

The role of ICT in education with special reference to classroom teachings - A literature review

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Received: 01/06/2026 | Revised: 11/06/2026 | Accepted: 01/07/2026 | Published: 03/07/2026

Abstract

In the field of education(ICT) has done a tremendous progress by modifying the system of education to some extent. Over the past few decades, information and communications technology (ICT) has become more important to educational institutions. There are wide of knowledge, and findings exists to enquire and study the use of ICT in the process of learning and teaching in educational institutions. Today in many developed and developing countries, most investments are made in this area and ICT is regarded as a key instrument within the field of education. This research inspects the application of ICT in the classrooms. This study will explore the role of information and communication technology in enhancement of teaching and learning process, academic achievement of students and attempt to show the student and teachers attitude towards the learning with technolog. Proper usage and utilization of modern tools and techniques by which teaching learning process is made interactive and indefinite will be precisely discussed.

Keyword: education, special reference to classroom teachings, literature review

Introduction

The integration of ICT in education means that teaching and learning process will be acquainted with the technology that closely relates to the usage of learning technologies in schools. In reality the students walk side by side with technology and the students will learn better with technology-based environment, the matter of ICT integration in schools, specifically in the classroom is essential. This is only because, usage of ICT in education provides a lot in the pedagogical aspects in which the application of ICT will progress to effective learning with the help and supports from ICT elements and components (Jamieson-Procter et al., 2013).

According to the Report of the Education Commission of 1964-66, "The destiny of India is now being shaped in her classrooms". In the realm of Science and innovation it is instruction which decides the degree of success, Welfare, solace and security. Hence training is a methods for success and government assistance of the country. Its field is wide to such an extent that all exercises and encounters are grasped in its circle of work. ICT is a very vast term which is made up of all communication devices and applications, constituting: radios, phones, televisions and satellite systems, hardware and software of networks etc, and many other services attached to them as well. Since past few years india witnessed a sign of growth in information and communication technology and networking systems . the huge development in internet and communication systems like broadband and telecommunication, provided the field to the teaching and learning process to use modern tools and equipments for betterment.

Blease (1986) said that micro technology is a thing which is used for "achieving one's objectives more quickly, more cheaply or more successfully". As a technical instrument ICT has the power to modify the teaching and learning process in the field of education. Liaw (2002) quoted that with the huge advances in communication and computer technology, the educational system urgently requires the application of this technology in order to boost the quality of teaching and learning. According to Daniels (2002) ICTs have become within less time, one of the primary building blocks of modern society. Various countries now consider understanding ICT and mastering the primary skills and ideas of ICT as part of the key of education, side by side reading, writing and numeracy. Nonetheless,

there emerges to be confusion that ICTs for the most part alludes to PCs and processing related exercises. This is luckily not the case, although computers and their applications play a noteworthy part in modern information management, other technologies and/or systems also comprise of the phenomena that is commonly regarded as ICTs. According to Oliver, (2000) Conventional teaching has emphasized content. In the past course have been written around textbooks. Teachers have taught through lectures and presentations interspersed with tutorials and learning activities designed to amalgamate and rehearse the material. Present day settings are currently preferring educational programmes that advance competency and execution. Curricula are starting to stress capabilities and to be related to more with how the information will be used than with what the information is. The ICTs of the contemporary times are able to produce strong support for all these needs and there are now many better examples of world class settings for competency and performance-based curricula that make strong use of the opportunities of these technologies. Bransford, Brown, and Cocking (2000) stated that use of ICT can help students to develop the competencies required for the current globalization. This is the case because ICTs can help students to expand their skills, enhance their motivation and boost their knowledge and information (Grabe & Grabe, 2007;

Nature and concept of ICT: Information and communication technology (ICT) mentions to the generation, collecting, dealing, storage, furnishing and determination of information and the system and tools that make it happen. information declares itself wherever we make a specimen. every sort of information should be meaningful, unexpected and fresh, in adjustment to and related with past knowledge, correction of previous knowledge, same, updated and action oriented. ICT in education that information Technology that is centered on the acquisition, storage, manipulation, dealing, transference or receiving of data needed for the educational purpose (Yuen et. al., 2005). Such as, the information of students' records, their admission, progress update of their curricular and cocurricular activities. ICT in education refers any educational technology that deals with the interchange of information or in short communication in the teaching-learning process. It is surrounded by hardware approach like use of machine and materials, software approach like use of methodologies and strategies of teaching-learning and system approach that uses the management technology which deals with the systematic combination of hardware and software (Harris, 2002).

I C T Enhancing quality of teaching learning process. The main ambition of (ICT) information and communication technology based education is the enhancement of the teaching-learning process. The integration of information and communication technologies can help in re energising teachers and students. This can help to enhance and boost the quality of education by providing support in tough subject areas. Teachers require to be involved in collaborative projects and initiation of invention change strategies, which would incorporate teaching partnerships with information and communication technology as a tool. Contemporary learning theory is build on the belief that learning is an active process of constructing knowledge rather than acquiring knowledge and that instruction is the process by which this knowledge construction is supported rather than a process of knowledge transmission (Jonassen & Reeves, 1996).

Zhao and Cziko (2001) said three conditions are necessary for teachers to introduce Information and Communication Technology into their classrooms: teachers should believe in the effectiveness of technology, teachers should believe that the use of technology will not create any disturbances, and finally teachers should believe that they have control on technology. However, examine contemplates show that most educators don't utilize the endowments of Information and Communication Technology to add to the nature of learning situations, although they value this potential quite significantly (Smeets, 2005). Besides Harris (2002) directed contextual investigations in three primary and three secondary schools, which fixated on inventive educational works on including ICT. Harris (2002) presumes that the upside of ICT will be picked up As a result, the utilization of ICT won't just upgrade learning conditions yet additionally get ready cutting edge for up coming lives and professions (Wheeler, 2001). Changed pool of instructors will come changed obligations and ranges of abilities for future showing including elevated levels of ICT and the requirement for more facilitative than educational instructing jobs (Littlejohn et al., 2002).

Information and Communication Technology Into Classroom Teaching

The use of (ICT) information and communication technology like CD-ROMs, Internet applications, , video conferencing, and several software programs has caused many changes in the world of education and in other fields. These changes where not only technical, but also of a structural nature.

Several major institutions of our society have changed, and day to day lives have been affected. However, the impact on education may just initiation to be felt as teachers combine this new technology into their teaching. In the beginning of ICT usage in teaching, looking at the experiences of teachers at a high school in the forefront provides some clues as to what possibilities and problems may be at hand with this new technology. Classroom resources are excitedly expanded by the usage of ICT, which makes many resources, including original source from all over the world, available to learners, teachers, and schools. Such as, the network system brings material like information, data, images, and even many softwares into the classroom from those places where everyone can not reach easily, and it does this within no time. These resources can help in completing toughest work, idea sharing etc. and can provide the various facilities like, quick access to curriculum in schools and in project work etc.

One of the leading models for change in educational system has been the concerns-based adoption model (CBAM) developed by Eugene Hall and his colleagues. This model focuses on the individual faced with a newer technology and how he or she reacts (Newhouse, 2001). It gives a change process model involving stages of concern and level of use indicators. Individuals in the process of adoption pass through seven stages of concern from *awareness*, where they are not concerned because they are not aware of an innovation, through to *refocusing*, where the adopter tries that level how to improve on the original innovation. The usage level during the change correspond to these stages of concern. Sherry, Billig, Tavalin, and Gibson (2000) also note that while teachers pass through various stages of adoption, they may need different kinds of support and professional development.

They mark that at this point, most attention has been on the earlier stages of the adoption process where providing information is sufficient, but later more collegial sharing is required as teachers move to add technology into the curriculum. Dias and Atkinson (2001) has well said the necessity of recognizing the stage or phase of adoption the teacher is in when determining what strategy to use for integration or evaluating best practices. Tapscott (1998) outlines eight shifts that he believed teachers and students need to make if they desire to have a powerful and more effective learning paradigm. according to him, these shifts are: from linear to hypermedia learning; from instruction to construction and discovery; from teacher-centered education to learner-centered education; from absorbing material to learning how to navigate and how to learn; from school to forever learning; from one-size-fitsall to customized learning; from learning as torture to learning as fun; and from teacher as transmitter to teacher as facilitator. Both Perelman (1992) and Salisbury (1996) opined that classrooms are outdated and not giving any guarantee to make education better in future. They think that the change process happening in education, is natural, similar to what has happened in other cases or occasions like the steam engine, the kerosene lamp, and the horse-drawn carriage. Morris (2010) confirmed that online discussions have been introduced in schools but they are not frequently used yet. And the explanation behind that is that (1) teachers have basic knowledge of these technologies, but it is not enough as to prepare their students for new social challenges (Kocak Usluel, Kuskaya & Demiraslan, 2007) and (2) teachers technical management of ICT tools (i.e. Digital white board, wikis or blogs) does not guarantee how to teach with ICT (i.e. didactic effectiveness) (Schoepp, 2005).

Impact of I.C.T in academic achievement of students.

Kulik (1994). His meta-analysis study revealed that, on average, students who used Information and communication technology based instruction scored higher than students without computers. The understudies additionally adapted as often as possible in less time and loved their classes a lot of when ICT-based guidance was incorporated. Fuchs and Woessman (2004) utilized universal information from the Program for International Student Assessment (PISA). They viewed that while the bivariate relationship between the accessibility of ICT and understudies' exhibition is firmly and altogether positive, the connection becomes little and inconsequential when other understudy environment qualities are taken in notice.

The analysis of the effects of these methodological and technological renovations on the students' attitude towards the learning process and on students' performance seem to be evolving towards a consensus, where by the effective use of emerging technology in higher education can have major positive effects on both students attitudes and student attainment. Attwell and Battle (1999) analysed the relationship between home computing and school success for a study of around 64,300 students in the U.S. Their study suggest that students who have a computer at home for educational purposes, have increased scores in reading and maths. Coates *et al.* (2004) studied that students in on-campus courses often score better than their online counterparts, but this difference is not significant here. Li *et al.* (2003) pointed out: —First, web-based instruction presents information in a non-linear style, allowing students to explore new information through browsing and cross-referencing activities. Second, web-based teaching carries active learning processes suggested by constructivist theory. Third, web-based education is enhanced understanding through better visualization and at last but not the least, the convenience, it could be used any time, anywhere.

Jehanzeb R. Cheema & Bo Zhang USA(2013)studied The significant endowment of this study is that it investigated the simultaneous effect of both quality and quantity of use of computer on academic achievement in context of a large-scale probability sample which allows projection of our analytical results to the entire population of 15-year old high school students in the U.S.

Further, Results from the weighted ordinary least squares multiple regression analysis showed that quantity and quality of computer usage are both significant predictors of overall achievement. However, the predicted strength of these variables is somewhat low with quantity of computer use explaining 1.4% of the variation in achievement and quality of use describing an additional 4.0% for a total of 5.4% of the total variation in achievement. In short, of the 34.3% of the variation in achievement that our most comprehensive multiple regression model accounted for, approximately one-sixth came from quantity and quality of computer use while the remaining came from demographic differences. One indication of these results is that when faced with a scenario where a choice needs to be made, then quality of use has a relatively larger impact on achievement relative to quantity, and should be awarded big attention in high school budgetary allocation and decision making. In terms of classroom practice this translates into providing students with help and support so that they come to know what they are doing and are more assured about their performances. This feature of our work in line with earlier research that has found quality of computer use to be proportionately more necessary predictor of academic achievement as compared to quantity (e.g. Lei, 2010). This study explored the impact of ICT in the education system. ICTs have changed the educational practices in many ways and will change considerably in future. ICT has become an essential agent in restructuring several educational practices . the continuous application and inclusion of ICTs in the education system will have far reaching results on teaching learning process ,its accessibility , motivation of learners, establishment of a pleasant teaching learning environment and improving academic performance.

The integration of ICT in the field of education has a positive impact on both teaching and learning process. There is seen a difference in the process of delivering and imparting education through the very new tools and techniques , which are the blessings of the information and communication technology. ICT has the capability for a wide accessibility to educational resources .besides this , it assures flexibility, so that, anyone can have access to learn without any difficulty at any corner of the world. It can also show the impact in students, how they are taught and how they learn. ICTs helps to motivate the learners by creating a rich and favourable learning atmosphere in the schools and by providing different opportunities for students and teachers as well. availability of good educational practices and educational programs, which can be shared through ICT, can enhance the spread of best education system by sharing best educational programmes. Further the use of ICT in education system is ablessing and will enhance the academic performance of the learners.

Teacher attitude towards ICT (information and communication technology).

A study was conducted by Bulent CAVAS et al (2009) on science teachers' attitudes towards information and communication technologies in education. The aim of this study was to disclose Turkish primary science teachers' attitudes towards Information and Communication Technology in education so explore the connection between teachers' attitudes and factors which are associated with teachers' own characteristics (gender,age, computer ownership reception, and computer experience). The researchers collected the information by using an instrument (STATICTE) which was developed by researchers and administered to 1071 science teachers almost uniformly distributed in 7 geographic regions of Turkey. In data analyses, descriptive statistics was accustomed describe and collect the properties of the mass of knowledge collected from the respondents. The results showed that here science teachers have positive attitudes toward ICT and although teachers' attitudes toward ICT don't differ regarding gender, it differs regarding age, computer ownership reception and computer experience. it absolutely was expected that the outcomes of this study will be employed in shaping innovational practices within the Turkish Educational System. Ana-Belén et al (2012) also studied on in commission teachers' attitudes towards the employment of ICT within the classroom. His aim of this study was to point out teachers' attitudes towards the employment of ICT within the classroom situations. From kindergarten to high school level, 100 and seventy in-service teachers participated within the study. A 154-item survey was elaborated (Cronbach $\alpha = .89$) containing three main sections: (1) general information; (2) attitudes towards ICT and use of computer resources within the classroom; (3) level of satisfaction towards the training. A quasi-experimental study with one non-randomized study group (n=85) was also conducted employing a pre-and post test design with the aim of searching for differences before and after training. Besides, 11 semi structured interviews were conducted out with the aim of deepening into teachers' major motivations and beliefs. The results show that teachers' attitudes towards ICT are very positive but the employment of them in school is small and it's subjected to innovative processes. Secondly, there have been no significant differences after instruction. Main conclusions indicate that new ways of teacher training have to be developed. the great and excellent usage of

knowledge and communication technology within the educational field provides the scholars and teachers various teaching learning opportunities and it improves the methods of teaching learning. Throughout the entire world teachers should find out how to use and teach by including current technologies within the instructions. It's also necessary that teachers will make plans and techniques to coach the teachers and to be prepared with ICT skills. ICT has emerged as an imperative part of our lives. It's spread its area to the sector of teacher education also. Since past few decades, ICT has changed the entire scenario, i.e. the practice and system within the various fields like engineering, industry, markets, banking etc., by which it's changed the society rapidly. ICT is an instrument which helps to create the training procedure very simpler for the teachers. Due to the rapid explosion and frequent advantages of ICT the teachers' attitude towards ICT is being very positive and mounting. This new environment has created by ICT is claimed to be the interactive learning atmosphere. Teachers' attitude The teachers play a vital role in integrating ICT. Teachers of this era should bear in mind of the content of the topic and pedagogy to present the knowledge effectively by using technology. The teachers should know the usefulness of the ICT tools and techniques. They must realize that the applying of technology does not disrupt the classroom atmosphere in any way. They must be fully prepared to use the technology in several classroom situations. Nevertheless various studies have shown that besides a positive attitude towards the usage of recent technology, most of the teachers do not take advantages of it. These resources if exploited properly and safely by the teachers and schools, the teaching learning process are going to be flourished and can get a rapid progress within no time.

General conclusion of the review

This literature review studied the role of information and communication technology in the present day education system. ICT have changed the teaching learning process to a greater extent and have influenced educational practices, will increase hopefully in future. ICT is becoming a powerful agent in transforming several educational practices. Continuous application and development of ICTs in education system will have a greater influence on teaching - learning process, motivation of learners, accessibility of education, creating a pleasant learning environment and improving academic performance. The integration of ICT in education system has a progressive and positive effect on teaching and learning process. With the use of technology the delivery system is more and much advanced than the older system of teaching learning. ICT enhances the basic qualities which a teacher and a student require in the classroom situations and outside of the classroom as well. Such as, flexibility, by which students can learn without any hindrance at any place at any time. The way students are taught and the way they learn, are also being influenced by the integration of ICT in education. The most important requirement in the teaching learning process is the motivation of the students and teachers, this very thing is boosted by the information and communication technology by which a rich teaching learning environment can be created to ensure the new opportunities for the teachers and students as well. These opportunities can mould and enhance the academic performance and achievement of the students.

References

1. Attwell, p.; Battle, j. (1999). —Home Computers and School Performance. *The Information Society*. No. 15, p.1-10.
2. Bransford, J., Brown, A. L., & Cocking, R. R. (2000). *How people learn: Brain, mind experience and school* (ed.2). Washington, DC: (NAP) National Academy Press.
3. Coates, d.; Humphreys, b. R. [et al.] (2004). —'No Significant Distance' between Face-to-face and Online Instruction: Evidence from Principles of Economics. *Economics of Education Review*. Vol. 23.
4. Daniels, H. L., (2002), Electronic portfolios and teacher education standards: Making the connection with curriculum, in M. Simonson (Ed.) *Proceedings of the International Conference of the Association for Educational Communications and Technology*, 27, 345-348, Bloomington: AECT Press.
5. Dias, L., & Atkinson, S. (2001). Technology integration: Best practices—Where do teachers stand? *International Electronic Journal for Leadership in Learning*.
6. Fuchs, t.; Woessmann, l. (2004). Computers and Student Learning: Bivariate and Multivariate Evidence on the Availability and Use of Computers at Home and at School, *CESifo Working Paper*. No. 1321. November.

7. Grabe, M., & Grabe, C. (2007). Integrating technology for meaningful learning (ed.5). Boston, MA: Houghton Mifflin.
8. Harris, S. (2002). Innovative pedagogical practices using ICT in schools of England. *Journal of Computer Assisted Learning*. 18 , p 449-458.
9. Jehanzeb R Cheema & Bo Zhang.(2013).Quantity and quality of computer use and academic achievement:Evidence from a large-scale international test program. *International Journal of Education and Development using Information and Communication Technology*. (IJEDICT), 2013 9, 95-106.
10. Jamieson-Proctor, R., Albion, P. Finger, G., Cavanagh, R., Fitzgerald, R., Bond, T., & Grimbeek, P. (2013). Development of the TTF TPACK Survey Instrument. *Australian Educational Computing*, (3)27.
11. Kocak Usluel, Y., Kuskaya Mumcu, F, & Demiraslan, Y. (2007). ICT in the Learning – teaching process; teachers views on the Integration and Obstacles. (32), 164 – 178.
12. Lubna J. Mansuri, attitude towards information technology: Astudy of secondry school teachers. *Scholarly Research Journal for Interdisciplinary Studies*, 2017, 4,35.
13. Newhouse, P. (2001). —Applying the concerns-based adoption model to research on computersl. *Journal of Research on Technology in Education*, (5) 33.
14. Oliver, R.(2000). —Creating Meaningful Contexts for Learning in Web-based Settingsl. *Proceedings of Open Learning 2000*. 53-62.
15. Perelman, L.J. (1992). School's out: Hyperlearning, the new technology, and the end of education. NewYork: William Morrow.
16. .Report of the Kothari education commission (1964-1966).
17. Syed Noor-Ul-Amin :An Effective use of ICT for Education and Learning by Drawing on Worldwide Knowledge, Research, and Experience: ICT as a Change Agent for Education. (a literature review).
18. Saradindu Bera and Ramakanta Mohalik. Enhancing quality of teaching learning by using information and communication technology (ICT). *Research Scholar, Regional Institute of Education (National Council of Educational Research and Training), Bhubaneswar-751022*.
19. Smeets, E. (2005). —Does ICT contribute to powerful learning environments in primary educationl? *Computers & Education*, No. 44.
20. Sherry, L., Billig, S., Tavalin, F., & Gibson, D. (2000). New insights on technology adoption in schools.*T.H.E. Journal*, (7) 27.
21. Tapscott, D. (1998). Growing up digital: —The rise of the net generationl. New York: McGraw-Hill.
22. Yuen, A, Law, N and Wong, K. (2005).l ICT implementation and school leadership case studies of ICT integration in teaching and learningl. *Journal of Educational Administration*. 41, 158-170.
23. Zhao, Y. & Cziko, G. A. (2001).Teacher adoption of technology: —a perceptual control theory perspectivell. *Journal of Technology and Teacher Education*, Vol. 9, (1), 5-30.