to plan lessons more efficiently and more effectively. It helps them to manage data about learners’ performances. Use of ICT helps in giving the wide spectrum of knowledge in computer and technological skills rather than sticking only to the subjects learnt by the students.

The focus of the present study is to identify the Awareness, Adoption and Skill Level of Information and Communication Technology at PSGCAS. With this exposure the study was focused with the following specific objectives:

- To identify the Perception of Information and Communication Technology for Teaching and Learning.
- To measure the awareness and usage of Information and Communication Technology in Teaching and Learning
- To identify the Skill level of Information and Communication Technology for Teaching and Learning

### 3. METHODOLOGY

For the purpose of research, the following broad variables related to perception, awareness and adoption of information and communication technology were identified and analyzed. Considering the background of the study, the researcher embarked upon adopting an 'Expost - Facto' - Research Design, a non-experimental research design, extensively explored in social-science research, mostly relying on survey procedures. This method is not only scientific but a systematic empirical enquiry. Primary data were collected from teachers of PSG College of arts and science in Coimbatore. The questionnaire was structured in such a way as to appraise the Information and Communication Technology for Teaching and Learning.

The present study is designed in the way to examine the relationship and differences between the variables: gender, teaching experience and perception, awareness and skill level of Information and communication technology among college teachers. A survey of 127 teachers from PSG College of Arts & Science, Coimbatore was taken with regardless of their departments, educational level and experience. The vital aspect of the study in this investigation lies in understanding the perception and skill level of ICT amongst the teachers. Considering the nature of the present investigation, the demographic variables; gender, teaching experience taken as independent variables and the perception of ICT and awareness and skill level of ICT as dependent variables are clearly defined for the purpose of the study. The dependent variable skill level of ICT has been conceptualized and fitted as a three dimensional factors encompassing as Microsoft office applications, audio video contents and internet and blogs.

**Microsoft office applications:** Office applications such as word processing excel sheet, power point used in supporting teaching learning process.

**Audio video contents:** Audio video content materials and repository materials used in assisting teaching learning.

**Internet and blogs:** E-mails, e-classes and e-learning platforms used for teaching learning purposes.

The objectives of the present study and the analysis of the literature enables in drafting the following research questions for the present investigation. The following research questions are concerned with the gender and teaching experience of teachers on perception and skill level of information and communication technology in higher education.

**RQ1:** Is there any difference among male and female teachers towards the perception of Information and Communication Technology applications in teaching learning.

**RQ2:** Is there any difference among teaching experience towards the perception of Information and Communication Technology applications in teaching learning

**RQ3:** Is there any difference among male and female teachers towards the skill level of Information and Communication Technology applications in teaching learning.

**RQ4:** Is there any difference among teaching experience towards the skill level of Information and Communication Technology applications in teaching learning.

This study was based on a survey that was administered and confined to PSG College of Arts & Science, Coimbatore which comprises of heterogeneous teachers of various departments. The survey consists of questions regarding the demographic profile, perception of ICT, awareness of ICT and skill level of ICT and teachers had the option to fill out the hard copy which was self structured. Data collected was manually entered and analyses were carried out to test the research questions. To test the research questions t test and analysis of variance test were performed.

### 4. RESULTS

The results of analysis of the data are presented. Taking into consideration the objectives of the study, it was considered appropriate techniques of data analysis and presented the same. The first section presents the results of the percentage analysis of the perception, awareness and skill level of ICT among teachers in teaching learning. The second section presents the results of t test and one-way analysis of variance (ANOVA) explaining the effects of the independent variables such as gender and teaching experience of the teachers on the dependent variables perception and skill level of ICT.

Table.1. College Teachers Perception on Information and Communication Technology for Teaching and Learning

	SA	A	NO	DA	SDA
Perception of ICT for Teaching and Learning	33.9	62.2	3.9	0	0

SA - Strongly agree, A - Agree, NO - No opinion, DA - Disagree, SDA - Strongly disagree

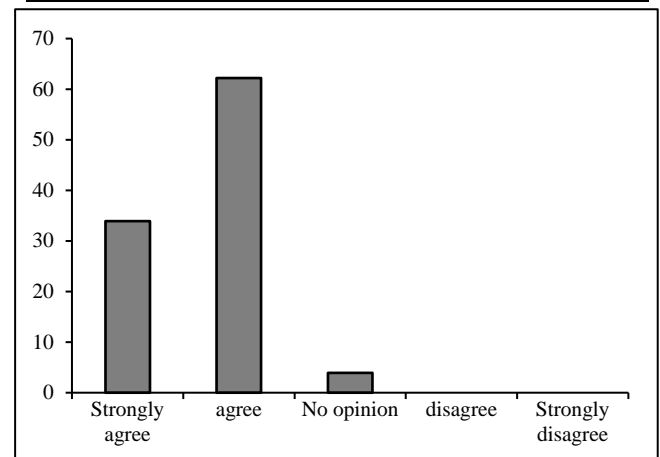


Fig.1. College Teachers Perception on Information and Communication Technology for Teaching and Learning

The Fig.1 represents the perception of Information and Communication Technology for Teaching and Learning. In the above figure it indicates that the 62.2% of teachers have agreed and 33.9% have strongly agreed that ICT enhances teaching and learning process in higher education. From the above table it can be inferred that none of the teachers disagree with the role of information and communication technology in higher education towards improvement.

Table.2. Awareness and Usage of Information and Communication Technology for Teaching and Learning

Awareness and usage of ICT for Teaching and Learning	Not aware	Aware but not used	Aware and using
MS Office applications (word processing, excel sheet, power point)	1.6	18.9	79.5
Audio Video contents and repository materials	8.7	55.1	36.2
Internet and blogs	4.7	55.9	39.4

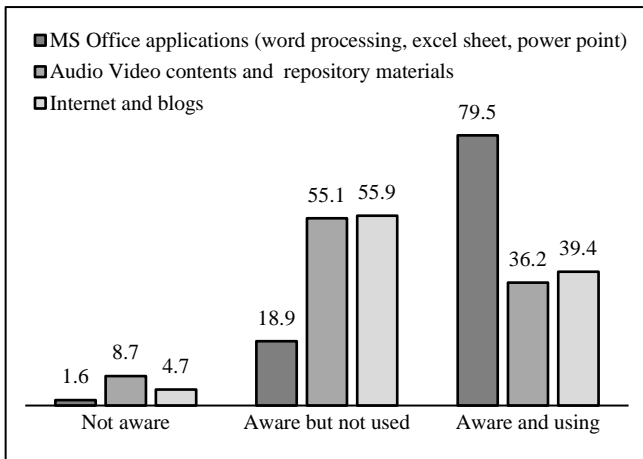


Fig.2. Awareness and Usage of Information and Communication Technology for Teaching and Learning

The Table.2 represents the awareness and usage of Information and Communication Technology in teaching learning with reference to MS office applications, audio video contents and repository materials and Internet and blogs. From the above table, it indicates that 98.4% of teachers aware of MS office applications used for teaching and among them 79.5% they use it for their academic purpose and 18.9% of teachers were not used any of the MS office applications for their teaching. 1.6% of teachers doesnot have any awareness about it. There are many advantages of in Microsoft office and it is obvious that most of the respondents are aware of ICT and use it effectively in their daily routine for teaching.

The Table.2 also indicates the awareness of audio and video resources, its features and methods to use it in teaching learning process. There are innumerable advantages and availabilities of services accessible to the teachers and as well as students inside the college campus. In reference to audio and video resources 36.2% of the teachers have awareness about it and they use it as a tool for teaching, 55.1% of the teachers have knowledge about audio video content available for teaching learning but they have not used it for their academic purposes and 8.7% of teachers donot have any idea about audio video contents and repository materials available for teaching learning. It is obvious that most of the respondents are aware of ICT and use it effectively in their daily routine for teaching. In the case of audio and video resources very few are aware and use it in teaching, few are aware but does not use and only handful is not aware of the facilities.

The Table.2 illustrates the awareness and usage of Internet and Blogs for Teaching and Learning process. The table indicates that 55.9% of teachers are aware of how internet and blogs used in teaching learning but not using for their supporting tool. 39.4% of teachers are aware and using internet and blogs in their teaching. Only 4.7% does not have any awareness about internet and blogs in teaching learning i.e., very few teachers are not aware of the resources.

Table.3. Skill level of Information and Communication Technology for Teaching and Learning among college teachers

Skill level of ICT for Teaching and Learning	Beginner	Moderate	Advanced
MS Office applications (word processing, excel sheet, power point)	19	45.3	54.7
Audio Video contents and repository materials	40.9	36.3	22.8
Internet and blogs	44.9	27.5	27.6

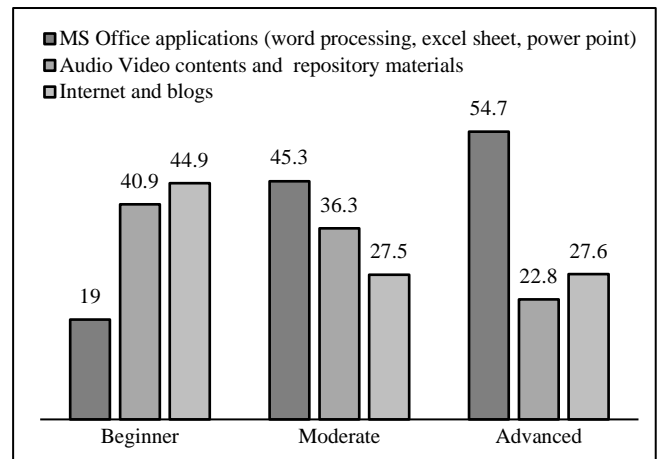


Fig.3. Skill level of Information and Communication Technology for Teaching and Learning among college teachers

The Table.3 represents the self report of teachers about their Skill level of Information and Communication Technology for Teaching and Learning. The table indicated that 54.7% of the teachers are in advanced level, 45.3% are at moderate level and 19% of the respondents are in beginner level with MS office applications in using for their teaching learning process. The above table also indicates that 40.9% of teachers are at beginner level, 36.3% are at middle level and 22.8% of teachers are in advanced level with reference to the audio video and repository materials used in teaching. In the case of Internet and blogs used in teaching and learning 44.9% are at beginner level, 27.5% of teachers are at middle level and 27.6% are at advanced level. Hence, it can be inferred that in the case of internet and blogs and audio and video contents used for teaching learning process majority of the teachers are at the beginner level and in the case of micro soft applications majority of the teachers are in the advanced level and moderate level and a very minimal is in the beginner level.

Table.4. Results of t-tests showing (RQ 1 and RQ3) the difference among male and female teachers towards the perception and skill level of ICT applications in teaching learning

		t test for equality of means			Gender	Table of Means			
		Equal variances	t	df		Sig. (2-tailed)	Mean	N	Std. deviation
Perception of ICT in teaching and learning		assumed	.783	125	.435	Male	4.35	42	.503
		not assumed	.776	79.898	.440	Female	4.27	85	.409
Skill Level	Microsoft office applications	assumed	2.084	124	.039	Male	2.27	42	.667
		not assumed	2.100	80.681	.039	Female	2.00	85	.682
	Audio video contents and repository materials	assumed	.710	125	.479	Male	1.81	42	.855
		not assumed	.682	73.887	.497	Female	1.70	85	.762
	Internet and blogs	assumed	1.159	125	.249	Male	1.85	42	.932
		not assumed	1.101	71.842	.274	Female	1.66	85	.803

Table.5. Results of analysis of variance showing (RQ 2 and RQ4) the difference among teaching experience towards the perception and skill level of ICT applications in teaching learning

ANOVA Results		Sum of Squares	df	Mean Square	F	Sig.	Table of Means		
							1 - 5 yrs	6 - 10 yrs	above 10 yrs
Perception of ICT in teaching and learning	Between Groups	.041	2	.021	.084	.920	4.31	4.32	4.28
	Within Groups	30.653	124	.247					
	Total	30.695	126						
Microsoft office applications Skill	Between Groups	.326	2	.163	.360	.698	2.08	2.16	2.04
	Within Groups	56.104	124	.452					
	Total	56.430	126						
Audio video contents Skill	Between Groups	1.238	2	.619	1.128	.327	1.62	1.87	1.79
	Within Groups	68.050	124	.549					
	Total	69.288	126						
Internet and blogs Skill	Between Groups	1.569	2	.784	1.228	.297	1.62	1.91	1.74
	Within Groups	79.232	124	.639					
	Total	80.801	126						

The results of t-tests as seen in the above Table.4 shows the difference between the male and female teachers perception of ICT ( $t(125) = .783, p > .05$ ), Skill level of ICT; Microsoft office applications: ( $t(125) = 2.084, p < .05$ ), Audio video contents: ( $t(125) = .710, p > .05$ ), Internet and blogs: ( $t(125) = 1.159, p > .05$ ) at 5% level of significance.

Thus it can be inferred that there is no significant difference among male and female teachers towards the perception and skill level (audio video contents and internet and blogs) of ICT in teaching learning. The above result also provides evidence that there is a significant difference between male and female teachers towards the skill level in using Microsoft applications for teaching

their subjects. The mean value in the Table.4 reveals that male teachers (M-2.27) prefer more in the case of using Microsoft applications for teaching than female teachers (M-2).

The results of one way analysis of variance (ANOVA) for teaching experience and Perception of ICT and skill level of ICT in the Table.5 reveals that there is no significant difference among teaching experience towards Perception of ICT ( $F(2,124) = .084, p > .05$ ), skill level; Microsoft office applications ( $F(2,124) = .360, p > .05$ ), audio video contents ( $F(2,124) = 1.128, p > .05$ ), internet and blogs ( $F(2,124) = 1.228, p > .05$ ) in terms of information and communication technology in higher education. Hence, it is inferred that among the teachers of various experience categories

(1 to 5 years, 6 to 10 years, above 10 years) there is no significant difference on the perception and skill level of ICT in teaching.

From the table of means for teaching experience and perception and skill level of ICT. The perception of information and communication technology for teaching learning the more they support ICT is the teachers with the experience 1 to 5 years (M-4.31), 6 to 10 years (M-4.32) than the teachers more than 10 years of experience (M-4.28). In the case of ICT skills with reference to Microsoft applications, audio video contents and internet and blogs the teachers in the experience of 6 to 10 years (M-2.16, 1.87, 1.91) have more skill than the teachers with the experience 1 to 5 years (M-2.08, 1.62, 1.62) and more than 10 years teaching experience (M-2.04, 1.79, 1.74). Hence it can be concluded that the teachers in the experience of 6 to 10 years category have the perception that ICT enables and supports the teaching learning process and more skill in the referred tools than the other category i.e., the teachers with the experience of 1 to 5 years and more than 10 years.

## 5. DISCUSSION

Teachers also get a satisfaction in promoting this kind of learning because students are more involved when the class is an integrated ICT class rather than traditional classroom. It is challenging for the teachers to educate through ICT method because of the complexities in framing the syllabus and they are to prepare the materials by their own. ICT teaching promotes the way to access, store, retrieve and manipulate information in various spheres, to combine all it for the effective learning process which helps in solving complex problems to develop cognitive skills.

ICTs are seen as tools to help teachers create more 'learner-centric' learning environments. The most effective uses of ICT are those in which the teacher, aided by ICTs, can challenge pupils' understanding and thinking, either through whole-class discussions and individual/small group work using ICTs. ICTs are seen as important tools to enable and support the move from traditional 'teacher-centric' teaching styles to more 'learner-centric' methods.

Teacher technical abilities and knowledge of ICTs helps in preparing teachers to benefit from ICT use is about more than just technical skills. Teacher technical mastery of ICT skills is a not a sufficient precondition for successful integration of ICTs in teaching. Teachers require extensive, on-going exposure to ICTs to be able to evaluate and select the most appropriate resources. However, the development of appropriate pedagogical practices is seen as more important than technical mastery of ICTs.

Professional development should include methods for evaluating and modifying pedagogical practices and expose teachers to a variety of assessment methods. The needs and assessment should precede the creation of and participation in teacher professional development activities, regular monitoring and evaluation should occur of these activities, and feedback loops should be established, if professional development is to be effective and targeted to the needs of teachers. On-going and regular support is essential to support teacher professional development and can be facilitated through the use of ICTs in the form of web sites, discussion groups, e-mail communities, radio or television broadcasts.

Teachers must have adequate access to functioning computers, and be provided with sufficient technical support, if they are to use ICTs effectively. The existence of formal and informal communities of practice and peer networks can be important tools to support ICT in education initiatives and activities. Such support mechanisms can be facilitated through the use of ICTs.

To teach through ICT method various technologies are involved in endorsing it to the students. The Microsoft Office tools help to prepare required essays in a destined manner. The Microsoft Word provides various facilities to arrange organize and produce a piece of information in academic way. The PowerPoint is widely used in teaching learning process because it has various facilities to be presented in more appealing and attractive way. Videos, images and audio could also be included related to our topic to enhance the effect of our essay, which might largely attract the attention of the students. Right from the childhood, children are taught with many videos and pictures that capture their mind easily and last for long to remember. Though the points are forgotten the connective pictures reminds them the concept. So Power Point is the widely used tool in ICT education. While Excel helps in displaying the accounts section with specified spreadsheets. The bank related database can be worked out in Excel spreadsheets.

Radio and Television helps in Broadcast technologies that have a much greater penetration. Radio and Television can have high start-up costs, and reinforce existing pedagogical styles. Educational initiatives that utilize radio and television typically have quite high initial start-up/capital costs, but once they are up and running, ongoing maintenance and upgrade costs are much lower making initiatives utilizing radio and TV for distance learning in the educations sector particularly appealing for donor support in many cases. One-to-many broadcast technologies like radio and television as well as satellite distribution of electronic content are seen as less 'revolutionary' ICTs in education, as their usage is seen as reinforcing of traditional instructor-centric learning models, unlike computers, which many see as important tools in fostering more learner-centric instructional models. Radio instruction in formal education has been well studied, especially the links between the use of radio in combination with school-based educational resources and a variety of pedagogical practices. Television has been utilized successfully as a mechanism for reaching out many people and the results of such projects have been widely disseminated. ICTs are used to distribute educational content regionally within a country.

Teachers of PSG CAS motivate the students to join in various online courses related to their subject or different one that helps in promoting the students interest in various other subjects also. The teachers also encourage creating a blog where the students can actively participate in publishing their articles. These are all the part of ICT based teaching learning process. ICT helps to provide interactive learning experience which stimulates and motivates students to learn, aids in understanding of difficult concepts and processes, caters to different learning styles, gains valuable computer skills, aids in group work. It also promotes creativity, enables multiplier effects of documents, and provides flexibility and variety in learning. Video Conferencing is a method of performing interactive video communications over a high speed internet connection. The other tools are Multimedia,

PC, Laptop, Notebook, CDs and DVDs, digital video, still camera, internet and its facilities like email, browsers, website, search engines, chat etc. are used for ICT class. Digital libraries, e-books and electronic publications, Microsoft publications like newsletter, poster, and brochure are also used. Unique feature of digital library are safe storage and multiple access of material across the globe, the main advantages of using digital resources for ICT is because of flexibility, reliability, faster speed, cheaper cost and are also very portable. Students using multimedia tools are active learners which paves way for them to work in groups with teachers and researchers.

ICT interventions are not an end in themselves. They are made for educational purposes based on estimated potential and effectiveness. Only through a systematic summative and formative evaluation the degree of fulfillment of the potential of an ICT intervention be evidenced and its educational effectiveness proven.

Teachers are satisfied in promoting e-learning because of the students' involvement in ICT; it gives way to easy access, storage, usage etc. The challenging part for teachers to educate through ICT is framing the syllabus and preparing the materials on their own. Teachers' technical abilities and knowledge of ICTs help in a better way to use ICT in teaching. Teachers' technical mastery of ICT skills is not only a sufficient combination of ICTs in teaching, but they also need an extensive, on-going exposure to ICTs to be able to evaluate and select the most appropriate resources.

There is a need for professional development activities. Regular monitoring and evaluation and feedback loops should be established. On-going and regular support is essential to support teachers' professional development and can be facilitated through the use of ICTs in the form of web sites, discussion groups, e-mail communities, radio or television broadcasts.

To teach through ICT method there are various technologies involved. Microsoft Word provides various facilities to academic teaching. The PowerPoint is widely used in teaching-learning processes, where videos, images and audio could also be included related to the topic concerned, to ensure an effective way of teaching, while Excel helps in displaying the accounts section with specified spreadsheets. Radio and Television have been utilized successfully as a mechanism for reaching out to many students in teaching. The adoption and usage of ICT tools like internet, laptops, notebooks, CDs etc., pave way for a very effective ICT learning environment and also make them to work in groups with students and researchers.

## 6. CONCLUSION

The ICT initiatives of the any institution should operate with objectives to develop, catalyze, support and maintain the ICT infra structure and ICT enabled activities in order to improve the access, quality and competence in the system. To enable the above

mentioned, the policies will facilitate to create, promote and motivate the information and communication technology adoption and usage training at various levels from school education to higher education. The capacity building training towards the practice of information and communication technology in education have to be organized frequently to the in service teachers and facilitate them in the participation of digital content development process and their effective use towards their subject. This needs in a plan of action on skilling and re-skilling of teachers towards the ICT and adoption across the country. The familiarity with the technology has to be bridged with the access to technology and resources which are gap the digital divide.

## REFERENCES

- [1] Peter R. Albion, "Self-Efficacy Beliefs as an Indicator of Teachers' Preparedness for Teaching with Technology", *Proceedings of International Conference on Society for Information Technology and Teacher Education*, pp. 1-6, 2000.
- [2] ICT in Education, Available at: <http://sarahali17.weebly.com/>. Accessed on June 2016.
- [3] C. Dede, "Learning about Teaching and Vice Versa", *Proceedings of Conference of Society for Information Technology in Education*, 1998.
- [4] Ian Forsyth, "*Teaching and Learning Materials and the Internet*", Kogan Page, 1996.
- [5] George Steiner, "The Calling of the Teacher", Available at: [www.goodreads.com/author/quotes/5229.George\\_Steiner](http://www.goodreads.com/author/quotes/5229.George_Steiner), Accessed on 2016.
- [6] Jenny Leach, "Do New Information and Communication Technologies Have a Role to Play in the Achievement of Education For All?", *British Educational Research Journal*, Vol. 34, No. 6, pp. 783-805, 2008.
- [7] Kate McKenzie and Neil Turner, "Information and Communication Technologies (ICT)", Available at: [stellae.usc.es/red/file/download/117655](http://stellae.usc.es/red/file/download/117655). Accessed on 2016.
- [8] Robert Kozma, Ray McGhee, Edys Quellmalz and Dan Zalles, "Closing the Digital Divide: Evaluation of the World Links Program", *International Journal of Educational Development*, Vol. 25, No. 4, pp. 361-381, 2004.
- [9] United Nations Educational, Scientific and Cultural Organization, "Information and Communication Technologies in Teacher Education: A Planning Guide", pp. 1-235, 2002.
- [10] Weldon, Paul, Phillip McKenzie, Elizabeth Kleinhenz and Kate Reid, "Teach for Australia Pathway: Evaluation Report Phase 3 of 3", *Australian Council for Educational Research*, pp. 1-167, 2013.
- [11] Henry R. Marcinkiewicz, "Computers and Teachers: Factors Influencing Computer use in the Classroom", *Journal of Research on Computing in Education*, Vol. 26 No. 2, pp. 220-237, 1994.