

# THE NEW FACE OF THE UPCOMING EDUCATION SECTOR

## Abstract

The world has been through crucial circumstances during COVID-19, and this was one of the major influences in the rise of online learning and e-education. Contemporary times have been dominated by technology, and we can hardly imagine a life without the internet, smart phones, and computers because of this distance education can be easily available if one has stable internet connections. Students were exposed to online classes instead of traditional classroom settings when different nations announced lockdowns, school children and college students acquired knowledge via online lectures, and internet resources more than ever before. This study demonstrates how COVID-19 was an eminent turning point in the field of education as the entire education sector was reliant on technological aids, we can perceive the undeniable effect technology will have on the future education sector. The paper discusses how the new face of online education may be successful in promoting more equality in society as online resources can be accessed easily, flexibly, and at a lower cost rate. Furthermore, the rising dominance of Artificial intelligence (AI) can help increase efficiency within the education system and there is a high possibility of increased interactions between AI and humans. The future trend of education may follow a hybrid learning model, where students have a mix of both online and offline education simultaneously. The first world countries may have the privilege and funding to build a tech-dominated education system, but the third world countries may find it harder to build up the proper infrastructure that facilitates e-learning and online education due to lack of internet access and economic stability.

**Keywords:** Artificial Intelligence (AI), e-education, hybrid learning mode, online education

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## I. INTRODUCTION

*“Teaching is a very noble profession that shapes the character, caliber, and future of an individual”-*

*Dr. APJ Abdul Kalam.*

Education is one of the fundamental rights of an individual (According to the Indian constitution 86<sup>th</sup> Amendment, Act 2002 inserted Article 21-A aims to provide free education to all children from 6- 14 years) and its discussion importance remains relevant in international conventions of the 21<sup>st</sup> century. As the Greek philosopher, Heraclitus once said “*change is the only constant*”, the scenario of education is no different from it. There have been constant changes in time, perspectives, and societies, which have largely influenced a dramatic change in the nature and method of the education system. The evolution and advancement of technological aids have changed the way we view education in contemporary times especially due to the outbreak of covid-19, according to UNESCO around 1.37 billion students in 138 countries have been affected due to the shutting down of schools and colleges. Over the last decade, we have seen a rise in massive open online courses (MOOCs), Coursera, Udemy, and other online platforms which provide free educational modules for different courses and subjects. Digital media is now taking over the conventional and traditional style of teaching and learning in the field of education, the classroom interactions are gradually replaced by online interactions via apps such as Google meets, Zoom, and MS teams, and paper books have been replaced by PDF files, online articles, and word documents. This shift has stirred up controversies in the minds of educators, governments, and policymakers all around the globe. There are many questions that stand, what would be the future of the education system in different countries? Will the future generations sit only in front of their computer screen for their education? How effective would online learning be for future students? What would the examination systems and evaluation systems of the future be like if Digital platforms take over education systems? We must properly evaluate the costs and benefits of online education before arriving at a concrete decision about the future.

## II. SIGNIFICANCE AND IMPORTANCE OF EDUCATION

On average in most countries, people complete their high school by the age of 18 and then may choose to pursue college courses (undergraduate courses/master’s degree/ higher studies) till the age of 21 to 25 years approximately, this shows that one spends around two to two and half decades of his/ her life in education. It forms an integral part of our development, as Mahatma Gandhi correctly mentioned “*By education we mean an all-round drawing out of the best in child and man- body, mind, and spirit*”. Developmental theorists like Piaget and Vygotsky have thoroughly mentioned the implications and importance of education in a child’s social, cognitive, and emotional development (Webb, 1980).

Education and training facilitate individuals to get a job in the market which contributes to their financial independence, thus employment becomes one focal point of education, and we invest in quality and higher education to increase the chances of our employability (Groot et. al, 2000, Yorke, 2006).

Learning is the main outcome of education; learning is the goal of education where individuals gain knowledge that leads to the overall development of the human capital of a country (Knight et.al, 2003). Education helps in the transference of knowledge from one generation to the other, where the teachers/ educators impart knowledge to the next generation of students. The progression and development of knowledge and skills are determined by good quality education.

Education therefore in a societal context has a key role in developing new ideas for learning and teaching through e-learning (Kahiigi, Ekenberg, Danielson, & Hansson, 2007) in modern times. Online resources were the main sources for research and learning for students and teachers (Richard and Haya, 2009). Current bodies of research work demonstrate that ICT (information and communication technologies) and e-learning are crucial for teachers and students of upcoming and existing generations (Bhuasiri, Ciganek, Rho, Xaymoungkhoun, & Zo, 2012; Kirkwood, 2009).

### **III. OUTBREAK OF COVID- 19 AND ITS IMPACT ON EDUCATION**

The advent of the world wide web and Artificial intelligence technology has changed the traditional setting and processes of many sectors like business, education, entertainment, media, banking, retail and customer services, manufacturing, marketing, etc. (Agarwal et.al 2022). Since the sudden outbreak of covid-19, we have seen an enormous dependence on technology, especially in the education sector, shutting down of schools and colleges has changed the interaction between a student and a teacher from offline to online.

**This brings us to the objectives of the study, which are mentioned below:**

1. The first objective is to provide a view of how the landscape of education was during the sudden outbreak of the COVID-19 pandemic.
2. The second objective is to illustrate the change in the education system after the reopening of schools and colleges.
3. The third objective is to explore how artificial intelligence (AI), digital media, and online resources can facilitate the process of education for future generations

### **IV. RESEARCH METHODOLOGY**

Relevant literature has been included in this study to understand the topic in a comprehensive manner. Scholarly journal articles, books, online government reports, websites, and other academic publications have been referred to in the of writing the paper.

### **V. DISCUSSION**

- 1. The landscape of education during the COVID-19 pandemic:** UNESCO and UNICEF joined hands to publish case studies and literature reviews to describe the impact of COVID-19 across Asia, its impact, and the responses of each education system. Ministries of education all around the world were concerned about how the pandemic has swept roughly two years of education from the lives of children in most parts of the world. Collaboration reports of UNESCO and UNICEF indicate that more than 10 million covid-19 cases have been recorded with India being the second most impacted country in

the globe after the United States of America but with fewer recorded deaths. In a developing country like India, 54 % of urban and 32% of the rural population of 12+ years had internet access which makes students in rural areas fall short of online education, and 99% of both urban and rural internet users aged 12+ years used mobile phones to access the internet because only 11% of Indian households have computers such as desktops, laptops, and tablets (excluding smartphones).

**Findings by UNICEF and UNESCO also portray the following:**

- 37% of children in higher grades (Grade 9 and above) received learning materials and 31% of children in lower grades (Grades 1–2), these percentages were consistently higher for children studying in private schools compared to government schools across all classes.
- Of those who did receive learning materials, 67% of government school students and 87% of private school students received them on Whats App. The overall picture of education in India during the pandemic was rather bleak and dark. Although a lot of digital content has been generated and transmitted to help children continue to learn from home, there is limited evidence on the extent to which this content is reaching children, whether they are engaging with it its impact on their participation and learning. However, the Indian government along with many NGOs has created a repository of educational content which allow people of all socioeconomic backgrounds to have free access to the following websites:
- **Diksha:** it is the acronym for Digital Infrastructure for Knowledge Sharing. It’s an open-source national platform for learners and teachers to facilitate educational autonomy. People can access more than 80,000 e-books in multiple languages keeping in mind the lingual diversity of the country. It can be accessed via <https://diksha.gov.in> or <https://seshagun.gov.in/shagun>.
- **e-Pathshala:** the National Council for Education Research and Training (NCERT) has developed this portal and content for Grades 1–12 in different languages have been designed to cater to the student’s needs. It is commonly accessed via a mobile app which is readily available. Students can browse the websites using the following links, <http://epathshala.nic.in> or <http://epathshala.gov.in>.
- **Swayam:** Is another national online education platform hosting courses covering both school (Classes 9–12) and higher education (undergraduate and postgraduate programs) courses. Can be accessed via [swayam.gov.in](http://swayam.gov.in).

**2. Impact on education after the reopening of schools and educational institutions:** With the passage of time schools and colleges gradually opened more and more for the offline mode of education and examinations. The same goes for countries abroad as well, however, an online press report published by UNICEF on 29 March 2022 says that 23 countries have yet to fully reopen schools, some of the countries that are on the list are Liberia, South Africa, Uganda, Malawi and many more. Countries like US and Germany have partially opened up colleges and schools with students attending school for fewer days.

In the case of India, the plan for and reopening of schools and educational institutions is being managed at the state level. Decisions regarding reopening, rest with the local authorities of the states based on the local context. Ministry of Home Affairs has given a date of 30 September 2020, when states could begin to reopen schools, except in containment zones. The ministry also stated that: Online or distance learning would be the preferred mode of teaching and learning whilst the pandemic is still prevalent. Physical attendance in classes must not be enforced and must depend entirely on the written parental consent of the students. Thus, this situation gives rise to a hybrid mode of education where students are exposed to sometimes offline and online modes of education simultaneously.

- 3. A brief overview of the emergence of e-learning and how AI may change the traditional educational setting for the existing and future generations:** E-Learning simply stands for electronic learning; it involves the unification of two things, the utilization of technological tools and the interaction of the users (mainly students and teachers) for the sole purpose of learning and education. E-learning involves online courses, texts, and activities for imparting knowledge and resources to the students, certain synonyms for e-learning are online learning, internet learning, distance education, etc. According to Laurillard (2004), a comprehensive definition of e-learning is “*e-learning describes the interaction in which students use different types of ICTs in their learning process.*” The literature on e-learning is vast and continues to grow this time than ever before (Aparicio, Bacao, & Oliveira, 2014).

The emergence of e-learning occurred mainly during the 1980s because of the advancements in computing and coding, information technologies, and extensive use of the internet. We cannot deny its relevance in today’s world as we are seeing an ever-increasing interaction between human intelligence and artificial intelligence. Artificial intelligence greatly contributed to the process of e-education, and there are three paradigms in AI- education as mentioned in a paper by Ouyang and Jiao, 2021, they are as follows:

- **(Paradigm 1) AI directed (learner is the recipient):** Paradigm 1 is characterized by AI that represents the source of knowledge and guides the learning processes, while the learner (student) acts as a recipient of AI services to walk through the specific learning pathways. The psychological theoretical underpinning of paradigm 1 is behaviorism (Skinner 1985), which emphasizes the view of learning as a reinforcement, leading to the learner’s correct response to the stimulus presented by the AI For example, Intelligent tutoring systems (also called Computer assisted learning systems, CALS) which are software applications that help people learn by providing them with needful content.

The acquisition of knowledge is through programmed instructions that introduce new concepts and offer the learner immediate feedback about incorrect responses, and maximize the positive reinforcement (Greeno et al., 1996; Schommer, 1990) in order to reach the learning goal. AI systems act as the teacher to make logical presentations of subject knowledge, require the learner’s overt responses, and

present immediate knowledge of correctness (Burton et al., 2004). Paradigm One is the least learner-centered paradigm.

- **(Paradigm 2) AI supported, learner as a collaborator:** Dialogue-based tutoring systems (DBTs) are an approach to creating a learning experience driven by natural language dialogue and the classification of student natural language responses (e.g., Graesser, 2011). DBT conversations can be described as Socratic because the tutor guides the student through concepts via dialogue moves, which can include questions, hints, and other prompts.

Paradigm Two is AI-supported learning, where the learner is a collaborator, this makes the AI system a supporting tool, while the learner works as a collaborator with the system to focus on his individual and personal learning process. This paradigm is based on the cognitive and social constructivism view of learning, which emphasizes the process of learning when a learner (student) interacts with people, information, and technology to construct his/her own knowledge in socially situated contexts (Bandura, 1986; Liu & Matthews, 2005; Vygotsky, 1978). Thus, in Paradigm Two, the AI system and the learner's mutual interactions are optimized resulting in personalized learning. Overall, compared to Paradigm One, Paradigm Two makes an important move towards learner-centered human learning via mutual interactions and sustained collaboration between the learner with human intelligence and the computer with artificial intelligence system.

- **Paradigm 3- AI-powered learning, learner as leader:** In paradigm 3 the learner is the leader who holds the core of AI Education (Bandura, 2006) and views AI as a tool to augment and enhance human intelligence (Law, 2019). Here a perspective from the complexity theory is seen, which views education as a complex adaptive system (Mason, 2008), where a synergetic collaboration between multiple entities (e.g., the learner, the instructor, information, and technology) in the system is essential to ensure the learner's augmented intelligence. Human-AI collaboration (Hwang et al., 2020), and human-centered artificial intelligence in education (Yang et al., 2021) are aiming to approach AI from a human perspective by considering human conditions, expectations, and contexts. Paradigm 3 is viewed as the developmental trend of AI Education, with the goal of applying AI in education, in order to augment human intelligence, capability, and potential (Law, 2019). The human-computer cooperation system, integrating advanced AI techniques and human decision-making, has the potential to achieve the AI-empowered, learner-as-leader goal in Paradigm Three.

## VI. FUTURE TRENDS IN EDUCATION

By now we have a comprehensible idea that education has a huge dependence on technology, information communication technology, and AI in the coming years. ICT-based learning and Computer-based teaching (CBT) will have a gradual developmental trajectory all around the world. The modern stream of education is going to be more student-centric in nature as we already witnessed in the AI paradigms that students become their own guides (Alsalem, 2004) and will use AI as a tool to sharpen and widen their knowledge base for research, development, and learning. Thus, learning will be more interdisciplinary,

explorative, and evaluative instead of a student's ability to memorize facts as mentioned by KVS Madaan in his book named UGC NET.

**There are more reasons for the growth in online education, which are given as follows:**

1. The point of flexibility is one of the first considerations. Students have the benefit of choosing the place and time that suits him/her in the learning process. As Smedley (2010) correctly states that the adoption of e-learning provides universities and colleges as well as their students the flexibility of time and place of delivery or receipt according to relevant learning information.
2. Secondly affordability is a plus point in E-learning as it is cost-effective in the sense that for an online education degree students do not need to pay expensive college tuition fees and costs related to traveling and buying books are also negligible. Thus, the availability of education will just require a computer and good internet connections. Affordability of education can be enjoyed by people of different social strata and this can bring down the unequal distribution of knowledge in societies where the rich and poor will be able to get resources at ease for learning and education (Klein and Ware, 2003).
3. The option of self-pacing also acts as an added advantage for the learners. For instance, videos can be paused, and recordings can be rewatched which allows students to study at their own pace and speed whether slow or quick resulting in increased satisfaction and decreases stress levels (Urdan and Weggen, 2000; Klein and Ware, 2003). E-learning also takes into consideration an individual's differences. Some learners, for instance, prefer to concentrate on specific parts of the course, while others are prepared to review the entire course, we often have these options available on websites like Coursera, Udemy, and Khan academy.

## **VII. HYBRID LEARNING MODEL**

Another important model of education that may emerge in the future is the Hybrid mode of education which is also called blended learning. Hybrid Learning Model refers to the blending and mixing of the learning environments: face-to-face classroom instruction and online environment (Doering, 2006) where the participants attend colleges or universities offline on the university campuses and online meetings with mentors and teachers as a part of their course. This can be applicable to students who are doing part-time jobs or are pursuing higher education degrees that require a lot of fieldwork and professional practices (Alnajdi, 2014). The hybrid mode of education can alter the view of traditional education where the student only attends college/ school for lessons, institutions can now move on to create an alternative approach to education by making students work and intern at a workplace and simultaneously attend classes and online lectures for their education. In this model, education will have relevance to both knowledge and practice.

## **VIII. CONCLUSION**

The emergence of a hybrid/ blended model of learning can be one of the suitable implementations made by the government for future generations, it can ensure the coexistence of both online and offline education simultaneously. E-education gives the

learners the advantage of affordability, flexibility, and sustainability and involves the use of digital tools for teaching and learning. It makes use of technological tools to enable learners to study anytime and anywhere keeping in touch with training, delivery of knowledge, and feedback.

E-education and hybrid learning models would be highly suitable for students who are working and pursuing higher studies like Ph.D. or post-doctorate degrees, students can carry on their field and professional work and academics online at the same time. Online education might not be the best for children below 15 years because they need certain guidance and assistance for their education and acquisition of knowledge. Overall, we have witnessed that education and technology cannot be separated as we require its presence for our advancements in R&D, learning, resources, and communications.

However, developing countries and poorer nations may not have the infrastructure and facilities for the implementation of advanced AI education systems and e-education because some of the prerequisites for such education systems include strong internet connections, computers, and other technological gadgets. Thus, the future of online education and hybrid mode of learning may not be feasible for all, to promote online education for children all around the world, nations need to develop their economic stability and educational environments.

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