

# Analysing The Role Of Infrastructure To Accentuate The Art Of Teaching In Educational Institutions

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**Citation:** Mrs Puja Pant Naithani, et.al, (2024), Analysing The Role Of Infrastructure To Accentuate The Art Of Teaching In Educational Institutions, *Educational Administration: Theory and Practice*, 29(4), 2527 - 2530

Doi: 10.53555/kuey.v29i4.7109

## ARTICLE INFO

## ABSTRACT

### Article History

**Article Accepted**  
**05 Dec 2023**

Globally, information, communication, and technology (ICT) have revolutionized the art of imparting education. All educational institutions and people that have embraced technology have reaped tremendous rewards. Integration of ICT has successfully handled major concerns such as access, efficiency, and quality. The access of, information and communication technology (ICT) have harmonized the art of teaching and promotes the bonding between educator and scholar. India advocated for the use of ICT infrastructure in secondary school teaching and learning. However, studies suggest that, in relation to worldwide trends, the adoption rates have been quite sluggish and low. Teachers, school leaders, and students all need to familiarize with this new art and gain new skills and competences as a result of the usage of ICT infrastructure. As a result, all stakeholders must resolve to surpass all impediments encountered in the use of ICT in teaching and learning so that schools do not trail to embrace this new art of science. The importance of infrastructure to revolutionize the art of teaching by adoption of technology in educational institutes is the topic of this research.

**Keywords:** communication; infrastructure; efficiency; laptop

## I. INTRODUCTION

In a high-quality 21st century education system, information communication technology (ICT) infrastructure may play a critical role in improving teaching, learning, and evaluation methods for instructors and students. It is widely acknowledged that teachers and schools are continually working to improve how they teach, how their pupils learn, and how learning is assessed across the world. It is critical to integrate ICT infrastructure across the educational system. ICT is increasingly prevalent in society, and it is continuing to change how we live our lives. It has the potential to enable school-wide transformations in teaching, learning, and evaluation, as well as link educational policy to economic and social growth. Likewise, there is mounting evidence that digital technologies alter how children learn, how teachers educate, and where and when learning occurs.

More open-ended learning experiences are needed to help students develop higher-order thinking skills, creativity, freedom, collaboration, and ownership of their learning. When the ICT infrastructure is efficiently utilized, all instructors, students, and parents/guardians have the opportunity to develop these Key Skills. Incorporating ICT into teaching, learning, and evaluation is a difficult task, and the sheer presence of ICT in a school does not imply that it is being used effectively. Older technologies, such as books or whiteboards, have often been replaced by ICT infrastructure, but the teacher's and learner's roles have remained same.

Technology progress include the use of hardware like as computers and the internet to supplement instructors' knowledge and abilities, as well as the availability of learning content that allows for the use of multiple teaching pedagogies. The use of ICT in teaching and learning is thought to improve the educational system by offering effective learning pedagogies and information exchange that facilitates learning. Similarly, in today's rapidly changing world, incorporating Information Communication Technologies (ICTs) has become a must. The advantages of embracing the process have long been recognised, as it has become the primary means of increasing educational access, promoting efficiency, and improving educational quality.

To fulfil the demands of the twenty-first century, globalization and economic trends have forced the incorporation of ICT in teaching and learning. ICT advancements have boosted efficiency in the teaching profession, where teachers are required to prepare for the use of new, more efficient teaching tools (UNESCO, 2002). In general, having a good balance and interaction between ICT infrastructure and teaching curriculum provides a lot of advantages in terms of teaching and learning. Similarly, the integration of information,

communication, and technology has had a tremendous influence on education by improving accessibility, increasing efficiency, and promoting high-quality teaching and learning.

## II. STATUS OF THE ICT INFRASTRUCTURE

Computers, scanners, photocopiers, mobile phones, printers, projectors, and broadcasting technologies such as radio and television, as well as important software that improves teaching and learning, are all examples of ICT infrastructure. To enable for the exchange and dissemination of data and information among instructors and pupils, ICT infrastructure must be connected through computer networks and internet access. Researchers agree that ICT infrastructure should be accessible and usable by everyone. Multimedia apps should be used more frequently in schools to promote teaching and create engaging activities for pupils. A networked school isn't simply a school with a physical network; it may also use resources from outside the school's own network when it's desirable to do so. ICT Infrastructure, like ICT curriculum, has a direct impact on the outputs and results of ICT use in teaching and learning. The implementation of ICT infrastructure projects at chosen educational institutions with the goal of offering recommendations on how such projects might be implemented and supported revealed that schools require more ICT, particularly computer technology. The ICT would then encourage the use of ICT technology in the delivery of student education.

Many schools, particularly those in rural regions, are disqualified from receiving ICT donations because they lack facilities such as power. Security, electricity, and the availability of ICT-literate instructors are usually among the prerequisites for deploying computers and ICT facilities in a school. Because some schools do not have access to electricity, they must rely on generators to power their computers. These types of power sources are inconvenient because they are typically employed at night. As a result, few teachers are able to use technology, resulting in poor ICT usage. However, a plan has been put in place to make computers more accessible to instructors. Teachers at public schools will be able to purchase laptop computers via a check-off system. The effort, according to the newspaper, is intended to encourage instructors to use modems and other instructional tools.

Staff professional development is more likely when suitable and up-to-date ICT infrastructure is provided, since staff learns on the job when they utilize them in the process of teaching in school. This would result in a positive working atmosphere in which both employees and students are respected and cared for. The provision of up-to-date ICT infrastructure in schools would encourage school workers who are not proficient in ICT skills to learn them. The practice of providing ICT infrastructure before personnel is trained in how to use it is becoming increasingly prevalent in the introduction of ICT in schools. More schools are investing in ICT infrastructure without sending their employees to in-service training, such as providing laptops in classrooms so that instructors may check them out.

## III. USE OF THE ICT INFRASTRUCTURE IN TEACHING AND LEARNING PROCESS

Before beginning to deploy ICT infrastructure in schools and classrooms, a detailed reason must be developed. With general, as computer technology becomes more readily available, it is critical that instructors remain focused on their fundamental tasks as educators rather than becoming engaged in the machine. Teachers must stretch their ideas, knowing that as computer technology advances, they will be able to accomplish more of their objectives. Some have hailed the computer as the answer to many educational difficulties since the 1960s. Many early computer scientists believed that computers may eventually replace instructors in schools. There are three primary reasons for using ICT in schools: one is to improve the school's organisational productivity, and the other two are to meet the requirements of students: technology literacy and learning assistance. The need for ICT-skilled instructors is driven by the demand for ICT-skilled students and an ICT-rich learning environment that supports students' learning throughout the curriculum.

ICT has had a significant impact on the field of education, affecting teaching, learning, and research. ICT infrastructure has the potential to accelerate, enhance, and deepen skills, to encourage and engage students, to help students connect their school experiences to work practises, to provide economic viability for tomorrow's employees, and to strengthen teaching and assist schools in changing. Basic education is necessary for an individual to be able to access and use information technology in today's quickly changing environment. The emphasis in teaching has traditionally been on material. Textbooks have been the focus of course study for many years. Lectures and presentations were mixed with tutorials and learning exercises to help students consolidate and practise the material. Curriculum that encourages proficiency and performance is now preferred in modern contexts. Curriculums have begun to place a greater emphasis on capabilities and are more concerned with how material will be used rather than what information it contains. All of these prerequisites may be met with modern ICT, and there are currently several great examples of world-class settings for competence and performance-based curricula that make effective use of these technologies.

Only when confident instructors are willing to seek new options for improving their classroom practises by utilising ICT will the benefits of employing ICT technology be achieved. As a result, using ICT not only improves learning but also prepares the next generation for their future lives and jobs. With a new pool of instructors comes a new set of duties and abilities for future teaching, which will require high levels of ICT and more facilitative rather than didactic teaching roles. The use of technology in assisting students in their learning will

continue to grow. Teachers used to design and lead students through a number of instructional sequences to attain a specific learning outcome as part of the traditional teaching process. Traditionally, these methods of teaching have centred around the systematic transmission of a body of knowledge, followed by some type of interaction with the subject to help students consolidate their learning. Through their supply and support for resource-based, student-centered settings, and by enabling learning to be tied to context and practice, learning methodologies employing current ICT present many chances for constructivist learning. ICT infrastructure in learning environments promotes numerous areas of knowledge production, and as more students utilize ICT in their learning processes, their influence becomes more evident. Teachers strategically use ICT to promote learning by creating relevant and engaging learning experiences for their students. Students like learning and the independent inquiry that ICT facilitates through creative and proper application. According to the findings, relatively few schools were employing ICT for anything other than computer instruction and office work.

#### IV. ICT INFRASTRUCTURE

**Table 1:** Infrastructure for Educational Technology Usage

Items	Available sufficiently	Available but not sufficient	Not available
Computers	(64.28%)	(35.71%)	0
LCD Projector	(38.10%)	(50%)	(11.90%)
Video Camera	(9.52%)	(28.57%)	(61.90%)
VCD/ DVD Player	(4.76%)	(16.66%)	(78.57%)
Opaque Projector / Document Camera	0	(2.38%)	(97.62%)
Computer Lab	(64.28%)	(35.71%)	0
Internet/Web Environment	(30.95%)	(69.04%)	0
Slide Projector	(4.76%)	(21.43%)	(73.80%)
Tape Recorder/Voice Recorder	(16.66%)	(50%)	(33.33%)
Radio	(7.14%)	0	(92.86%)
Printer	(11.90)	(88.09%)	0
Scanner	(35.71%)	(45.24%)	(19.06%)
Sound card	0	(2.38%)	((97.62%)
Television/Video	(9.52%)	(52.38%)	(38.10%)
Microphone/ Speaker	(4.76%)	(40.48%)	(54.76%)
Digital camera	(11.90)	(54.76%)	(33.33%)
Video camera/ PC compatible	(14.28%)	(26.19%)	(59.52%)
Joystick	0	0	42(100%)
Optical scanner	0	0	42(100%)
Overhead projection/ PC Compatible	(57.14%)	(42.86%)	0
Fax/ PC compatible	(4.76%)	(66.66%)	(28.57%)
Modem	(2.38%)	(11.90)	(85.71%)
Ethernet card	0	0	42(100%)
Tele/Video Conferencing Facility	0	0	42(100%)
Web Cam	(16.66%)	(2.38%)	(83.33%)

The above mentioned Table displays the infrastructure presently available on sampled teacher education institutes (TEIs) as stated by teacher educators. No items other than computers, computer laboratory (64.28%) and overhead projector (57.14%) available on adequate numbers in TEIs as per opinion of teacher educators. Printer (88.09%), Internet (69.04%), PC compatible FAX (66.66%), Digital Camera (54.76%) and Television (52.38%) are reported to be available but not in sufficient numbers. Joystick, Optical Scanner, Ethernet card and tele/video facilities were not available any of the TEIs.

The data indicates the inadequate infrastructure regarding educational technology. The overall access of technology to teachers and students is inadequate in all TEIs as either they have limited hours of access to Educational Technology, with very few technology resources. On the whole, despite improvement in respect of availability of technology, staff and students of the TEIs have inadequate access to technology either due to limited availability of machines or lack of time in accessing the available technology.

These finding are similar as the report, "Infusing Dynamism in Teacher Education through ICT Integration: Learnings from India" jointly prepared by NAAC and Intel Tech. Sub-committee on ICTs for Teacher Education set up by MHRD which indicated, "The TE institutions need to be provided with the adequate infrastructure both academic (training in integrating the ICT resources to their regular teaching) and physical to use ICT's effectively.

Computers and other devices need to be made available on a 1:1 basis so that access is not restricted and available when needed. Labs need budgets and personnel for maintenance and support. Continuous up gradation of labs, adding new facilities is required on a continuous basis, since this is a rapidly developing field." The hardware needs the support or use of software for transaction of curriculum. The following table

reports the responses of teacher educators regarding use of software by them for educational purpose.

## V. CONCLUSION

The government should help secondary schools get started with ICT infrastructure. This would guarantee that all secondary schools have access to and usage of ICT infrastructure for teaching and learning. When ICT infrastructure facilities fail, the government should guarantee that there are enough ICT qualified technicians to restore them. This would ensure that if an ICT facility malfunctioned, it was fixed so that it could continue to be used in teaching and learning in the schools.

ICT can provide instructors with chances to get educational resources from the internet to supplement course content. These findings are consistent with studies showing that most instructors have accepted ICT integration in their classrooms. Using ICT infrastructure has a significant influence on teaching and learning in general. As a result of the integration of ICT infrastructure in teaching and learning, secondary schools have witnessed revolutionary shifts in education. Similarly, the majority of teaching staff has been made aware of the necessity for a paradigm change from traditional teaching and learning techniques to technologically feasible approaches in order for ICT integration in education to be effective and solve global and 21st century concerns.

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