

## **A comparative study on utilization of ICT in teaching by secondary school teachers with respect to their Gender, Age and Teaching stream in Kamrupmetro district of Assam**

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### **Abstract**

The use of the ICT has been found to be one of the most powerful ways to impart quality education. It has a significant impact on all the dimension of our lives, and the same is true for the educational system. In education, ICT has been used to improve the teaching-learning process, to simplify administrative tasks and help teachers and students to develop their personality. In this research work, the researcher attempted to study the difference in utilization of ICT in secondary school education by the teachers with respect to gender, age and teaching stream. Descriptive survey method has been used in the study. To collect primary data on teachers' use of ICT for school education, the researcher constructed a questionnaire and tested the reliability of the questionnaire following standard procedure. The researcher has formulated 3 hypotheses for the study according to the objectives of the study. The population of the study is all the teachers teaching in secondary schools of Kamrup metro district of Assam where ICT lab facilities are available. The researcher selected 300 teachers randomly for the study. The researcher found that there are differences in ICT use in school education among male & female teachers, young and aged teachers and science and arts teachers.

**Keywords:** ICT, Secondary Education, Kamrup district

## Introduction

Education is a process which starts from our birth to death. It helps us to be a good human being by acquiring all the socially accepted qualities as a good human being. We acquired knowledge and information by means of education and learn new things to adjust with the present situations of life. Education helps to solve the problems confronted on one's path. We can get education from different learning experiences at home, different social institutions, neighbourhood etc. But we get formal education in educational institutions. Teachers transmit the information and propagate knowledge to students in educational institutions. Students get exposed to ocean of information and new developments.

Today the Educational scenario has been changed by the use of ICT in teaching-learning process. In present time each government is emphasising on providing quality education. Quality of education is depended on quality of teachers. Different studies shows that use of ICT can make teaching process more fruitful and joyful. Various software has been developed for classroom teaching to make learning experience permanent. Using ICT, teachers can motivate the students to learn new thing. Self-learning has been remarkably enhanced by the use of ICT in education. Various educational website, portals and various search engine which are helping to find out the contents.

On the other hand, Secondary school caters students of age in between 14 to 16 and in this time, students become more curious to learn new things and they develop scientific outlook. It is the best stage for students to acquire ICT skills and at the same time to get techno-based education which may be beneficial for them in future life. So, all the countries in the world are using ICT to impart quality education and develop ICT skilled citizens. To fulfil this,

educational institutions are provided ICT facilities. Both government and private schools are having ICT facilities in all countries to develop ICT skilled future citizen.

### **Need of the study**

In the present time, use of ICT has been considered as a need not as an option. ICT enhance the quality of teaching process. Government has provided ICT facilities to many secondary schools. The researcher has visited several schools but found that use of ICT for education purpose is not homogeneous and satisfactory. Some of the teachers are using ICT lab but many of them are not using at all. Most of the teachers using traditional methods of teaching. It has been seen that teachers are using ICT in communication process or personal uses. Present study has been emphasised to find out the difference in utilisation of ICT facilities with respect to gender, their age and teaching streams. It will help the authority to get knowledge about use of ICT in secondary schools.

### **Review of literature**

Deb Roy, S. (2015) investigated the various ICT tools used in education for the teaching-learning process in his work 'Application of ICTs in Teaching-Learning Process.' The use of ICT in education has been discovered to have transformed the traditional teaching-learning process into modern ICT-based learning. The use of ICT in education changes teaching methods and student learning styles. The use of ICT tools in education through various means can raise the overall standard of education and significantly reduce the quality gap between rural and urban education.

In their study 'A study on knowledge and effectively of application of ICT in the teaching learning process among high school students and teachers with special reference to Morigaon districts, Assam,' Kalita, J. and Baishya, M. (2016) discovered that the districts under study have enormous potential in the field of ICT in high schools, and the school authority has also

prioritized incorporating ICT into the teaching-learning process, but the fruits of ICT are not well received. It was discovered that the district's teachers and students are familiar with a variety of ICT tools and their educational applications.

Deka, M., and A. K. Jena (2017) published a study titled 'Effect of ICT-assisted real and virtual learning on secondary school students'. Over 170 students from all secondary schools in Silchar Town, Assam, participated in the study, and it was discovered that YouTube learning in India still needs a lot of technological improvement. The study also discovered that using digital technology in the classroom improves the efficiency with which education is delivered. It also contributes to the improvement of educational standards. The study also discovered that class teachers must be knowledgeable about the use of ICT and technological tools in relation to innovative pedagogy. Furthermore, the study emphasizes the importance of teachers assisting students in proficiently operating technological devices for self-learning.

Sarma, H.S., and Baruah, R. (2022) conducted a study titled 'Access, use, and integration of information and communication technology among government school teachers of Jorhat district, Assam State, a status study on trends and problems' in Jorhat district's North west education block and discovered no significant difference in access and use of ICT in the teaching learning process between male and female teachers. The findings, however, indicated that young teachers had greater access to and use of ICT. Teachers with lower levels of education use less ICT in their classrooms. In addition, the study discovered that teachers in tribally dominated areas use more ICT. Finally, the study discovered that when integrating ICT into the teaching learning process, teachers face some significant challenges. These include network outages, a lack of understanding of how to use ICT in the classroom, and a lack of ICT in the classroom.

## Area of Study

The study area is KamrupMetro district. According to the 2011 census, the Kamrup Metropolitan district has an area of 1528 square kilometers and a population of approximately 12,60,419. It is Assam's most developed district. Guwahati, the most developed city of Assam and Dispur, the capital of Assam are located in Kamrup Metro district. The districts can be considered as educational hub too for all the north eastern state of India.

## Objectives

The present study is undertaken with the following objectives in mind.

- (i) To find out the difference in use of ICT by secondary school teachers with respect to different genders.
- (ii) To find out the difference in use of ICT by young and aged secondary school teachers
- (iii) To find out the difference in use of ICT by Science and Arts secondary school teachers

## Hypotheses

The following hypotheses have been formulated to test the objectives 1, 2 and 3.

$H_{01}$ : There is no significant difference in use of ICT in teaching among Male and Female Teachers

$H_{02}$ : There is no significant difference in use of ICT in teaching among Young and Aged Teachers

$H_{03}$ : There is no significant difference in use of ICT in teaching among Science & Arts Teachers

## **Methodology**

**Method:** In this study, the researcher used the 'Descriptive survey method'. In social science research, the descriptive survey method is the most widely used. The researcher uses the descriptive method to describe the phenomenon exactly as it is.

**Population:** The population of the study is all the teachers of Assamese medium secondary schools (Class IX & X) in Kamrup Metro district where the government provides ICT facilities.

**Sampling Techniques:** Simple random sampling technique has been used in the study to select the sample.

**Sample:** 300 teachers had been selected as sample of the study. Out of 300 teachers, 150 are male and 150 teachers are female.

**Tools:** The researcher constructed a questionnaire to collect primary data on teachers' use of ICT in teaching and school activities. There are 30 items in the questionnaire. There are 04 dimensions, (i) Use of ICT in class room teaching (ii) Use of ICT in communication students and fellow teacher (iii) Use of ICT in examination/evaluation process and (iv) Use of ICT in other school activity. Yes or No were the responses for all questions. To determine the reliability of the questionnaire, the researcher used the Split half method. For this purpose, the researcher met 30 teachers and distributed the questionnaire for their responses. The responses were analyzed statistically and the correlation has been found by Product Moment Method between two halves. The Spearman-Brown Prophecy formula is used to estimate the reliability of the whole test,

which is found as 0.8263, which can be considered as reliable. For content validity the researcher has sent the questionnaire to experts.

Scoring: The scoring scheme of the items are, (i) Yes – 2 and (ii) No - 1

Procedure of data collection: The researcher personally met the sample teachers. The hardcopies of the tool (questionnaire) were distributed to them requesting them to fill out responses for all 30 items. It was also stated that their information would be kept secret.

Statistical Techniques: In this research work, the researcher has used Mean, SD, t-test etc. for analysis and interpretation of data.

### Data Analysis and Interpretation

The General Information about the teacher is given in Table 1:

Table 1: General Information about the teacher

Particulars	Options	No. of Teachers	%
Gender	Female	150	50
	Male	150	50
Age	20 – 29 years	70	23.4
	30 – 39 years	55	18.4
	40 – 49 years	101	33.7
	50 – 60 years	74	24.5
Teaching Subject	Assamese	56	18.7
	English	51	17.0
	Social Studies	48	16.0
	Mathematics	45	15.0
	Science	53	17.7
	Computer Science	47	15.6

It is evident from the table that 50% of the teachers are females and rest 50% are males. 23.4% of the teacher respondents are of age group from 20 – 29 years; 18.4% of them are of age group from 30 – 39 years; 33.7% of them are of age group from 40 – 49 years; and 24.5% of them are of age group from 50 – 60 years. The age group from 20 – 39 years is considered as ‘young’ teacher and age group from 40 – 60 years has been considered as ‘aged’ teacher. The aggregate percentage of young teacher is 41.7% and 58.3% for aged teacher. 18.7% of the teacher respondents found to teach Assamese subject; 17% of the teachers teach English subject; 16% of the teacher respondents found to teach Social Studies subject; 15% of the teachers teach Mathematics subject; 17.7% of the teacher respondents found to teach Science subject; 15.6% of the teachers teach Computer Science subject. In aggregate, 51.7% of teachers are found to be teaching Arts stream (Assamese, English, Social Studies); and 48.3% belong to science stream (Mathematics, Science and Computer Science)

Objective (i): To find out the difference in use of ICT by secondary school teachers with respect to different genders i.e., Male and Female

The hypothesis is,  $H_{01}$ : There is no significant difference in use of ICT in among Male and Female Teacher

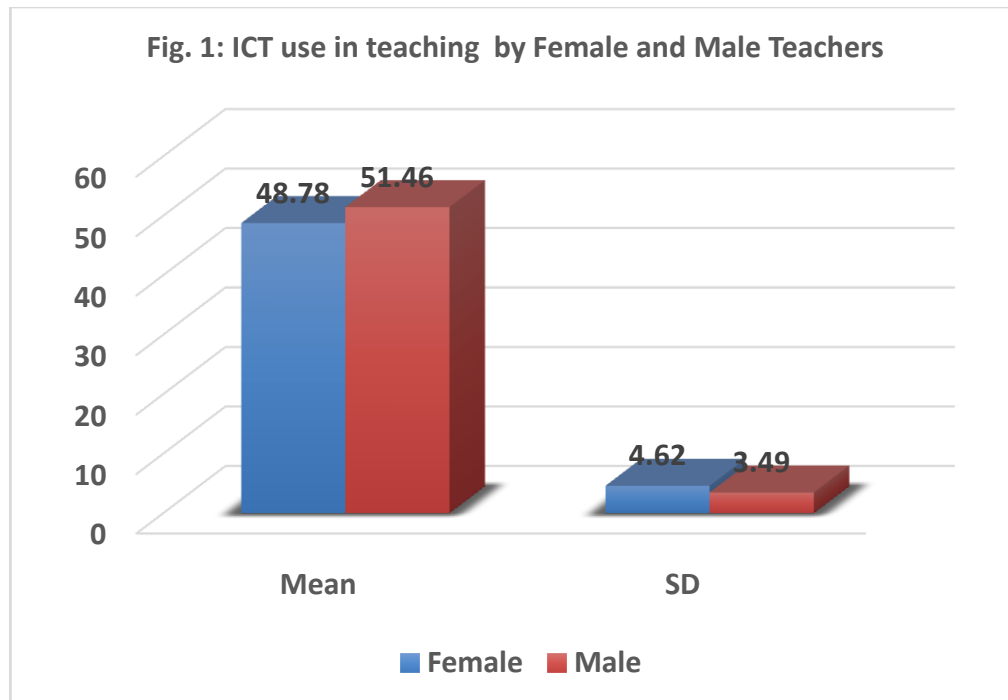
In order to justify this hypothesis, collected data are subjected to test the significance. ‘t’ test is conducted with the available information put forward in Table 2.

Table 2: Use of ICT in teaching among Male and Female Teachers.

Gender	N	Mean	Std. Deviation	Std. Error Mean	df	t	Significance
Female	150	48.78	4.62	0.33	298	6.5613	Significant
Male	150	51.46	3.49	0.24			

The graphical representation is given in Fig. 1.





The 't' value has been calculated as 6.5613, which is greater than the tabulated value of 2.34 at 0.01 level. It means the null hypothesis is rejected. Thus, it holds that there is a significant difference in use of ICT in teaching among Male and Female Teachers. The higher mean value for male teacher shows that the male teachers are using ICT more in teaching than the female teacher.

Objective (ii): To find out the difference in use of ICT by young and aged secondary school teachers

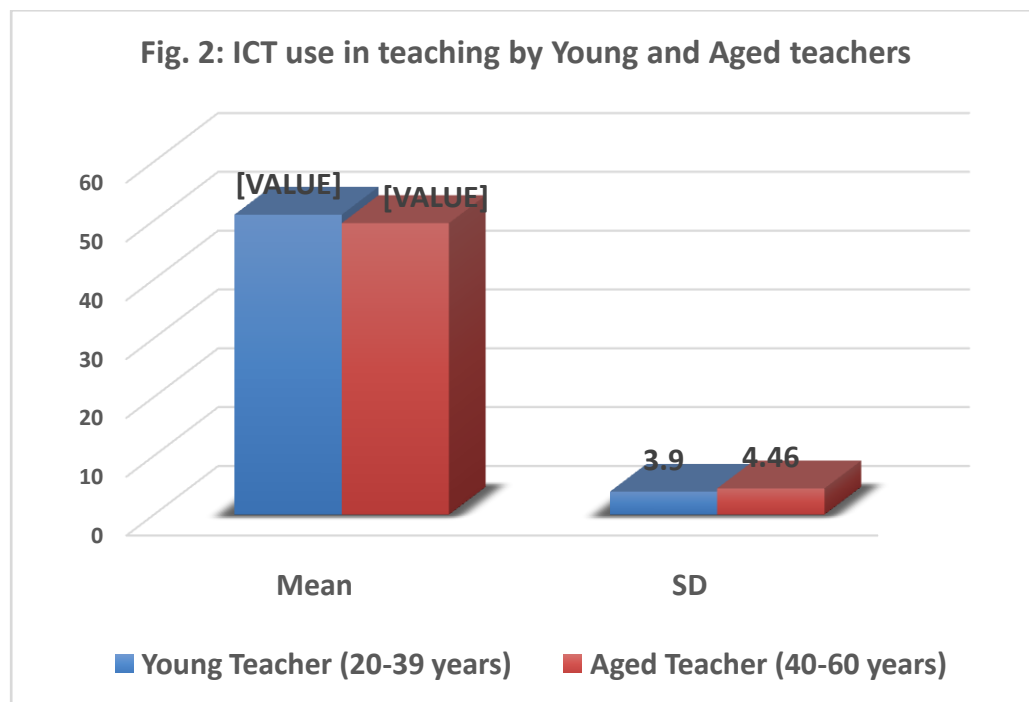
The hypothesis is,  $H_{02}$ : There is no significant difference in use of ICT in teaching among young and aged Teachers

In order to justify this hypothesis, collected data are subjected to test the significance. 't' test is conducted with the available information put forward in Table 3.

Table 3: Use of ICT in teaching among Aged and Young Teachers

Age	N	Mean	Std. Deviation	Std. Error Mean	df	t	Significance
20-39 years (Young)	125	50.99	3.9	0.3	298	3.3549	Significant
40-60 years (Aged)	175	49.55	4.46	0.29			

The graphical representation is given in Fig. 2.



The 't' value has been calculated as 3.3549, which is greater than the tabulated value of 2.34 at 0.01 level. It means the null hypothesis is rejected. Thus, it holds that there is a significant difference in use of ICT in teaching among young (Age: 20 - 39 Years) and aged (Age: 40 - 60 Years) secondary teacher. The higher mean value for young teacher shows that the young teachers are using ICT more in teaching than the aged teacher.

Objective (iii): To find out the difference in use of ICT by Science and Arts secondary school teachers

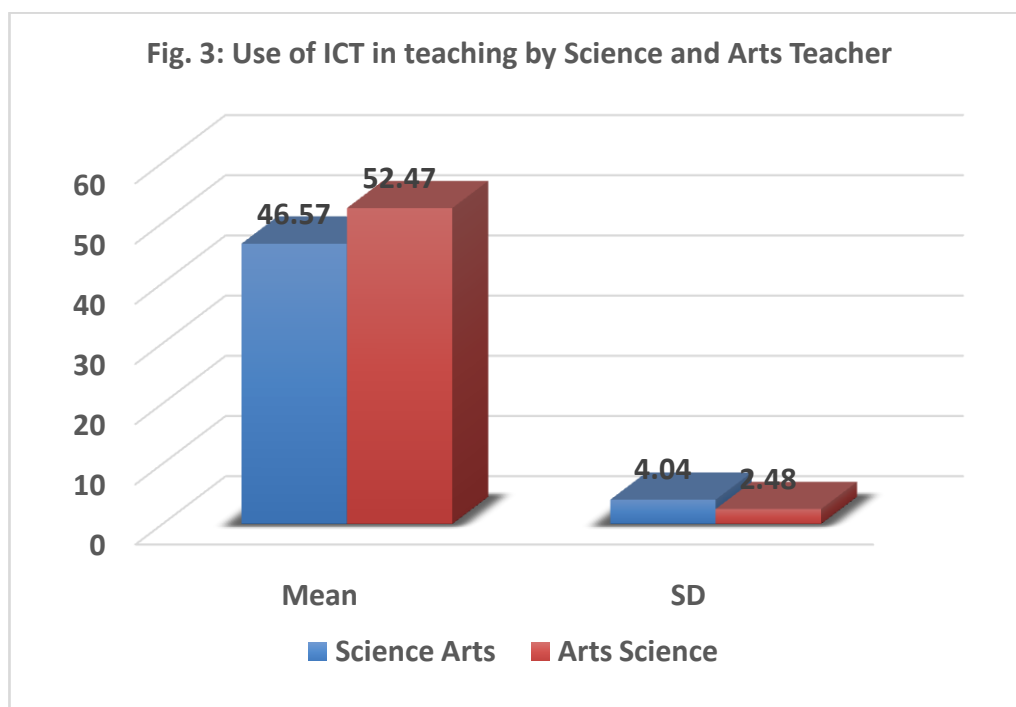
The hypothesis is,  $H_{03}$ : There is no significant difference in use of ICT by Science and Arts secondary school teachers

In order to justify this hypothesis, collected data are subjected to test the significance. 't' test is conducted with the available information put forward in Table 4.

Table 4: Use of ICT in teaching among Science and Arts Teachers

Stream	N	Mean	Std. Deviation	Std. Error Mean	df	t	Significance
Arts	155	46.57	4.04	0.32	298	18.111	Significant
Science	145	52.47	2.48	0.16			

The graphical representation is given in Fig. 3.



The 't' value has been calculated as 18.111, which is greater than the tabulated value of 2.34 at 0.01 level. It means the null hypothesis is rejected. Thus, it holds that there is a significant difference in use of ICT in teaching among Science and Arts Teachers. The higher mean value for science teacher shows that the science teachers are using ICT more in teaching than the arts teacher.

## **Findings**

Following are the findings of the study

1. There exists a significant difference in use of ICT in teaching and other school activities among Male and Female Teachers.
2. Male teachers are using ICT more in teaching than the female teacher.
3. There exists a significant difference in use of ICT in teaching and other school activities among young (Age: 20 - 39 years) and aged (Age: 40 - 60 years) Teacher
4. Young teachers are using ICT more in teaching than the aged teacher.
5. There exists a significant difference in use of ICT in teaching and other school activities among Science and Arts Teachers.
6. Science teachers are using ICT more in teaching than the arts teacher.

While collecting data from the sample teachers, the investigator visited all the schools and also did a self-observation. The researcher found that the ICT lab of schools are not in good conditions. Average 4/5 computers are working in all the ICT labs whereas minimum 10 computers were provided. Other tools in computer lab were projectors, UPS, generator, speakers etc. The researcher came to know that some teaching software were also in some schools. It was observed that no ICT facilities were provided in any classes. Therefore, the teachers used to bring the students to the ICT lab. Most of the female teachers took help of computer teacher while using ICT in teaching. It was observed during data collection that science teachers were

using ICT lab to go to computer lab to give power point presentation, show educational videos etc. In classroom, teachers are mostly using own mobile and laptop in teaching process and the mobile internet is generally used. Laptop is connected to internet through hot spot of smartphones. Teachers are mostly using WhatsApp, e-mail, phone call in communicating to people related to school activities. Diksha and NISHTHA App are sometimes used by some of the teachers.

### **Result and Discussion**

It has been found from the study that all the teachers in Kamrup Metro district use ICT in their teaching process and other school activities. In this study the researcher formulated 3 hypotheses and it was uncovered by the collected data analysis that there is significant difference in utilization of ICT among secondary school teachers on the basis of gender, age and teaching stream. It was found from the analysis that male teachers were using more ICT facilities than female teacher, young teachers and science teachers are using more ICT in school education than those of aged and arts teachers. The result of the study has been supported by the study conducted by Sikandar (2004). This study also found that there is significant difference in use of computers on the basis of gender and age. And the result contradicts with the results of the study conducted by Sahu, N. (2013) which found that there is no significant difference in the use of technology by male and female teachers.

### **Conclusion**

Realizing the importance and value of ICT in education, government have provided ICT facilities to most of the schools of our country. With the aim to provide technology-based education and to develop ICT skills among secondary school students, ICT lab facilities were provided to most of schools as joint venture of state and central government. As India is in still

developing stage, the facilities are not according to the need of the schools. But still teachers are trying their best to use ICT in teaching process and their professional activities. Secondary education is the bridge between primary and higher education and in this stage, students develop the qualities of creative thinking, eagerness to learn new thing, logical thinking etc. and using ICT, to a great extent these qualities can be molded towards productivity. It is equally required that the teachers should be well trained to use ICT in classroom teaching and they must encourage students to take the help of ICT in their learning. It is also observed that the utilization of ICT in education also depends on the attitude of the individual teacher. Interest and enthusiasm towards ICT depend on the attitude of the teacher as found.

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