

# Effectiveness and Uses of ICT (Information and Communication Technology) In Learning

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## **Abstract**

*In this digital era, all our daily activities have been simplified with the application of Information and Communication Technology. In the present scenario smart phone has become a part of everyone's life and it also replaced the computers to the maximum extent. The role of Information and Communication Technology in Education sector is significant in empowering technology in educational activities. The quality of teaching and learning has been uplifted with the advent of Information and Communication Technology in Education. The process of learning doesn't end after the completion of higher educations. Everyone must learn something throughout the lifetime to improve his/her quality of knowledge. Now a days, Learning doesn't include classroom learning alone. Any students can learn from anywhere with the easy access to internet. There are various online courses have been introduced only because of Technology enabled education. Technology enabled education can improve the quality of knowledge gained by the students through learning.*

*The main purpose of this study is to examine the effectiveness and uses of ICT in learning and also to identify the factors which influence the students to use the ICT tools in learning. The study has been done by collecting primary data from 69 students of different educational disciplines like Arts, Engineering and Professional Course like Chartered Accountant. The factor analysis technique is used to identify the factor which influences the use of ICT tools for learning.*

**Keywords:** *Information and Communication Technology, Learning, Education.*

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## **Introduction**

In traditional system of education, the knowledge is disseminated through the teachers. The primary technique of education is oral reciting. All the students have been taught in the same manner with same materials. This situation has been changed with the

advent of Information and Communication Technology. There are various ICT tools available in this digital world to improve the quality of teaching and learning. There is a famous quote by John F. Kennedy “The goal of education is the advancement of knowledge and dissemination of truth.” With the advent of Information and Communication technology in Education, the quality of knowledge has been improved to the great extent.

The integration of ICT in education has reduced the difficulties of education faced in traditional system. Now, the higher education is not restricted to the Classroom learning alone, there are various online courses which provides learning opportunities from any point of this Earth. Students are not required to depend on the teachers alone. They can improve their knowledge through ICT tools. The quality of education is high with the ICT enabled teaching. Smart phones have penetrated the life of modern students through which they can have real time learning. There are various applications which act as a tool for learning. Smart classrooms have improved the quality of education. The Audio Visual method of teaching is highly effective for the students to acquire subject knowledge.

### **Objectives of the study**

The main objective of the study is to analyze the factors which influences the use if ICT tools for learning. The other objectives are

- To examine the purposes of ICT and effectiveness of different classrooms based on gender and Educational category.
- To analyse the awareness of Online learning and active participation of students in social networks for learning.
- To identify the maximum frequently accessed websites by the students to take subject notes.

### **Hypothesis of the Study:**

- There is no significant difference between Usage of ICT by male and female respondents for various purposes.
- There is no significant difference between male and female respondents and effectiveness of classrooms.
- There is no significant difference between the Educational Category of respondents and Usage of ICT for Various purposes.

- There is no significant difference between Educational Category of respondents and Effectiveness of Classrooms.

## **Review of Literature**

Mrs.Swati Desai has conducted study on the Role of Information and Communication Technology in education and revealed that ICT plays an important role in transforming teacher dependent learning to competency based learning. She also explored various challenges of ICT in higher education. She has concluded that the use of ICT enhances the learning experience and independent thinking of students and also helps them to build successful career.

Ilodigwe Udoka Tochukwu , Fatma TansuHocanın has conducted study on the awareness of students on the usefulness of ICT tools in Education – Case of EMU. They have focused on the awareness of ICT tools of EMU IT students considering various factors and variables like gender, age, and class levels of respondents. They have analysed and found that female students are more active in adapting ICT tools for education and also identified that younger students are more participative in the usage of ICT tools.

S.K. Paneer Selvam has conducted study on awareness of online learning among the post graduate students and identified that students with computer knowledge have more awareness on online learning. He also found that hostellers are more aware of Online learning compared to day scholars. He has suggested to create awareness of Online learning among the post graduate students of various Arts and science colleges in Erode District and also to take necessary steps to enhance ICT in education.

Simin Ghavifekr has conducted study on the effectiveness of ICT integration to assist teaching and learning in public schools. In his study, he found that the integration of ICT in schools has greater effectiveness for both the teachers and students. He also found that professional training programmes for teachers enhance the quality of students' learning.

## **Information and Communication Technology**

ICT or Information and Communication Technology is an electronic means of processing, storing, capturing, communicating information by entering into digital world. Information and Communication Technology includes Computers with internet facilities and also communication tools like Mobile Phones. ICT plays a predominant role in Education

sector. The use of ICT tools higher education improves the efficiency of teaching as well ensures the quality education through interactive learning. With the advent of ICT, the education system has been widened without any geographical barriers.

## **E-learning**

E-learning refers to the learning through computer and mobile phones using internet. This is the different from the traditional classrooms. E-learning is an effective platform to upgrade the knowledge and skills. There are various websites which facilitates online courses even with certificates.

## **Role of ICT in Education**

- To improve the quality of education
- To utilise technology to acquire knowledge and information.
- To develop the interactive learning and also to develop various professional and vocational skills.
- ICT acts as a virtual teacher and helps the students to learn independently.

## **Effectiveness of ICTs in Education**

### **Self-regulated learning**

ICT tools enable the students to be an independent learner. As they have the resources of global network, they can acquire information and knowledge not only from their lecturers or professors but also from the internet.

### **Interactive classes**

Teachers can make the classes more effective and interactive using various ICT techniques. The smart classrooms are one such example for the effective teaching and learning.

### **Improved Quality**

ICT plays a vital role in improving the quality of education. Students can acquire additional knowledge other than the materialistic knowledge.

## **Locating Research Materials**

Apart from learning, internet is used for various research purposes. There are many tremendous articles, journals published in the internet which can be downloaded and utilised for the research proposals.

## **Communication**

Communication through internet is much faster than other communication devices. Internet removes the geographical barriers. Students from various regions can be interacted through internet and social networks.

## **Anytime, anywhere**

One of the adequate features of ICT is their ability to surpass time and space. Asynchronous learning is possible through ICT and it avoids the time lag between delivering and understanding the instruction. For example, Online course materials can be accessed anywhere at any time whereas such facility is not possible in traditional learning.

## **Learning Resources**

In traditional learning, informations are acquired only through the printed books and materials. With the advent of internet and technology, the prosperity of learning materials can be accessed from anywhere by any number of students. The students no need to depend only on the library resource, they can easily access the updated information through internet. ICT also enables the students interact various professionals, mentors, experts, researchers, resource persons across the world through various social networking sites.

## **ICTs help prepare individuals for the workplace**

Almost all the sectors have been technologically updated. It is important for the individuals to acquire technological skills to perform efficiently in the workplace. Technological literacy in higher education improves the computing skills of students effectively and efficiently. Such skills would be more useful for the students to approach the global job market.

## **Social Network for learning**

Social media can be extensively used to communicate, interact and disseminate information among peer group. Social media is an open platform to discuss, clarify any topics which students may hesitate to ask in traditional classroom. The students can obtain knowledge through social media where many professionals, experts, research scholars share their information and knowledge.

### **TedEd**

TedEd offers various TED talks and also renders animated video clipping of various subjects like social, literature, art, science, psychology, technology and business studies. This site is effective for learning through audio visual videos .

### **Google Classroom**

Google Classroom facilitates the virtual classroom where students and teachers can be interacted all the time. Teachers can use Google Classroom for posting assignments, validating and grading the performance of students. Students have been joined to the classroom through the private code. Google classroom is also available as Mobile apps for IOS and Android devices.

### **Academia.edu**

This is an amazing site for research scholars with varied collection of data and information on different subjects.

### **LinkedIn**

LinkedIn is a social network which is used to create professional identity. Employers can easily connect to the job seeking potential employees. Students can post their resumes for job opportunities. This is also a platform to interact with professional peer group to disseminate information.

### **LabRoots**

This social networking site is largely used by technical professionals, scientists and engineers to have access to millions of scientific news feeds. In addition to surplus information, it helps the individuals to stay connected with their peers and colleagues.

## **ResearchGate**

ResearchGate facilitates the collaborative platform for the researchers to interact with peer groups. Various research thesis can be reviewed and studied to acquire knowledge which supports research scholars.

## **MinecraftEdu**

The MinecraftEdu is a learning platform through video games. These games enable the students to explore, promotes creativity, collaboration and problem solving. Teachers can customize their own game to fit their curriculum.

## **Research Methodology**

This is the descriptive method of study. The study is based on the primary and secondary sources of data. The primary has been collected using self- designed questionnaire from 69 respondents. The questionnaire has been designed using both open ended and closed ended questions. Convenient sampling method is used for the collection of data. Different books, journals, newspapers and relevant websites have been referred in order to make the secondary data an effective one. The study focuses on the examination of factors influencing the use of ICT tools for learning and also throws light on the effectiveness and uses of ICT in learning. Statistical tools like one-way ANOVA, Independent t-test, factor analysis have been used in this study for the analysis of data.

## **Reliability Test**

Cornbach's Alpha reliability testing is used to test the consistency of data. The most commonly accepted alpha value is more than 0.7, according to Kline. In this study, reliability test has been done for 23 items and found the alpha value of 0.940 which signifies the consistency of data.

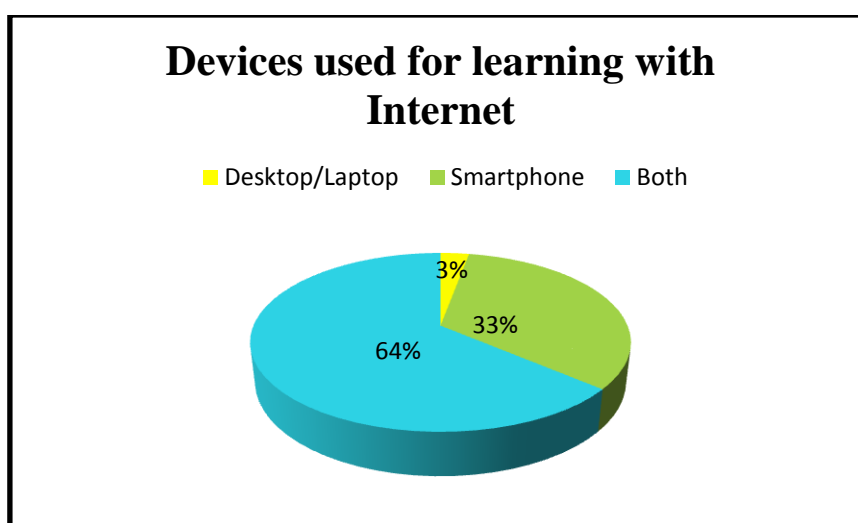
## Data Analysis and Interpretation

**Table 1: Descriptive analysis of Respondents**

		Frequency	Percent
Gender	Female	34	49.3
	Male	35	50.7
Educational Category	Arts	32	46.4
	Engineering	22	31.9
	Professional Courses	15	21.7
Computer Skills	Yes	67	97.1
	No	2	2.9
Devices with Internet	Desktop/Laptop	2	2.9
	Smart Phone	23	33.3
	Both	44	63.8

Source: Primary Data

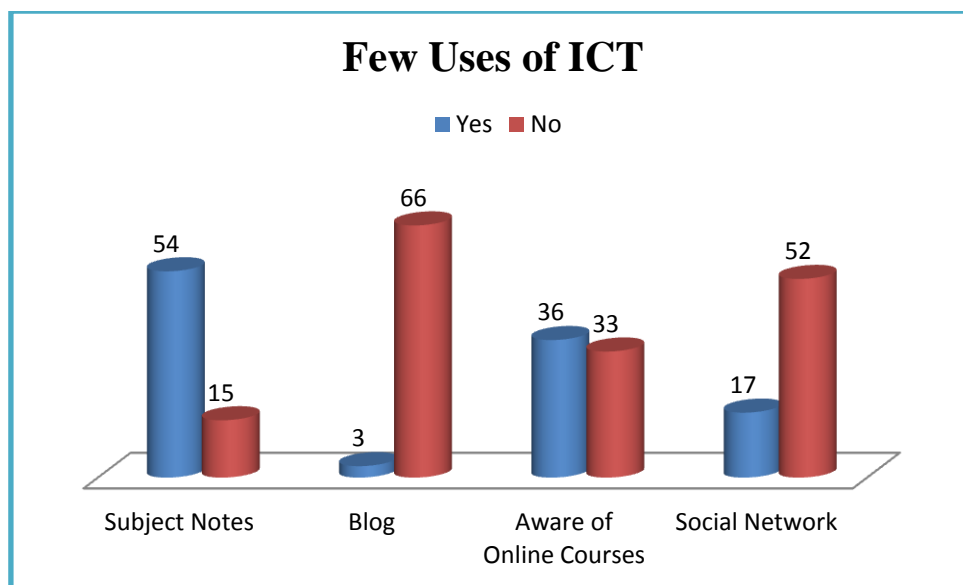
### Devices Used to access the internet for learning



Source: Primary Data

It is evident from the above chart that 64% of respondents have internet access to both Desktop/Laptop and smartphone which can be used for learning purposes.





Source: Primary Data

From the above chart, it can be concluded that 78.3% use Smartphone and Desktop/Laptop for taking subject notes. Only 4.2% of respondents are using Blog and maintaining it. It can also found that 52.2% respondents are aware of Online courses but very few have completed the online courses. Only 24.6% respondents are having account in social network especially for learning.

### Independent T-Test

This is used to measure the association between the gender and Usage of ICT for various purposes and also the Effectiveness of various classrooms.

Ho: There is no significant difference between Usage of ICT by male and female respondents for various purposes.

**Table 2**

GENDER	N	MEAN	Std. Deviation	T value	Sig. Value	Remarks
Female	34	2.441	0.899	0.133	0.716	Hypothesis is accepted
Male	35	2.589	0.890			

Source : Primary Data

Ho: There is no significant difference between male and female respondents and effectiveness of classrooms.

**Table 3**

GENDER	N	MEAN	Std. Deviation	T value	Sig. Value	Remarks
Female	34	2.277	0.751	0.403	0.528	Hypothesis is accepted
Male	35	2.608	0.848			

Source : Primary Data

**One way ANOVA:**

One way ANOVA has been used to determine the statistical difference between Educational Category and Usage of ICT as well as Effectiveness of Classrooms.

Ho: There is no significant difference between the Educational Category of respondents and Usage of ICT for Various purposes.

**Table 4**

EDUCATIONAL CATEGORY	N	Mean	Standard Deviation	F value	Significant Value	Remarks
Arts	32	2.544	0.819	0.566	0.570	Hypothesis is accepted
Engineering	22	2.618	0.958			
Professional Courses	15	2.307	0.965			

Source : Primary Data

Ho: There is no significant difference between Educational Category of respondents and Effectiveness of Classrooms.

**Table 5**

EDUCATIONAL CATEGORY	N	Mean	Strd. Deviation	F value	Significant Value	Remarks
Arts	32	2.308	0.690	0.853	0.431	Hypothesis is accepted
Engineering	22	2.578	0.972			
Professional Courses	15	2.543	0.810			

Source : Primary Data

## Factor Analysis

Factor analysis has been used to analyse the factors influencing the usage of ICT tools for learning. Bartlett's test of sphericity and the Kaiser-Meyer-Olkin measure of sampling adequacy are both tests that can be used to determine the factorability of the matrix as a whole. The value of Bartlett's test of sphericity is significant ( $p < 0.001$ ,  $p = 0.000$ ) refer table 6. In addition, the Kaiser-Meyer-Olkin measure is 0.891 which is greater than 0.6. Thus, it is appropriate to proceed with Factor Analysis to examine factors that influences the students to use ICT tools.

**Table 6 :KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.891
Bartlett's Test of Approx. Chi-Square Sphericity	791.912
Df	55
Sig.	.000

**Table 7: Factor Analysis**

	<b>FACTOR LOADING</b>
Speed of getting Information	<b>0.743</b>
Easy access to information	<b>0.723</b>
Easy to Understand	<b>0.775</b>
Downloading option	<b>0.764</b>
Technical Support	<b>0.792</b>
Time Saving	<b>0.801</b>
Cost effective	<b>0.692</b>
Flexibility	<b>0.691</b>
Accuracy	<b>0.650</b>
Necessity to use ICT tools	<b>0.543</b>
Simplicity	<b>0.729</b>

It is evident from the above table that among 11 factors Time Saving is the most significant factor influencing the usage of ICT which has the highest value of 0.801. It is followed by the factors “Technical Support”, “Easy to Understand”, and “Downloading option” with the values 0.792, 0.775 and 0.764 respectively. The least influencing factor is “Necessity to use ICT tools” with the value 0.543.

## **Findings and Suggestions**

From the above study it is clear that there is no significant difference between gender and Usage of ICT as well as effectiveness of different classroom setups. It is also found that there is no significant difference between Educational category and Usage of ICT as well as different classroom setups. It is observed from the study that “Time saving” remained the most significant factor influencing the usage of ICT tools. From the study, it is identified that investopedia, taxmann, studycafe, javaTpoint, Geekforgeeks, Tutorialspoint, Cloud CA are the commonly used sites by the students to collect study materials. It is identified that few respondents have completed the online courses like Swayam, Polish language training, NPTEL, Moop and Coursera. From the study, it is discovered that commonly used social media for learning are slide share, Linkedin, Quora digest and Meritnation.

The following suggestions can be recommended based on the above study.

- The government can take necessary steps to promote the ICT enabled higher education system. The Colleges could take measures to provide advanced computer skills to utilise various ICT tools for learning and improving the quality of knowledge and skills.
- The students themselves should actively participate in the social networks for enhancing the knowledge rather than chit chatting with friends through smartphones.
- Colleges can organise workshops and training programmes to train students to use various ICT tools to improve their skills and knowledge. The tutors can also encourage the students to complete various online courses for acquiring new skills.

## **Limitations of the Study:**

- In spite of the best efforts there are always certain limitations in the market research. The study is conducted only with the data collected from 69 respondents.

- The study is based on the primary data and findings depend upon the accuracy of these data.
- The data from the respondents are collected from the smaller geographical area. The study can be more effective when it covers the larger geographical area.

## Conclusion:

In conclusion, in this technological world, the effectiveness of education can be improvised with the integration of ICT tools in higher education. The higher education of the individuals plays a vital role in their entire career. ICT enabled higher education supports the students to the great extent to shine and succeed in their career. In addition to this the teachers equip themselves with ICT tools to provide guidance and assistance to the students for ICT enabled learning. Almost every student has their own smart phone which can be for learning rather than for entertainment.

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