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Research Paper



Role of ICT in Education System during Pandemic

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ABSTRACT

In 21st century knowledge is power. Information is liberating. Education is the premise of progress in every society, in every family and the country as a whole. The Covid-19 was a global crisis. It has impacted the education sector tremendously. At this situation, ICT has played a vital role in facilitating teaching learning process. ICT is very much helpful to teachers as well as students. Due to these ICT tools, teaching learning process became easier. They have transformed classroom communication methods and modified instruction strategies. Also, ICT has made teaching and learning interactive and collaborative instead of the traditional approach. In the field of education, innovative learning especially learning can be done using the internet to generate device-based learning ICT. In this digital era, the use of ICT in classroom is important for giving students opportunities to learn and grasp the 21st century skills. In the digital world, everything is under control of the internet and brand-new technological inventions. At the time of Covid-19, teachers can use ICT through video conference to enable them for teaching and monitoring the student's learning process. The purpose of this paper is to examine how the Covid-19 impacted the education system. Also, this paper represents some of the facts of ICT in the field of education in India. During Covid-19. Indian education system faced a lot of challenges that resulted in urging the Government to take initiatives to promote ICT in education system. Several private learning platforms also played major role in executing ICT in teaching learning process effectively and efficiently in India.

Keywords: Knowledge, ICT tools, Covid-19, teaching-learning process and education system etc.

CT stands for information communication and technology and can be defined as all the devices, tools, internet, software, content, resources, cell phones, interactive digital content, satellite communication devices, radio and television services use to create, store and help user and provider to interact as and when necessary. According to UNESCO (2002), "ICT is a scientific, technological and engineering discipline and management technique used in handling information, its application and association with social, economic and cultural matters." The COVID-19 pandemic is widely considered to be the most challenging health crisis the world has ever faced, attacking societies at their core, as described by the World Health Organisation (WHO). The novel corona virus has caused a

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tremendous loss of lives, jobs, and opportunities around the world. It has affected all segments of the population and continues to do so. Almost every country has imposed complete or partial lockdowns to combat the spread of the virus. The education sector is no exception has been affected tremendously by such lockdowns. Students from all backgrounds had to face considerable challenges to continue their learning process. According to World Bank data, 190 countries have faced complete or partial school closure, affecting more than 1.7 billion students. India also began closing down schools and colleges temporarily during the second week of March. As per the present situation, there is still uncertainty about when schools and colleges will reopen. The pandemic has forced the Education Sectors to shift dramatically to virtual and blended modes of teaching and learning using various Information and Communication Technology (ICT) tools and has radically accelerated the pace and urgency of various ongoing technology-driven educational initiatives. Students and teachers are now relying on various online platforms to adopt new pedagogical methods to learn and teach. Educational communities across the world are coming together and figuring out various ways to support students and teachers with innovative platforms and strategies. The crisis has helped in the stimulation of innovation in the education field. India has also seen various ICT led initiatives to reach out to everyone in such difficult times, including the most marginalized populations who may lack access to adequate healthcare, and about education, lack access to devices and connectivity, families who may feel less equipped to children's learning from home. There has been a monumental rise in adopting widespread use of online tools like Zoom, Google Classroom, and Blackboard, mobile applications to facilitate communication with parents, telephone, television, and radio to try to reach every learner. This global crisis has reiterated the potential of ICT in enabling the goal of education access and quality for all children. India has been responsive in utilizing existing various national and state-level platforms like DIKSHA, National Repository of Open Educational Resources (NROER), WhatsApp, Television, Radio, etc as a response to continue the learning process during the pandemic. There has been a surge in various innovative approaches and solutions as well on an individual level in support of education. States like Kerala have paved the path in effectively using technology to ensure continuous learning by enabling universal access to ICT infrastructure for remote learning. Stakeholders in the educational community are moving forward towards blended learning using both online and offline modes of learning to ensure no student is left behind. This paper will cover such a few key initiatives at the national &state.

Impact of Covid-19 on Learning System

The covid-19 pandemic has created largest disruption of education system in history affecting nearly 1.6 billion learners in more than 190 countries. According to UNICEF report school closures during lockdown period have impacted 247 million children enrolled in elementary and secondary education and 28 million children enrolled in preschools and Anganwadi centers. Covid-19 crisis has also helped in accelerating the adoption of digital technologies to deliver education which is a major transformation in the field of curriculum development and pedagogy. The Ministry of Human Resources & Development (MHRD) has launched national and state level online platforms like DIKSHA, NISHTHA and e-Pathshala to provide training opportunity to a larger set of educators. Massive open online courses (MOOC) were encouraged for higher studies. The COVID-19 pandemic has created the largest disruption of education systems in history, affecting nearly 1.6 billion learners in more than 190 countries and all continents. In response to the unprecedented educational challenges created by school closures due to the COVID19 pandemic, more than 90% of countries have implemented some form of remote learning policy. Closure of schools and

other learning spaces has impacted 94% of the world's student population, up to 99% in low and lower-middle-income countries. COVID-19 crisis being an exceptional situation has also helped in accelerating the adoption of digital technologies to deliver education. Most of the educational institutions have moved forward in the direction of a blended mode of learning. The pandemic resulted in a digital revolution in the higher education system through online lectures, teleconferencing, digital open books, online examination, and interaction in virtual environments. In the Indian educational community, various stakeholders identified the challenges and the following opportunities of shifting from learning at school to learning through online platforms using various ICT tools. Many teachers and institutions were not trained and equipped adequately to shift to online teaching. Thus, putting them under extreme pressure to give their best and learn new skills in such difficult times. Even for parents, it has been a struggle to juggle their work from home and helping their kids with navigating the virtual learning process. Stakeholders in the educational community identifying such challenges have also understood the importance of keeping a check on the mental and emotional wellbeing of the family. There have been initiatives to support the students, teachers, and students with resources for mental wellbeing. Technology has helped immensely to be able to execute such initiatives in the time of virtual interaction. Such unprecedented challenges by the pandemic have helped our educational communities to realize the potential and scope of ICT enabled learning for the future.

Tools in ICT:

- Desktop, Laptop, Tablet
- Projector
- Digital cameras
- Mobile phones
- Smart TV
- Internet
- Smart watches
- Scanner, Printer
- Photo-copier
- Pen drives, CDs, DVDs
- Web-boards
- Interactive white boards

Information and communication technologies (ICT) have become commonplace entities in all aspects of life. Across the past twenty years the use of ICT has fundamentally changed the practices and procedures of nearly all forms of endeavour within business and governance. Education is a very socially oriented activity and quality education has traditionally been associated with strong teachers having high degrees of personal contact with learners. The use of ICT in education lends itself to more student-centred learning settings. But with the world moving rapidly into digital media and information, the role of ICT in education is becoming more and more important and this importance will continue to grow and develop in the 21st century.

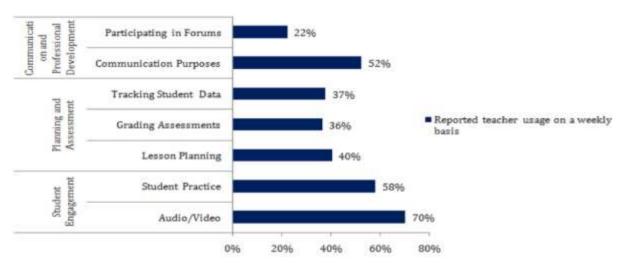
Benefits of ICT for Students

ICT helps to support cognitive process by reducing the memory load on students. It encourages awareness of problem-solving attitude. It helps to stretch student's opportunities by providing information on vast topics. It provides platform to focused studies through

students analysis of their strength and weakness. It encourages independent and active learning in students. It stimulates flexibility of time and place in learning. It creates opportunity to collaborate with people inside and outside school. Student can study through online resources. There are different resources through which it will be helpful for students to understand topic. Students can learn from their place and at any time. Students can meet teachers online and get required knowledge about the subject. Students can have no limit of time and place. In this way there are different apps through which teaching learning process is becoming more easy. These apps help teachers and students to communicate with each other and get knowledge of particular subject. Teachers are also learning different apps use for teaching and students are using for learning process. In this way ICT tools are helpful in this pandemic situation. These tools are helping teachers as well as students.

Benefits ICT for teachers

It is helpful in the professional development of the teachers. A teacher can learn various language skills with the help of ICT. He can do various certification programs run by the famous educational institutions like Cambridge University, British Council etc. These programs help in enhancing his capacity to teach his subject content easy, economic and more understandable. A teacher can increase his domain of knowledge with the help of e-journals. ICT helps a teacher to learn innovative methods of teaching. He can work with the students on various project and assignments. It also helps him in providing teaching contents, home works etc. He may participate in various in-service training programs and workshops which are essential for his professional development with the help of ICT. ICT helps a teacher to guide his students about the learning materials available on internet, e-books, e-journals, e-magazines and social sites like linked –in which are helpful in better learning of subject skills. All these things help him in framing a curriculum that leads to achieve the aims and objectives of subject of teaching.



Source: https://www.centralsquarefoundation.org/70-percent-tech-savvy-teachers-use-mobile-phones-and-internet-in-their-profession

National Initiatives on ICT

To address the challenge of remote learning, the Ministry of Human Resource Development (MHRD) has undertaken several initiatives to assist students and educators. Some of the initiatives used the already existing digital platforms effectively to tackle the learning gaps created due to pandemic. Platforms like Digital Infrastructure for Knowledge Sharing (DIKSHA), e-Pathshala, National Repository of Open Educational Resources (NROER)

were used extensively for supporting the students and teachers across the country with educational resources and relevant training. ICT tools like TV, Radio helped the government to reach a larger number of target audiences. Some of such widely used initiatives on a larger scale in the country are discussed in detail below.

- 1. DIKSHA (Digital Infrastructure for Knowledge Sharing): DIKSHA is an initiative of the National Council for Education Research and Training (NCERT) and MHRD launched in 2017. It is a national platform for school education available for all states and the central government for grades 1-12. The platform can be accessed through a web - portal and mobile application. It provides access to a pool of econtent linked to the curriculum through several use cases and solutions such as QR coded energized textbooks (ETBs). There are training courses for teachers, quizzes, explanatory videos, and other helpful resources to create an engaging learning experience. Currently, the platform supports languages and various curriculums of NCERT, CBSE, and SCERTs across India. The platform has been put to use extensively during the school lockdown in the pandemic. It has been designed as a shared space using open standards available for use by teachers, learners, educationists, academics, administrators, government, NGOs, and educational functionaries. DIKSHA platform has been proved as a revolutionary step ahead in the direction of digital India vision and has helped a large number of learners and the frontline workers of the country with capabilities to fight the COVID-19 virus by getting just in time knowledge and skills sets to help overcome the ongoing crisis. A massive number of students and teachers from all over the country have been using the platform to continue their learning since the time schools were closed. It has been the most popular application in school education during a pandemic due to its design to rapidly evolve with inputs, contributions, innovations from states/UTs across the
- 2. Manodarpan: The Ministry of HRD launched the initiative MANODARPAN to provide psychosocial support to students for their Mental Health and Well-being during the challenging times in the Pandemic. Children and adolescents being more vulnerable to heightened levels of stress, anxiety, and fearfulness along with other behavioral issues. Understanding these challenges Indian government felt the equal need to focus on the mental wellbeing of the students. The platform covers a wide range of activities to provide psychological support to the students, counseling services, online resources, and a helpline. The webpage page advisory, practical tips, posters, podcasts, videos for psychological support, FAQs, and online querry system. A national toll-free helpline (8448440632) has also been set up, which is managed by a pool of experienced counselors/psychologists and other mental health professionals, and plans to continue beyond the COVID-19 situation. The idea behind the initiative is to acknowledge the importance of the well-being and functioning of an individual in such a stressful time. Telephonic services being an easily available resource in the country as compared to internet-based services, helped the platform to reach those who needed support. Resources mobilized through the initiative are envisaged to facilitate a sustainable psychological support system for students, families, and teachers, and will be a great utility even in the post corona times with proactive and preventive mental health and wellbeing services integrated into the mainstream of learning processes.
- 3. Swayam Prabha: Swayam Prabha TV Channels Swayam Prabha is an initiative by MHRD to provide DTH channels that are meant to support and reach those who do not have consistent access to the internet. 'SWAYAM' stands for Study Webs of

Active Learning for Young-Aspiring Minds. 32 channels are devoted on a 24x7 basis to telecast high-quality educational programs by the MHRD. Channels are embarked on for school education and higher education separately. The number of TV channels for school education has now been increased from 5 to 12 to transform into 'one class, one channel', that is, one channel each for all grades from 1 to 12. To ensure coherent access through multimodal delivery, the same content is organized by chapter & topics on the DIKSHA platform as well to ensure asynchronous usage by anyone, anytime, anywhere. The channel covers both school education (class 9th to 12th) and Higher Education in a wide range of subjects like engineering, vocational courses, teacher training, performing arts, social sciences and humanities subjects, law, agriculture, and many more. Reaching out to students through television has helped with the challenge of remote learning in India amid the COVID-19 crisis.

4. All India Radio: All India Radio For the vast reach and depth of dispersion of various educational resources to the remotest region of the country, central and various state governments have been utilizing radio channels. All India Radio (AIR) is being used to broadcast virtual classes and other educational content through regional channels across the country. The platform is being specially used for children from primary grades (1-5) in remote areas who do not have access to online resources. The broadcasts focus on activity-based learning. Under this initiative, all the channels of All India Radio in MP have broadcasted programs from Monday to Saturday from 11 am to 12 pm. The purpose of this special educational radio program is to provide regular study to students of the state at home during the lockdown period. The program includes class wise and subject wise educational resources. Many more states have been utilizing this national platform to reach every student of their states.

Private learning platforms

Pandemic has forced both parents and students to rely upon some online learning platforms that provide interactive video sessions with various topics from class 4 to even higher studies. 24x7 doubt clearing classes and experienced teachers with good communicative skills has paved way for these platforms. Example: Byju's, Unacademy, Upgrad, Vedantu, Toppr, Khabri etc.

i.Challenges in ICT for Teachers

To recruit and retain teachers, some states have recently approved bills to increase salaries amid a trend of resignations and retirements in schools nationwide. Even so, many teachers have resorted to taking on second jobs. During pre-pandemic times, Camden schools, a state-run system, once had a 92% average daily attendance rate. A recent Curriculum Associates study found that students who were in remote learning did worse on summative state assessments than students who learned in person the previous school year. Parents and teachers are still finding ways to handle the anxiety that persists from the ongoing pandemic. Since the start of the pandemic, in fact, teachers have received more aggressive emails from parents - mostly those who did not want their children wearing masks and who blamed the schools for learning loss. More than two years since the pandemic began, educators are still dealing with unprecedented staff shortages. In Nevada, for example, principals have had to teach in classrooms and take on janitorial roles, vacuuming school hallways and even cleaning toilets. In Vermont, teachers have also had to grab cleaning supplies to assist with the short staffing of custodial crew. There's also been vacancies on the teaching side. Special education reported one of the highest vacancy rates, with 45% of schools stating a need for

this role. There's also been a need for general elementary school teachers (31%) and substitute teachers (20%).

ii. Challenges in ICT for Students

A feeling of melancholy has evolved all across the globe from a newly emerging infectious disease whose journey is said to be started from Wuhan, China in December 2019 which is being referred to as corona virus or COVID-19 and is now rapidly affecting the whole world (Kannan et al., 2020; Esakandari et al., 2020). Also, COVID-19 is being considered as a major source of disaster in the twenty-first century. And the sad part is that currently there is no specific vaccine or antiviral drugs that can be used for the treatment purpose (Esposito et al., 2020). This whole scenario has been reported to leave an inauspicious psychological impact on the children, the general public, older adults as well as on the patients and medical staff (Singh, 2020; Yang et al., 2020). Amidst COVID-19 threat, the Indian government announced a nationwide lockdown on 24th March 2020, to tackle and control the spread of the virus in the country (Esposito et al., 2020; Barkur et al., 2020). Lockdown was a much required and an important step at the time, but it has challenged the normal living, work, economy, and most importantly the education of students due to closure of all the colleges and universities (Brooks et al., 2020). Even after the lockdown, there is uncertainty over the future scenario of studies as there is no specific cure and vaccine for COVID-19 to date. Also, in future, similar illness could be encountered and there is a need to adapt the culture of online learning by the Indian students. Also, there is a requirement of adapting to science and technology for future encounters like this (Ali & Alharbi, 2020). So, to make it efficient, challenges encountered during such measures must be traced and addressed. This study might be helpful in providing attention to the hidden but emerging challenges for the students which requires a positive and practical approach to save the future of the country from some worst mental health issues.

Limitations of ICT

Among the disadvantages of using ICT we can mention the fact that the staff in a school for example, may become so reliant on ICT that they cannot work if the computer fails, or that the training can be so expensive when the systems are updated. Here are some disadvantages of using ICT in any teaching setting, disadvantages that can be considered important, both from the teacher and from the students' point of view; when learning how to use ICT properly, the teacher is required to allocate both time and energy, and we should be aware of the fact that the 'new stuff' factor present in using ICT can become in the end a distraction from real learning goals and have negative effects while the process as it is, of teaching and learning, could thus be touched in a negative way by the so-called computerized classroom syndrome. This list of disadvantages can give us a different perspective of seeing things, and once we know the limits, we should always be ready to teach with the help of technology unless we count on it as being the ultimate best tool in teaching. Considering the lists of good points and bad points of ICT usage, we can be sure that the one who uses the computers and ICT in general in such a manner that it can become something desirable in class, is the qualified teacher. This is why this perspective is waited for, and not something that students and teachers alike want to get rid of. Some researchers believe that it is crucial for this generation of teachers to train for this purpose so that when problems of any kind occur with the computer, the teacher is able to solve it so that the teaching process should not suffer any alteration. This being said, there was a good number of teachers who did their best and spent some time to learn how to properly use computers and ICT in terms of learning and teaching also. In fact nowadays, especially in developed countries where technology has an important place, we can't teach any object properly, without the use of

technology, at least for one reason: these kids already use ICT in their games, while searching for information, in communicating to one another, and the process of teaching cannot be left behind without losing the contact between the teacher and his students, which will give birth to a gap, and speaking about this gap, the teacher should provide the tools to overcome it, and the proper usage of ICT is the solution.

CONCLUSION

In this study, we firstly brought into discussion an important matter, that of using; ICT in learning and teaching, pointing to some benefits and disadvantages, and then tried to draw up some guiding principles which the teachers, and respectively, the students should consider. While there still may be some teachers who are not so keen on using ICT, we have to admit that in this era of connectivity it is almost impossible to deny the value and importance of technology. We find technology everywhere, and nowadays we find technology in all houses, poor or rich, used by intellectuals or people working in different fields. In fact, technology makes our life much easier, and we practically could no longer do a lot of the modern world stuff without it, and when it comes to teaching, ICT opened a way with unthinkable results. When speaking about disadvantages of using ICT, we should be aware that not all teachers are keen on ICT, but they are forced to use it, and in some situations the students tend to have some presentation which are rather superficial, and copy resources from the internet, and in most of the cases they may have less opportunities to use oral skills and handwriting For an efficient use of ICT, we suggested in this paper four directory lines which define a certain balance in the teaching learning process: the temporal, the relational, the physical, and the spatial limits. Thus, for each of these we have come to the following conclusions: The students being connected together with the teacher and other students, the teacher still has to be one that has the modelling role that brings together the old and the new, the ICT and the benefit of real books, close to I-books, as it has already been stated above. The physical limits focus on the idea that, even if a lot of adolescents feel confident about using ICT, believing that it can help them to learn and achieve information, still there arises the health problem of many adolescents who report physical discomfort using ICT, such as sore eyes, and pain in the shoulders, to mention just a few of the problems of this kind. At this point we should keep in mind the blessed usage of books, the position needed for the health of the body, the side from where the light should come, things that are no more important in ICT usage, but still so good for all of us. Thus, while some teachers will force things in technology is much, another option will be the need to use the classical method too, besides this technology, meaning that none of them could b used alone, or separately. The teacher has to use both methods if a correct manner.

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Conflict of Interest

The author declared no conflict of interest.

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