DIGITAL TRANSFORMATION IN EDUCATION SECTOR: THE WAY FORWARD FOR INDIA

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ABSTRACT

The Covid-19 pandemic that has affected the world's economies has also muffled the education industry. End of March, 2020 recorded the spread of pandemic to over 185 countries and resulted in closure of over 95% of all schools, colleges and universities. The spread of the epidemic was so speedy and quick that there were hardly any plans for transition to online teaching or learning from offline classes and no one could anticipate the associated possible risks and opportunities that a sudden change could bring in the sector. The effect has been radical, as educators expect technological solutions to support remote education and learning. Digital transformation in education sector is, however, not limited to post Covid-19 online education and learning. Although some educational institutions have used technology solutions for the past years, the importance of digital transformation in education environment has now been realized in most schools, colleges and universities during the pandemic. Indian education system is still not mature at both the urban and rural areas. Under these circumstances government imposed nation-wise lockdown on March 25th, 2020, has made severe impact on the education system. Since the Indian education system is dominated by classroom study, the present scenario has made the functioning of the educational institutions go very difficult.

This paper makes an attempt to measure the impact of Covid-19 pandemic in unleashing digital transformation in the education sector in India, highlighting some key areas of transformation in education sector, and tries to give a roadmap to future e-learning system. Data were obtained from secondary sources, mainly newspaper articles, magazines and journals and various government reports. The study found that in India, a variety of virtual tools was unleashed from primary education to higher education where educational activities switched to online learning. The observations point to the fact that India, generally, has some pockets of excellence to drive the education sector to the next level, which has the potential to increase access. Access to education has always been a challenge due to a limited number of spaces available. Much as this pandemic has brought with it massive human suffering across the globe, there is an opportunity to assess successes and failures of deployed technologies, costs associated with them, and scaling these technologies to

improve access. The result of the study indicates that leveraging digital tools will not only raise the excellence level in education but could also be a true game changing experience for both students and teachers in coming years.

KEYWORDS: Digitalization, Covid-19, Online Learning, Modern Education, Traditional Education.

INTRODUCTION

India has the world's second largest school system, after China. According to United Nations Educational, Scientific and Cultural Organization (UNESCO), 63 million teachers were affected in 165 countries during Covid-19 pandemic. A total of 1.3 billion learners around the world were not able to attend schools or universities, and approximately 320 million learners are affected in India alone (National Statistical Office, 75th Round, 2017-18). It has changed the traditional education system to the educational technologies model in which teaching and assessments are conducted online. Indian government has announced the lockdown and closure of educational institutions as a logical solution to enforce social distancing within communities. All educational activities like examinations, school admissions, entrance tests of various universities and competitive examinations, others, are being held during this period. As the days are passing by with no immediate solution to stop this outbreak, the closure of schools and universities is hugely affecting the learning across the country. The structure of the Indian education system i.e. learning methodology, teaching techniques and assessment methodologies, is quite affected, resulting in a shift to online education with most focus on virtual education to accomplish the set aims and objectives. Digitalization in Education sector is an issue that concerns many educational stakeholders. In this globalised era, ICT skills are becoming increasingly relevant in every context, especially in the workplace, therefore one of the prime objectives for educational institutions has become preparing future professionals to be able to deal with problems and search for solutions, including digital competence as a vital skill set. Different policies, initiatives and strategies are currently being proposed by the government also to address educational technology innovations in education sector.

India is a vast country with much diversity in culture, language, heritage etc. and so is its education system. We have schools with all digitized air-conditioned classrooms as well as the transportation; there are schools which believe in emphasizing on value education by following Gurukul system where students are taught under the trees despite of having world-class infrastructure. At the same time there are schools which emphasize on books and physical development of students by conducting in-house activities whereas others can afford international exchange programs. At the same time we have schools where students struggle for books. India holds an important place in the global education industry. According to the report of National Sample Survey Office, the country has more than 1.4 million schools with over 227 million students enrolled and more than 36,000 higher education institutes. India has one of the largest higher education systems in the world. However, there is still a lot of potential for further development in the education system.

Before the lockdown in India, no one estimated that the face of the Indian educational institutions could change so drastically. Schools that never allowed students to carry an electronic gadget turned into learning centers for online classes. Both teachers and students are getting familiar to this new normal, which is definitely more challenging for them to handle with this situation. In the streamline, this paper makes an attempt to highlight some key areas of transformation in education sector, the impact of Covid-19 pandemic on present education scenario and tries to give a roadmap to future e-learning system.

THEORETICAL FRAMEWORK

Digital technology transformation is considered as one of the current trend in industry. In Indian education system there is an enormous scope for digital transformation especially in schools, universities and colleges. Though, digitization and digital approaches are way to digitizing the content of lectures and to opening access to education or learning modules by providing them online. It involves modern methods of working, not just new technology. The rarest resource in education world is not essentially technological know-how, but also with control of leadership. Today's leaders, potential students need to be able to judge through an mass of digital initiatives, manage speed up innovation cycles, and reform the organization around new approaches. Wide use of digital resources has become the needs of modern learners. The potential students always look for advanced learning opportunities beyond the typical traditional classroom-method. Keeping mind the emerging needs and situation of youngster's schools and colleges need to develop alternative and advanced ways of teaching for quality education.

The power of technology can never be under-estimated. With a huge population of 1.31 billion people in the country, the ratio of technology has highly increased in the last few years. With around 140 million mobile phone users and being a country for the second most social site users, India has a huge opportunity to grow in this field and to grasp the positive vibes of technology in the field of education. With huge responsibility in digital technology, Prime Minister Modi has introduced initiatives like Digital India. This is to transform India into a digitally empowered society and knowledge economy. Digital India is a concept to change the education system in India. It gives an opportunity to access learning sources to a global platform. Nowadays students are spending lot of time on the internet and smart phone to get a lot of content online and upgrade their knowledge. Educational institutes, Schools College and Universities are left with no choice but to adapt these new technologies. The latest technology has provided a different and a new platform for students. Regular advancement of technology as well as the increasing popularity of social media and the Internet of Things, (IoT), Artificial Intelligence (AI), Augmented Reality, Virtual Reality are giving new hope to Indian education system.

OBJECTIVES

1. To analyze the post-covid effect on Indian Education System
2. To study the various potential threats and opportunities in education system
3. To find out future perspective of digital education in India

RESEARCH METHODOLOGY

Sources of Data Collection: The data for the study has been collected through relevant research journals, magazines and present available literature on websites. Various government reports have also been considered.

Area of Study: The area selected for the present study is schools, colleges and higher educational institutions.

Scope of the Study

In India, various digital tools piercing heavily day by day, close to a billion people and many of them connected to the internet. In education industry also, there is a huge potential to educate the students to give better knowledge. In coming years, there has been an increase in the usage of Digital and Live Virtual

Classrooms at different levels of learning. By leveraging Open Educational Resources, students and teachers will have flexibility to attend the session at any time and get the better knowledge. At the same time to have better clarity, more accountability, better engagement in learning, Augmented Realty and virtual reality concepts has also started by which students can understand the concept in real situation.

REVIEW OF LITERATURE

Pulkit (2020) explain the current education system in his paper. He wrote India holds a very important place all over the world in education industry. The nation has more than1.5million schools with more than 260 million students enrolled and around more than 800 universities and 65,000 colleges. Although, lot of scope for continuous improvement in the education framework. Indian education industry is ready to face significant development in the years to come, as India have world's biggest tertiary-age population and second biggest graduate ability internationally.

Korableva (2019) highlighted on the benefit of online courses over the traditional class room based teaching. In extend of the study, more insight was on the latest two online platforms, MOOC and Course era, to understand which more user convenience is as well as give the best solution in terms of knowledge.

R.Raja (2018) did a research on the importance of technology in education system with reference to schools in Chennai and found that with the onset of latest technology like ICT, and other digital tools are very helpful to impart knowledge to our students and process of teaching and learning can be more enjoyable.

Dr. Radhika Kapur (2018) in her study focussed on the problem faced in Indian education system like importance of quality education, challenges in the traditional mode of Education system, lack of Student engagement etc. In extend of the study author found education quality, trained teachers, the curriculum & instructional methods are not well developed and these are also contributing as major issues in Indian education system.

Arnab Kundu, Dr. Kedar Nath Dey (2018) in their article wrote that the Government of India has played a major role in the development of e-learning in India and the Department of Electronics and Information Technology is developing tools and technologies for promotion of e-learning by supporting Research and Development projects at various academic and educational institutes revolving around content development, Research and Development technology initiatives, human resource development projects and faculty training initiatives to improve literacy through distance education in order to improve general literacy and education levels in the country. Rs. 17000 crore has been allocated for this purpose in the Year 2017-18 by the Government for boosting the Skill India Mission. This investment has had a beneficial effect for the domestic and foreign product and services providers in the e-learning market in the country.

Omer (2018) in his research on academicians view on need of transformation digitally in education sector focused on that academicians strongly feel that as world is moving towards complete digitalization; it's also required to take step forward in education system and transform in digital education. In extend of study, academicians give their view point on effective learning can also be achieved through digital tools like Artificial intelligence, learning analytics, online learning, virtual learning as well as its also required to redesign the physical environment & infrastructure equipped with Information and Communication Technology.

Arvind Kaur (2018), in his Ph.D thesis mentioned about the limitation in our academic curriculum, like many government university do not update the syllabus as compare to Private University. Skill education is lagging, less focus on industry academia interaction in our curriculum, many colleges and schools still go with typical traditional mode of classes, less focus on improving the quality of higher education in India.

Reeves, Jennifer L., Glenda A. Gunter (2017) in their research focused on influencing student-teacher collaborative efforts and increasing engagement while learning through digital tools, completing assignment, worksheets online as well as taking the help of user-friendly professional educational apps to enrich their knowledge.

Chahal (2015) found in her study that due to many problems like poor teaching methods are, less number of professional and trained teachers, the curriculum, the old teaching-learning methods are not well organized, no proper and appropriate communication between the teachers and students regarding the lectures , shortage of modern and innovative techniques and financial problems, the teaching in our educational institutions is not better quality due to above mentioned reasons and some strong measures need to get implemented to make our education system more effective.

KEY AREAS OF DIGITAL TRANSFORMATION IN EDUCATION

1. Use of classroom coaching technologies

After the pandemic, the coaching of classes has been closed in schools, colleges and conventional bricks and mortar institutes. Nearly all institutions have been adapted to digital education approaches. However, the learning findings are also unclear. Now that the outbreak of Covid seems to be under control and schools and colleges gradually start teaching, parents are uncertain that they can send their wards to the institution. This has pushed institutions to accept the digital educational transformation. Some of them can be underlined as follows:

- **Sanitation and thermal screening**: It will be mandatory to calculate the temperature of students and teachers. Adequate sanitation and control of health would also gain ground. It is easy to recognize if a student and teacher who is contaminated comes into contact with another person and is taking precautionary actions. Daily health checks in institutions can have secondary benefits. Students' health is always unaffected and their academic performance is hampered. Possessing health problems promptly helps increase in learning skills.
- **Contactless attendance**: like restaurants are using a contactless menu. We can search for a QR code for a menu by using our mobile phones. Institutions may also take advantage of this technology. By scanning their ID cards or using a face recognition device, students can record their attendance. Daily biometric participation would soon be uncontactable.
- **Social distance control system**: AI-based systems have been used in some jurisdictions to monitor public meetings and prevent the virus spread. These technologies can also be used by educational institutions to enforce social distance and to track health standards.

2. Use of admission technology

The method of admission or registration is usually very time-consuming. To apply for admission and send required documents, students need to wait in the queue. Students have to visit the institution to verify the status of form submission. The admissions team has to review records, verify qualifications, list students, and update them with their application status on the administrative front. The new age enrollment process would

be accessible online for all - parents, students, teachers and administration. The organizations can be supported in the following ways through a whole application process:

- Institutions should prevent paperwork in connection with the process of admission.
- Technology can automatically assist in selecting suitable applicants.
- Routine inquiries can be offloaded by an automated response system.
- Institutions can update classes, faculty, students, etc. in real-time.
- Students should not have to wait in queues and waste time for their applications to monitor their status.
- Students may apply simultaneously without visiting the campus at many institutions.

3. Transforming the EdTech models

EdTech encompasses the spectrum of products and ideologies for bringing education into the 21st century from interactive whiteboards to online curriculum management systems and advanced tablets. It is possible that there were chalkboards, overhead ventures and voluminous books. The chalkboards were replaced by digital whiteboards, the overhead screens with interactive front-of-class showings and the bulky books with digital tablet versions, thanks to the overall digital transformation of the education sector.

4. Learning from Augmented Reality (AR) and virtual reality (VR)

Augmented and virtual reality is growing in education extensively. Enhanced reality is an immersive environment in the physical world where computerized perceptual knowledge improves real-world artifacts. On the other hand, virtual reality is a simulation of a 3D environment that people can interact using VR glasses or headgears. These technologies make subjects like History, Geography, and Biology come to life. Initially, schools took technologies such as Zoom and Google Meet for the conduct of classes. But organizations now can integrate their website with these resources and re-establish a seamless experience on a digital basis.

5. Intellectual exam portals

Educational institutions also face challenges in evaluation and grading. Often, students struggle to pass unfair examinations. Institutions should incorporate webcams into their online exam portals in order to avoid this. It will help to monitor suspicious activities like opening tabs, chat boxing in the background, picture exchange and more while taking examinations.

6. Learning Experience Platform (LXP)

LXP is a student's mental guide. Unlike a learning management system (LMS), which offers a one-way learning roadmap, LXP offers autonomy. For instance, an LMS provides 1,2,3 and so forth in the order. LXP provides curated content according to the speed and preference of the students. An LXP offers the option of curriculum flows rather than a predefined curriculum.

7. Transformation in Teaching and Learning Methodologies

The pandemic has forced educational institutions to adopt a hybrid model of imparting education if not entirely online. The recent acquisition of Aakash by BYJU's validates that EdTech leader sees a promising future in the hybrid-learning model. The digital transformation in education journey has been like a fast-paced time-lapse, providing a closer peek at the schools of the future. And this is not just in context to classrooms going virtual but a complete transition in the mindset, outlook, and approach to learning.

ADVANTAGES OF DIGITAL TRANSFORMATION IN EDUCATION

1. Cooperative learning

Collaboration is forced by digital learning. Teachers can build and handle groups through learning platforms. Co-authors' papers and presentations are made easier by collaborative creative environments such as Google Docs, Twiddla, Edmodo, etc. Such interactive instruments are already used in organizations.

2. Future-focused curriculums

An institution teaches potential curricula, robots, artificial intelligence, automation, science-fiction films. Vast evidence suggests that the workforce needs are changing and continue to expand much in the future, but the organization is not prepared to completely educate them. It won't take years to create and upgrade the curriculum changes. More access to appropriate and frequently updated content is available to students. The ability to quickly upgrade and function requires daily access to new material and functionality.

3. Enhance cooperation between parents and teachers

Research indicates that children do better at school and are much healthier in general when parents participate in the academic success of their children. Automation supplies progress notes and reports to parents electronically and advises them to take part in their ward's progress. Imagine if the software would provide an efficient career guide solution by recommending career choices based on calculated metrics, based on student strengths and weaknesses.

4. Tracking of student results

One impact of digital transformation on education is that it provides a more realistic way of monitoring the success of students. In recording the information in the work of students, technology can play an important role that lets teachers and parents track their development. For example, manuals or creative work may be compared at intervals to material that is already digitally recorded, which leads to a clearer understanding of who is better and who needs attention.

5. Improved results with data analytics

Schools may use analytics to monitor and enhance results. The teacher can better understand what individual student requires by reviewing the information gained by the use of technology in the teaching room. The more clearly you can understand how a student missed a term, the easier the course can be taken. Technology will help us diagnose these shortcomings much more easily and reliably.

CHALLENGES OF THE DIGITAL TRANSFORMATION IN EDUCATION

1. Unequal Access

Considering the costs associated with modern technology, not every student could possibly afford it. This is why, if overall digital transformation is to succeed, then classes need to provide students with all the necessary tools and materials in a universal manner. Conversely, teachers do not necessarily have to implement education transformation on the individual-student-level, but rather can limit it to front-of-classroom tools.

2. System-based compatibility

In the world of today, most companies and organizations depend on systems and infrastructures that are technologically oriented, ensuring a smooth and successful operation every day. A major problem with digital transformation in education systems is not compliant with modern digital technologies to advance them. This

incompatibility means that a current integration system must be upgraded, customized or replaced, which inevitably requires time and resources.

3. Reticence to change

In India, almost 70% of those employed in the public sector believe that their digital skills fall behind the private sector. Despite this, several main policymakers reject the next major steps towards digital maturity. In essence, people prefer to get acquainted with what they do and reject to move out of their comfort zone which leads to slow growth and development. Many in education sector fear of failure and are hesitant to learn new skills or processes if they adjust to new technology, culture or mentality.

4. Inferior knowledge or skills

An adequate level of trust, expertise and skills is important for driving innovation in the organization. Education institutions must compete to reach a small pool of talent, or follow new approaches for upgrading emerging players through cloud infrastructure in order to ensure a smooth and efficient digital conversion.

5. Data reliability

In this digitally rich age, numerous measurements provide insights into future learners, internal efficiencies, user experiences and much more from schools, universities, and trainers. In short, it is an invaluable level of detail. The problem is that these data are smooth, sometimes inaccurate and unreliable, particularly in the education sector. Educational leaders should make educated forecasts, integrated business decisions and take new educational measures to understand the most useful and informative data, in order to be able to receive flowing, prompt, accurate and structured data.

6. Lack of strategy

One of the key challenges to progress today is to know where to proceed with digital transformation in any sector or industry. Because the prospect of mass change can be overwhelming, it can be difficult to understand which path to take or how to build a solid strategy.

MAJOR GOVERNMENT INITIATIVES

1. **New Education Policy:** National Education Policy, 2020 aims at making India a global knowledge superpower by introducing several changes from the school to college level in the Indian education system with special emphasis on digital education.

2. **Digital Infrastructure for Knowledge Sharing (DIKSHA) platform:** DIKSHA is the national platform for school education available for all states and the central government for grades 1 to 12 and was launched in September 2017. As part of Prime Minister eVidya announced under the Atmanirbhar Bharat Programme, DIKSHA is the 'one nation, one digital platform' for school education in India.

3. **Swayam Prabha TV Channel:** To support and reach those who do not have access to the internet.

4. **Online Massive Open Online Course (MOOC):** MOOC courses relating to National Institute of Open Schooling (from grades 9 to 12 of open schooling) are uploaded on SWAYAM portal; around 92 courses have started and 1.5 Crore students are enrolled.

5. **On Air:** Shiksha Vani, Digitally Accessible Information System (DAISY) by National Institute of Open Schooling for differently abled students, e-PathShala, Radio broadcasting is being used for children in remote areas who are not able to join online.

THE WAY FORWARD FOR INDIA

Though there were many challenges being faced by the education sector due to Covid-19 outbreak, there is also an optimistic blow which could take the education system and its methods a step higher. The pandemic has opened gates to innovative methods of transmission of knowledge across the globe. It was very challenging to India as many people live in areas without internet, and others attend more poorly equipped government-run schools. Many efforts were made to continue education at all levels with online methods, but it could not be made available to everyone. Covid-19 accelerated the adoption of digital technologies to deliver education. Educational institutions moved toward blended learning and encouraged teachers and students to acquire technology know-how. Soft technology, online webinars, virtual class rooms, teleconferencing, digital exams and assessments became common phenomenon, where otherwise we might have merely defined them or they might have come into practical use a decade later or more. There was unimaginable collaboration among all the stake holders in the field of education including administration, teachers, students, parents and companies making the software for transfer of knowledge in an innovative ways. The proliferation of digital technologies is bringing radical changes in the way education is being delivered and received.

The outreach of educational programs is improving day by day with the digitalization of education. Digital education is providing both teachers and students with new opportunities to teach and learn thereby ensuring greater participation in the overall learning process. With the advent of new technology-aided learning tools such as smartphones, smartboards, MOOCs, tablets and laptops etc has transformed the way education is being imparted in schools and colleges. The Internet of Things (IoT) is further proving to be one of the most cost-effective ways to educate students. It is also powerful system to integrate a world-class learning experience for everyone. The EdTech companies are constantly working to find innovative solutions to increase access to education.

The state of education in India is depressing, especially in rural areas. The sector is currently battling with grave challenges such as outdated teaching methods, shortage of teachers, inadequate student-teacher ratio, insufficient teaching resources etc. However, with the digitalization of education, students in backward areas are being taught with the help of the latest teaching tools and methodologies. The technology is also helping teachers connect with students remotely across several locations at one time. Digital technology is also helping overcome all language barriers. Now learning material can digitally be made available in regional languages as well. To begin with, we need to promote and ensure digital literacy among the masses, primarily uninterrupted Internet connectivity and mobile network signals in rural areas. Through e-learning initiatives fostered by the government and private players, students and teachers can get access to the vast pool of knowledge content.

CONCLUSION

The Covid-19 pandemic initiated an extensive, sudden and dramatic digital transformation in the society. The pandemic forced us to take an extraordinary digital leap in our everyday life and practices, including education. In a flash, education was transformed from a traditional classroom practice to a remote, digitalized one. Suddenly, an entire generation had to start managing and mastering with digital tools to participate in education. This required significant adjustments not only from students and their teachers, but also from their families, administration and the entire society. Even if digitalization in education has been a hot topic already for ages within different

Disciplines and digital tools are extensively already utilized in educational institutes; teachers, students and educational administration have been poorly prepared for acting as leaders and change agents in digital transformation. A great burden was placed on students and their families who suddenly had to possess a variety of skills, competencies, and resources.

Digital learning in India is going to be the key face of future education in the subcontinent. It is surprising to see how smart technologies are changing the overall educational framework in the country. The diffusion of digital education into rural market is evolving fast. Affordable high speed internet and direct to device technologies are empowering rural students to study online and improve their skills and knowledge. The education industry will witness the proliferation of small, medium and large scale EdTech start-ups who will offer a variety of innovative digital products to academic institutions in coming days. The government is also taking radical steps to come up with policies that will boost the digital education market in the country. The Centre has directed State Education Departments to map the online access available to all their students in order to adequately plan curriculum and teaching methods. In the days to come, digital education like all other professions will see noteworthy changes.

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