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# Digitization and use of ICT in Educational Institution: An effective way to move towards Sustainable Development Goal of Indian Society

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*ABSTRACT*

Education is the one and most powerful instrument of social change and social development. Every and all sectors of social development is largely depending on its human capitals. Today, every sector of the economy has found a new form of development with the introduction of digitization which has also brought a major impact in changing the scenario of the Indian economy specially the education and business sector as obviously depicted during the period of Covid-19.This paper goes to identify the impact of digitization and use of information and communication technology in promoting the skill and efficiency in the different sectors of Indian economy during the last decade. ICT has been used as a tool to render assistance to achieve our goal of the profession to serve the end user as providers of information, pin pointedly, expeditiously and exhaustively. Undoubtedly ICT based education is the need of the professional world and much beneficial for meeting the potential demand of the society but the challenging part of it is that even today major population of India is quite unaware from this which needs to be addressed on priority basis to improve the skill and value both in the present competitive age of Globalization.

**Keywords: Information, Communication, Technology, Digitization, Professional skill, Globalization.**

## Introduction

Digitization has become an integral part of every sphere of life. Growth of ICT has become very fast in the previous decades. With the development of new communication technologies such as satellite television broadcasting (DTH), mobile communications, smart phone, computers, internet, laptop, notebook, tablets etc., have sparked of optimism about their potential to harness overall development in India. Today, technology implementations may reach across campuses, institutions, departments, offices and other workplaces and often require the integration of systems involving both academic and business units. Introducing new information technologies into education and exploring the new horizon for using the various technologies for more effective instruction and delivery of education inside and outside classrooms are burning issues. In India as a developing country, there are many advantages and constraints in the application of ICT. This paper highlights all those aspects related to ICT in the Indian education system. An attempt has been made to identify the justification of SDG position in the present age of ICT. The term, information and communication technologies (ICT) refers to forms of technologies that are used to create, store, share, transmit or exchange information. This broad definition of ICT includes such technologies as: radio, television, video, DVD, telephone (both fixed line and mobile phones), satellite systems, computer and network hardware and software as well as the equipment and services associated with these technologies, such as videoconferencing and electronic mail.

Information and Communication Technologies (ICT) can help improve the quality of education, as long as some conditions regarding its design, implementation and evaluation are met. In particular, ICT can force and lend support to needed changes in educational practices, which will allow them to be

adapted to the demands of the twenty-first century. Without serious, systematic incorporation of ICT, education systems will be unable to adapt their operation to the traits of the students and their families, and the demands of the labor market and society.

Sustainable development goal (GDG) is said to be fulfilled when each and every person living in the society feels satisfied and other interest is going to be well protected at their desired level by their action. It is the stage where giver and receiver both are honest and transparent in their action and there is no discrimination at any level with anyone. Rural and urban ,Rich and poor, Quality and quantity all are treated at par and based on the principals of equity in the place of equality which will ultimately ensure the sustainable growth of any society and it is expected that this digital revolution in education sector will certainly bring drastic change in the said economic conditions of the people by bringing innovation and ensuring quality is existing education system of the country. It goes to promote and generate well informed group of the society and will ensure equilibrium is terms of growth in Indian society. This is the stage where value and skill both will go to exist in the society.

**Objective of the Study**

This study aims at-

1. To find out the role of ICT in enhancing the quality education by bringing change in the role of Educators in 21st century.
2. It identifies the challenges as faced in using innovative technology in the rural areas of the Country.
3. To find out the benefit of digitization to make the people more participate and inclusive in sharing the available benefits and improving their skill.

**Methodology of the Study**

This study is primarily based on secondary data. A number of Books and Research Journals have been consulted for the study. However, some information has been collected by sending well designed questionnaire to some professional teachers and institutions using this technology for providing education to the students.

**Significance of Digitalization in Education**

There are two equally important reasons for integrating IT in teaching. Pupils must become familiar with the use of IT, since all jobs in the society of the future will be dependent on it and IT must be used in teaching in order to improve its quality and make it more effective. The importance of ICT in education has been identified in the following points during the course of the study.

**Access to a variety of learning resources**

ICT aids plenty of resources to enhance the teaching skills and learning ability. With the help of ICT now it is easy to provide audio-visual education. The learning resources are being widened. Now with this vivid and vast technique as part of the ICT curriculum, learners are encouraged to regard computers as tools to be used in all aspects of their studies. In particular, they need to make use of the new multimedia technologies to communicate ideas, describe projects and order information in their work.

**Quick Information**

ICT has provided immediacy to education. Now in the year of computers and web networks, the pace of imparting knowledge is very fast and one can be educated anywhere at any time.

**Comfortable Leaning**

Now in the year of computers and web networks, the pace of imparting knowledge is very-very fast and one can be educated .One can study whenever he wills irrespective of time and place.

**Collaborative Learning**

Now ICT has made it easy to study as well as teach in groups or in clusters. With online we can be united together to do the desired task. Efficient postal systems, the telephone (fixed and mobile) and various recording and playback systems based on computer technology all have a part to play in educational broadcasting. The internet and its websites are now familiar to many children in the developed countries and among educationalists.

**Authentic and up-to-date information**

The information and data which are available on the net is purely correct and up-to-date. Internet, a collection of computer networks that operate to common standards and enable the computers and the programs they run to communicate directly provides true and correct information.

**Online library**

Internet supports thousands of different kinds of operational and experimental services one of which is online library. We can get plenty of data on this online library.

**Better Access to Children with Disabilities**

IT has brought drastic changes in the life of disabled children. IT provides various software and techniques to educate these poor people. Unless provided early with special training, people profoundly deaf from birth are incapable of learning to speak. Deafness from birth causes severe sensory deprivation, which can seriously affect a person's intellectual capacity or ability to learn. Thus, ICT is the best way of providing quality education to this neglected segment of the society.

**Need of ICT in Education**

Over the past few decades, technology has completely transformed our lives in all possible ways. India, a successful ICT powered nation, has always laid a lot of accent on the use of ICT, not only for good governance but also in diverse sectors of the economy such as health, agriculture and education etc. Education undoubtedly is one of the most important investments in building human capital in a country and a medium that not only sculpts good literate citizens but also makes a nation technologically innovative, thus paving a path to economic growth. In India, many programme and schemes such as free and compulsory primary education, Education for All Movement (Sarva Shiksha Abhiyan), National Literacy Mission etc., have been launched by the government to improve the education system.

In the recent years, there has been a groundswell of interest in how ICT has been deployed in the education sector. One of the most vital contributions of ICT in the field of education is easy access to learning resources. With the help of ICT, students can now browse through e-books, sample examination papers, previous year papers etc., and can also have an easy access to resource persons, mentors, experts, researchers, professionals, and peers-all over the world.[1]

Anytime-anywhere, one of the most distinctive feature of ICT is its ability to transcend time and space. Keeping this module in mind, ICT has made asynchronous learning (digital learning) possible. One can now use online course study material, at any hour of the day. ICT-based educational delivery (broadcast of educational programme over radio and television) also dispenses with the need for all learners and the instructor to be in one physical location. ICT has acted as a perfect motivating tool as well since using it as a media to teach includes usage of videos, television and multimedia computer software that combine text, sound and colour. This allows the students to get more engaged in the learning process.[1]

Indian society is now effectively competing with the global economy. Unfortunately, Indian educational institutions cannot cope with the global demand for new skills, due to limited institutional provisions. Higher educational institutions in India should facilitate lifelong learning for competing in the global economy. In modern age, functional literates are those who can learn, Un-learn and re-learn in a given situation. Nowadays technologies are also available for provisioning of learn, u-learn and re-learn. In this situation, there should be flexibility in the curricula, not a fixed syllabus. Indian higher educational and technical institutions should attract foreign students for capital devilment. Ministry of Human Resource Development is investing Rs.600 Crore for the establishment of National Knowledge Network, networking higher educational and technical institutions of the country with 15 GB bandwidth connectivity. This network will be instrumental for transforming Indian institutions to cope up with the challenges in the global economy.

India actively promotes the use of ICT in education. Today, the country's decision-makers, at both the central and state levels, have chosen to explore the use of newer computer and internet-based ICT for education, along with broadcast ICT and have been promoting the use of open and distance learning for both the formal and non-formal education sectors. The launch of a dedicated broadcast education satellite, EDUSAT with capacity for specialized educational channels and up to 5,000 FM community broadcasting stations for use by educational institutions. This infrastructure will be available to all sectors of education, but primarily to publicly funded and implementing agencies that will be responsible for transmission and programming for their defined audiences. For instance, a state

government will be able to use the channel capacity for governance, an open school for transmission of its own programme, agricultural agencies for agricultural extension, etc.

There has been a dramatic shift from the 2000s to the present day in terms of access to technology by the population in general. Technologies like Wireless in Local Loop (WLL) and Very Small Aperture Terminal (VSATs) are being used for internet and intranet purposes. The current annual rate of growth in the telephone sector is at 48 per cent for mobile telephony. Radio has a penetration of 100 per cent in the country while satellite and terrestrial television cover nearly 80 per cent of the country.

Fortunately, the ICT as a tool in education is available to us at this juncture and we wish to fully utilize it to enhance the current enrollment rate in higher education from 10% at present to 15% by the end of the present plan period. A budget allocation of Rs.502 crore has been made in 2008-09 for the National Mission on Education through ICT which has been increased to 1054 crore by 2021.[2] Under this mission, a proper balance between content generation, research in critical areas relating to imparting of education and connectivity for integrating our knowledge with the advancements in other countries is to be attempted. This mission seeks to support such initiatives and build upon the synergies between various efforts by adopting a holistic approach. It is obvious that emphasis on ICT is a crying need as it acts as a multiplier for capacity building efforts of educational institutions without compromising the quality. The mission is also necessary to sustain a high growth rate of our economy through the capacity building and knowledge empowerment of the people and for promoting new, upcoming multi-disciplinary fields of knowledge.

**Digitalization and its role in bringing change in the quality of education**

The role of a professional teacher has totally changed to the present age of ICT. An attempt has been made to identify the changing role of a professional teacher in three different ways:

**Personalization**

Education in the 20th century, here to industrialization and massification, with its consequent increase in the diversity of the inside of classrooms, has inevitably had to consider students in terms of an average of skills over which the same contents are allocated, with the same strategies and at the same rate. This system assumes that most students will be able to adapt to this average delivery and that the acceptable price to pay is that some gifted students (with greater stimuli, better context, superior conditions) will become somewhat bored and at the other extreme (another group in poorer conditions) will fail to meet these standards.

Recent research provided by neuroscience and developmental psychology, and the daily experience of hundreds of thousands of educators, accounts for why each student is different: different interests, conditions, personality traits, strategies for creating or acquiring knowledge, learning rates, etc. The one size fits-all fantasy is no longer considered valid for school systems. Society and students themselves are demanding a different kind of education which is able to recognize, take on, appreciate and capitalize on this diversity, rather than ignore it.

Current development of ICT allows us to imagine, for the first time since education reforms significantly broadened the coverage of school systems that education is at the same time massive and personalized. Development of new pedagogical models that make it possible to create tailor made strategies for each student, his/her abilities and interests (facilitating its connection with curricular learning objectives and the needs of the knowledge society, offering personalized itineraries) translates into new opportunities for knowledge, motivation and learning. There are no reasons for us to forsake high expectations regarding the achievements of all students if we can develop an appropriate strategy for each one.

**Precision**

Precision deals with correct access and use of available data and information for the purpose of developing appropriate strategies. In this sense, precision is an essential requirement upon which educators must insist in order to make development of personalized learning strategies possible. Without up-to-date, secure, timely, and accessible information, development of personalized education is not possible. This requires not only efficient data gathering systems (already hard to find nowadays), but primarily a way to access data that will facilitate

action and decision making and the role of educators. In this context, precision implies knowing the traits and circumstances of each student, offering options for clear, enduring feedback to everyone involved, and providing specific options for dealing with potential difficulties. only with this level of precision it is possible to generate continuous learning dynamics based on the rationale of knowing the current situation, the desired situation, and the most effective path (for this student in this context) to take from the former to the latter.[3] Again, current development of ICT helps enormously to facilitate the precise work of educators involving the learning experiences of each student by devising tools and applications that strengthen the educator's role of manager of his/her students' learning processes. The key challenge along these lines is, precisely, to negotiate the way in which knowledge (of students and their learning results) connects with new strategies and methodologies. Thus the role of educators will inevitably be different, but also necessary in a different sense: there is no room for discourse suggesting that teachers and schools will no longer be necessary.

**Professional Learning**

The challenge of personalization and precision, then, demands a new role for educators beyond new initial training to deliver new teachers to schools. It requires constant practice of new teachers aimed at continuous learning and training: educators must become learners of the processes that they manage in schools every day.[4]

This does not advocate behavior in which teachers have not been engaged previously. Educators are always being challenged to change and learn by their context. What is needed is for the focus to be on pedagogical practices geared toward the learning of each student, in a process necessarily imparted in service, and as such requires much more teamwork, with peers, to detect and reinforce effective teaching practices. The impact on learning of many education reforms has been limited, due precisely to the difficulty of changing teaching practices. Thus it is essential to consider new models for teacher training and professional learning that better adapt to the context of massive and personalized education. We believe that this is more feasible to achieve through deliberate, ongoing continuous learning that can be found in the everyday practices of educators, and not by following traditional training strategies.

**Role in Management**

It goes to help the management in different ways by increasing transparency and communication improving decision making, increasing productively, enhancing collaboration and increasing efficiency. Digitization can help organization run more effectively and efficiently.

**Role in Administration**

Digitization of the administration will enable administrative procedure at national and local government to be conducted without any geographic constants. Contributing to increased comfort& convenience for the people. In fact, it will make administrative service accessible for 24 hours a day over the internet. It contributes to greater accessibility and better information and efficiency for citizens, companies & other entities. Government at all levels are undergoing digital transformation in order to deliver government services& program more efficiently, transparently & cost effectively.[5]

**Role in Strengthening Democracy**

It makes the Government more accountable, responsive, transparent, maximum participate in its action. ICT facilitating the dissemination of information about political issue, wider democratic participation by individuals& Groups& Greater transparency & accountability in democratic institution and processes and is serving citizens in ways that benefits democracy and society. In addition to, ICT and digitization has helped a lot and brought change in health and welfare facility, e- democracy, e-mediation e-justice, e-logistics etc.[6] Transformation of all economic activity into digitization has increased the efficiency of the economic & business sector.

Digitization created massive innovation, new job opportunities, online business activity and easy operation, banking services, cashless/ transaction & growth in economy. It also brought transparency within the economic system so that every common people will be aware of changes when taking place in social system. However, the digital form should not be a replacement for the original item of knowledge. Digital form is not permanent and should need a regular maintenance and transformation to new format. It has good impact and has been helpful to flourish the better

economy. According to analysts, digital India plan could boost up GDP up to $1 trillion by 2025. It can play a key role in micro economy factors such as GDP growth, employment generation, labor productivity, growth in a number of businesses & revenue of the government.

**Challenges :**

Undoubtedly ICT based education is much beneficial and it meets the present demand of the society but even today major population of India is quit unaware of it.

The poorest children in India have limited access to education, and to make matters even worse, those who do attend school receive low quality education. Even though the prices of new devices continue to be unaffordable for most Indian families, the new context provides an opportunity for the State, through development of new public policies, or on a lesser scale, private organizations, to invest in providing access to new technology for poor students.

Therefore, the poorest children are both the logical beneficiaries of this initiative (students from families with more resources will most likely have access to other technologies as well) and, from the point of view of education policy, those who require special care to draw them to school, make sure that they stay enrolled, and provide attractive strategies to improve their learning experiences.

The second question is for what reason. What is the aim behind efforts to incorporate ICT into education systems? Reference has been made to many concepts in designs for plans developed in the region to date, all of which are enormously relevant: inclusion, inequality, poverty, access, integration, competitiveness, work, social or technological gap, segregation, connectivity, equal opportunities, productivity, use models, participation, etc. We understand that investment in initiatives to use ICT in education is directly related to efforts toward offering quality education to students. This means potential improvement in their learning experiences, both in terms of contents proposed for national curriculum and in terms of development of competencies and skills essential to performance in the knowledge society.[7]

At the end of the day, and as part of an ongoing process of innovation and evaluation, the test that ICT must pass in education will be: how they help education provide better and more complete learning experiences that are better connected to the needs of the society into which ICT are introduced.

However, access to ICT is still limited because of physical infrastructure constraints such as lack of electricity, poor maintenance of telephone lines and distance from the kiosk or cyber cafe; economic constraints such as extreme poverty; educational limitations such as illiteracy and the lack of relevant content in the local language; and social constraints of gender, class, community and caste. Data are not readily available to indicate the extent to which social constraints limit access to technology.

A fundamental challenge is facing the development of Multimedia Teaching and Learning (MTL) material, namely how to ensure that a suitable level of quality is being maintained. Computer-based and web-based multimedia content ware is itself dynamic, built of bits and bytes, using software development tools that combine, in some cases, the power to create with the simplicity of use.

While developing educational multimedia resources, it is important to take into account objectives at the level of the individual learner, the school and the state. Each has different characteristics, expectations and needs and the means to fulfill them are all interrelated. For this reason, development of learning resources is linked, strategically, with processes of educational reform and the transformation of teaching and learning.[8]

What are the methods of skilling and re-skilling educators to adopt changing faces of technology? How can educators be guided on effective use of these new tools that focus on learning activities, rather than content delivery or general learner management? How to build buy-in and ownership among educators and motivate them to spearhead the ICT-based education process? How to build e-Learning professionalism among educators, these key factors explain the best strategies for facilitating the educator seamless progress from the traditional role of an instructor to the new role of a facilitator of learning.[9]

Challenges are manifold, starting from inadequate basic amenities in schools (such as classroom, teacher and blackboard), then basic ICT infrastructure in schools (such as ICT equipment's, hardware, software, digital literacy among teachers)

and lastly IT-enabled environment (such as quality content, ICT-enabled curricula, interactive learning environment). Amongst the three phases of e-Education, digital literacy is positioned in the first phase, which is still not achieved in the country at large.[10] This phase establishes a baseline for startup. Content creation and content sharing to communicate one to many are placed in the second phase. Interactive and collaborative content creation can be placed in phase three. Phase three is the high end of e- education that helps an ordinary student to become a creative, smart and intelligent kid.[11]

## Conclusion:

Digitization can have an unequivocal impact only when the whole structure of ICT is affordable, accessible and readily available. The states should believe in capability approach not in commodity approach which is possible through digitization. The introduction of ICT into education systems is an inevitable phenomenon occurring at a very accelerated pace. It is rather hard to image that in a few short years every student, from a very young age, will have a very robust relationship of intensive access and use of digital media through mobile devices that they will carry with them all day long, every day, even at school.

In the context of society where ICT enjoys a growing presence in the professional world and in leisure, this essentially represents an immense educational opportunity, if the school systems, schools, and educators reformulate their tasks to capitalize on ICT potential. Education systems have proven to adapt, sooner or later, to the demands of society. We think that many governments have already awakened to the capital importance of integrating ICT into their set of education policies (and not as a separate component).[12]

Much of the future will be decided by our own response to the new ICTs. If we did not appreciate and accept it, it will unquestionably ruin the value and growth of profession. If we embrace the technology and extensively use its capability, it can only broaden and fulfill our professional aspirations. Technology has to be used as a tool to render assistance to achieve our goal of the profession to serve the end user as providers of information, pin pointedly, expeditiously and exhaustively. It is time to embrace these challenges, to grasp the future and pull us forward. We look forward to a period when, because of the great universal availability of this technology, we would be able to improve the quality of lives even for poor people by both thinking positively and living a meaningful and informed life.

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