

Integration of Information and Communication Technology (ICT) In Promoting Teaching-Learning Process in Secondary Schools

¹Sushanta Kumar Panda & ²Ravail Singh

Abstract

Education is an act of training for fulfilling the responsibilities and needs in the life of an individual. It trains the senses as well as the soul so that individual can make solutions to the problem faces in life. To achieve effectiveness in the educational system, the teacher has to make use of several innovative methods, techniques, and devices because the development of technology, teaching methods, techniques, and strategies has shifted from traditional to scientific through the help of Information and Communication Technologies (ICTs). As UNESCO explained, "Information and Communication Technology (ICT) is a technological, scientific, and engineering subject and managing technique practices in handling data, its association and applications with economic, social and cultural matters". The present research has focused on the integration of ICT in promoting teaching practice in secondary school education. The main focus of the research is on the usage of the components of ICT in promoting the teaching process, its integration, and suggestion obtained from Government secondary school teachers regarding the effective Integration and maximum use of ICT in the teaching process. The study was descriptive. For the sample, 100 secondary school teachers from 20 Government secondary schools were selected randomly. An interview schedule technique was used for the collection of data. The findings of the study revealed that the majority of the teachers suggested that proper infrastructure related to ICT should be promoted, need for trained teachers for providing training to teachers, proper supervision, and refresher courses should be organized. The internet facilities, availability of hardware and software devices and their update from time to time is also very important to promote the teaching process effectively in the classroom.

Keywords : *ICT, Teaching Process, Secondary School, Teachers.*

Introduction

Education trains the human senses as well as the soul to make correct solutions to the problems faced in individual life. Quality education means a child should be able to discriminate between good and evil in every aspect of life with the help of a teacher. Teacher plays an essential role to nurture the life of the child with the help of teaching, inside as well as outside the classroom. The primary function of the teaching is to wake the mind of the child, a desire to know and, if possible, to find out by itself. To achieve effectiveness in his work, the teacher has to make use of several innovative methods, techniques, and

devices with the usage and integration of ICT, the teaching strategies methods, and techniques, have shifted from traditional to the modern classroom with the help of ICT. A teacher should be able to integrate these technologies into their teaching process so that he/she can fulfill the purpose of teaching.

Information and communication technology is the combination of two words i.e. 'Information' and 'Communication Technology', which means "information is communicated with the help of technology". ICT is a various set of technological resources and tools that helps to create, disseminate, communicate, create, store and manage data" (Victoria, 2003). It includes hardware and software computer devices, internet, broadcasting technologies such as radio, television, and telephony. As UNESCO, explained that "Information and Communication Technology (ICT) is a technological, scientific, and engineering subject and managing technique practices in handling data, its association and applications with economic, social and cultural matters". More specifically ICT can be defined as the usage of all possible digital media in processing and managing data. In other words, we can say that ICT is a weapon that is highly influential and beneficial in promoting the teaching process in the present scenario.

Components of ICT

The following components have been taken by the investigator to know whether the teachers are using them in their teaching process or not. These components are as :

Information : The investigator wanted to know whether the teachers had used ICT to get their study material for teaching purposes.

Communication : In this component, the investigator investigated whether the teacher had communicated with the help of ICT.

Hardware : The investigator wanted to observe whether the teacher had used educational hardware devices in their teaching.

Software : The investigator wanted to know whether the teacher had used educational software in their teaching-learning transaction.

Procedure : In the present study, procedure means how to use ICT for teaching purposes.

ICT and Education

Information and Communication Technologies enhance the traditional classroom environment, teaching-learning process, and examination system and work as a driving force for the transformation of education in a better way. In the last three decades, ICT has been integrated into the classrooms to make teaching-learning transactions effective by introducing computer hardware as well as software devices like projectors, smart boards, web-based learning, online learning, blended learning, and synchronous learning (Karo, 2012). ICT becomes an essential part of everyday life in every aspect. ICT includes all the communication devices, technologies, and applications, encompassing all types of media i.e. radio, television, cellular phones, computers, internet, satellite system, and diverse

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services and applications. The Ministry of Education, Government of India also taken various initiatives for the integration of ICT in education such as Massive Open Online Courses (MOOCs), Study Webs of Active-learning for Young Aspiring Minds (SWAYAM), SWAYAMPRAKASH, National Digital Library (NDL), e-PG Pathshala, Shodhganga, e-ShodhSindhu, e-Yantra, Free and Open Source Software for Education (FOSS), Spoken Tutorials and Virtual Labs to make teaching-learning transaction effective (Ministry of Education, 2022). ICT creates a better environment throughout the school, develops positive feeling and motivation, and enhanced educational standards.

Role of ICT in the Teaching Process

The use of ICT enhances the quality and effectiveness of teaching. It helps a teacher to stimulate and engage students in teaching-learning transactions in the classroom to retain the concepts more accurately. It has transformed the nature and process of the teaching-learning environment (Kingsley & Patience, 2019). An effective teacher needs to realize the needs of the individual differences in the classroom and attempts are made to blend modern and innovative methods and strategies like project methods, constructive methods, programmed instruction, smart board learning, m-learning, e-learning, blended learning, and, flipped learning. The purpose of ICT is "...support and enhance child learning across all aspects of the curriculum. Teachers and children should increase and apply technological skills, knowledge and suitable social and ethical values and practices to create, disseminate and communicate their ability to manage and operate ICT in their teaching-learning transactions" (Putland, 2010). Different types of innovative technologies could be incorporated into teaching and learning, helping teachers to understand a child and continue teaching outside the classroom (Cubukcuoglu, 2013).

Parameters of Integration of ICT in the Teaching Process

In the present study, the following are the parameters for integration of information and communications (ICT) in promoting the teaching process :

- a) **Use of Computer in Teaching Process** : In this parameter, the investigator focused on whether teachers are using the computer in the teaching process.
- b) **Internet Services** : In this parameter, the investigator focused on the usage of the internet by the teachers in the institution while teaching.
- c) **Skills with Particular Applications** : Here investigator focused on the knowledge of skills with particular applications which are used in the teaching process by the teachers.
- d) **Formulating Instructional Designs** : In this parameter, the investigator focused on the applications of ICT while preparing instructional designs like lesson planning, preparing charts, etc.
- e) **Smart board Technology** : The investigator observed whether the teacher used a smart board in the class.
- f) **Use of Teaching Material in Classroom Setting** : In this parameter, the investigator observed how effectively teaching material has been used by the teacher in the classroom.

Justification of the Study

The development of science and technology has changed the educational system all over the globe. Innovative and creative educational setups are introduced in educational institutions to make teaching-learning transactions effective. The quality of education depends on the proper usage of new and innovative technologies like computers, the internet, and, artificial intelligence. ICT increases the motivation and interest of learners, develops their basic skills, retains the concepts for a longer time, and helps in problem-solving (Saravanakumar, 2018). It is a transforming tool in the hands of teachers to enhance learning, provide more learning opportunities for learners as well as teachers, help to provide instant feedback and reflections of teaching, in building local and global knowledge societies including different stakeholders like parents, students, teachers, administrators, educationists and researchers (Kozma & Anderson, 2012; Jhuree, 2005). An effective blend of ICT also improves teaching performance, develops significant skills, quality education, self-paced learning, problem-solving, critical thinking and, increases the ability to communicate, disseminate and collaborate information effectively (Yuen & et. al, 2003). National Council of Educational Research and Training (NCERT), University Grants Commission (UGC), and Ministry of Education, Government of India (MoE, GoI) have also taken various ICT initiatives to make teaching-learning transactions effective in school and higher education such as National Initiative for School Heads' and Teachers' Holistic Advancement (NISHTHA), Digital Infrastructure for Knowledge Sharing (DIKSHA), MOOCs under SWAYAM, e-Pathshala, Try and Measure Aptitude and Natural Abilities (TAMANNA), National ICT Award, Kala Utsav, Curricula for ICT in education, Shodhganga, e-Shodh Sindhu, Vidwan and, CEC-UGC YouTube Channel.

Based on the above discussion, it is analyzed that ICT is creating an essential place in the process of teaching-learning transaction day by day and there are limited studies conducted related to the integration, usability, and application of ICT in Jammu District of Jammu and Kashmir Union Territory. Therefore, to study the applications of ICT in education, the investigators had undertaken the present topic to know to what extent the integration of ICT is promoting teaching-learning transactions in Government secondary schools of Jammu.

Objectives of the Study

1. To find out the ways of uses of components of ICT in promoting the teaching-learning transactions in Government secondary schools of Jammu District.
2. To study the integration of ICT in Government secondary schools of Jammu District.
3. To obtain suggestions from Government secondary school teachers for better integration of ICT in promoting teaching-learning transactions.

Research Questions of the Study

1. How does the faculty comprehend the integration of ICT in teaching transactions of secondary schools?
2. What are the changes in teaching transactions due to the integration of ICT?

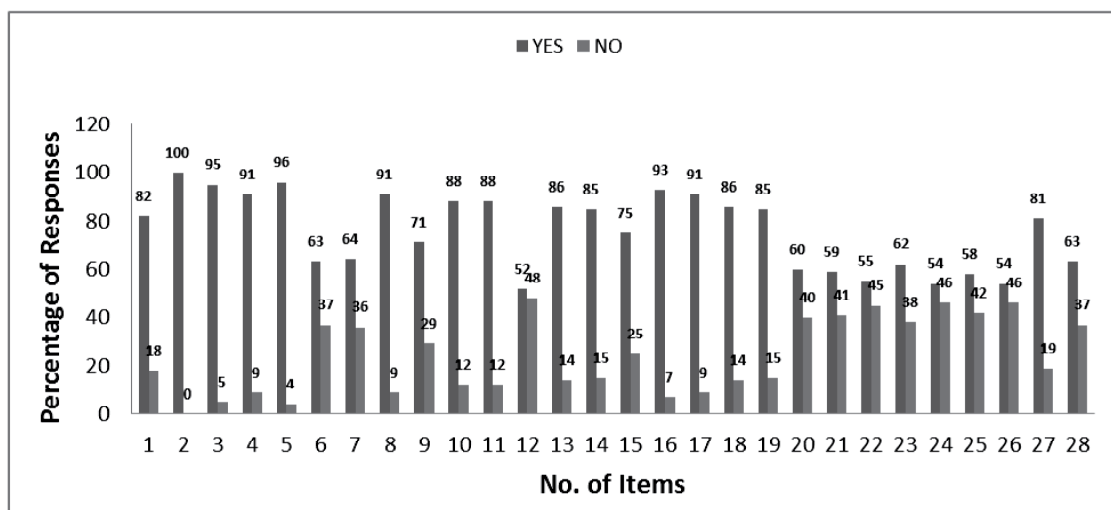
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Research Methodology

The present study was descriptive in nature. The population for the present study were comprised the entire government higher secondary and secondary school teachers of the Jammu district of Jammu and Kashmir Union Territory. The total number of government higher secondary and secondary schools in Jammu district were 171 with total number of 2682 teachers (Directorate of School Education, Jammu, 2020-21). Out of 171 government secondary schools, 20 were selected through simple random sampling technique. After that, five teachers were selected randomly from each school. Thus, $20 \times 5 = 100$ teachers were included in the sample. Interview Schedule was used for the collection of required data. There were total 29 items were included in the tool, in which 28 items were close ended and one item was related to the suggestions obtain from the teachers. Percentage of calculation of frequencies, and graphical representation of data through histogram were used to analyze and interpret the data.

Analysis & Interpretation of Data and Findings of the Study

Table I : Responses of Teachers



Based on the above table, it is interpreted that :

- I. The majority (82%) of teachers had used ICT in classroom teaching to make teaching-learning transactions effective.
- II. All the teachers agreed that ICT is helpful for the effective teaching-learning process in secondary schools.
- III. The majority (95%) of teachers felt comfortable when they use ICT in their classroom teaching.

- IV. The majority (91%) of teachers agreed that the integration of ICT is helpful to maintain discipline in classroom teaching.
- V. The majority (96%) of teachers agreed that the integration of ICT in teaching creates interest among the students.
- VI. The majority (63%) of teachers had used CDs/DVDs or any other hardware device to store the content for teaching.
- VII. The majority (64%) of teachers had incorporated ICT as a frequent mode of communication in classroom teaching.
- VIII. The majority (91%) of teachers responded that the amalgamation of ICT in classroom teaching increases the confidence level of teachers.
- IX. The majority (71%) of teachers had felt comfortable making PPTs related to their subject lesson on the computer.
- X. The majority (88%) of teachers agreed that ICT is helpful to enhance teaching proficiency among teachers.
- XI. The majority (88%) of teachers responded that the use of ICT is more effective in the modern classroom setting.
- XII. The majority (52%) of teachers responded that they are not used computer operating systems in the classroom during the teaching process.
- XIII. The majority (86%) of teachers agreed that ICT develops the retention power of the students.
- XIV. The majority (85%) of teachers preferred to teach with modern technology over traditional technology.
- XV. The majority (75%) of teachers responded that they had not undergone any ICT skills training before using modern technology in classroom teaching.
- XVI. The majority (93%) of teachers agreed that the assimilation of ICT in classroom settings increases the level of quality in education.
- XVII. The majority (91%) of teachers agreed that integration of ICT has more practicability in the classroom setting.
- XVIII. The majority (86%) of teachers agreed that the integration of ICT is beneficial for the inclusive classroom setting.
- XIX. The majority (85%) of teachers had interested to attend teacher training programs related to the applications of the latest technological skills in teaching-learning transactions.
- XX. The majority (60%) of teachers agreed that the applications of ICT in classroom teaching limit the teaching material.
- XXI. The majority (59%) of teachers agreed that the use of ICT is not hindering the originality of ideas.
- XXII. The majority (55%) of teachers agreed that integration of ICT is not increasing anxiety among the teachers.
- XXIII. The majority (62%) of teachers agreed that making use of ICT in the classroom is not time-consuming.

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- XXIV. The majority (54%) of teachers had agreed that integration of ICT is not seeking extra expenditure from teachers.
- XXV. The majority (58%) of teachers agreed that integration of ICT does not increase the workload of teachers.
- XXVI. The majority (54%) of teachers agreed that the incorporation of ICT in the classroom is a big challenge in the present era for teachers.
- XXVII. The majority (81%) of the respondent agreed that inadequate infrastructure of the classroom is a challenge to integrate ICT in the classroom.
- XXVIII. The majority (63%) of teachers agreed that ICT cannot replace teachers in the coming years.

Suggestions Obtained from Teachers Regarding the Integration of ICT in the Teaching-Learning Process

- Infrastructure related to ICT Lab, computer lab, etc to be available and updated in all the schools. There should be an ICT facility in every classroom so that the students can use them frequently. Every classroom should be equipped with smart boards. Available software should be updated from time to time and there should be proper management of ICT resources by the ICT experts in every school.
- Proper implementation of ICT techniques is most important in every classroom setting for effective teaching-learning transactions. Training/workshops regarding the use of ICT should be organized by the state education department to train teachers about all the new and innovative techniques in teaching-learning transactions.
- The Government should introduce ICT as a separate discipline at the secondary level and there should be a provision for technical staff to assist the teachers in every school; self interest and motivation of the teachers for the applications of ICT in the classroom is also equally important.
- The facility of tabs, laptops, computers, and other technical gadgets should be available in every secondary school. Proper computer labs with updated educational software should be established in every school so that teachers and students shall be benefitted.
- Awareness among the teachers especially those who have less experience with ICT, Internet usage, smart classrooms, computer classes, and knowledge of teaching-learning apps is very important to make an effective amalgamation of ICT in the classroom. Availability of video graphics and text materials related to the curriculum of the concerned subject and teachers should use those materials as and when needed.

Discussion of the Results

Based on the above evidences, it has been found that ICT plays an essential role to make teaching-learning transaction effective because it creates interest, increases confidence, enhances teaching proficiency, develops retention power, and increases quality of education. Various studies also supported that as a pedagogical model, it can become valuable resources

for learning (Fernandez-Gutierrez et al., 2020; Hermawan et al., 2018; Harnandez, 2017), important tool for quality education (Bariu, & Chun, 2022; Minamatov, & Nasirdinova, 2022; Phutela, & Dwivedi, 2019), provides cognitive, and affective benefits in teaching and learning (Foutsitzi, & Caridakis, 2019), and develops teacher professional competence, increasing the provision of learning opportunities, and enhance teacher professional development (Konig et al., 2022; Belland et al. 2017; Legrain et al. 2015; Li and Ma 2010; Sung et al., 2017). Sometimes excessive use of technology creates anxiety, stress, aches (head & back) and irritates them. Along with several benefits, some challenges were facing the secondary school teachers of Jammu district while implementing ICT in teaching-learning transaction such as lack of ICT infrastructure, lack of experts (Mir, 2019), inclusion of ICT as a separate subject in curriculum (Singhavi & Basargekar, 2019), lack of updated software (Netragaonkar, 2015), internet connection (Das, 2020), and lack of teachers training in operating the ICT tools (Mbodila, 2013).

Conclusion

Based on the above analysis and interpretation of collected data, the investigator found that most teachers suggested that incorporation of ICT in the teaching-learning transaction is helpful, maintains discipline in the classroom, increases the confidence level, and elevates interest among the students. It also enhances teaching proficiency, develops the retention power of the students, and is beneficial for the inclusive classroom. They also suggested that special training programs and refresher courses, regarding the use of updated hardware and software of computers, tabs, laptops, and desktops must be provided by the competent authority from time to time providing the teachers the skills necessary for the better integration of ICT in the classroom setting.

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Bio Profile of the Authors

- ¹ assistant Professor
Department Of Education,
University Of Jammu,
JAMMU -180006 (INDIA)
Email : drpanda77@gmail.com

&

- ² Research Scholar
Department Of Education,
University Of Jammu,
Jammu -180006 (India)
Email : ravailrajput94@gmail.com