

SUSTAINABILITY OF THE ACCELERATION IN EDTECH GROWTH POST COVID- 19

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ABSTRACT

Schools, colleges, and universities in India all use the same outdated model of classroom instruction. Even while many schools have begun using blended learning, many remain reliant on antiquated practices. In 2019, the globe was rocked by an unexpected and devastating pandemic of a disease called Covid-19, which was caused by the SARS-CoV-2 Corona Virus. Because of this, the WHO has classified it as a pandemic. Because of this, instructors all around the globe were immediately thrust into teaching through the Internet. Many universities were forced to completely transition to online education and learning despite initial resistance to the idea. In this post, we'll look at the SWOC examination of e-learning modalities and how they stack up against one another, as well as the value of online education during times of crisis. The essay also provides insight into the rise of EdTech startups during times of epidemic and natural catastrophes and offers advice to educational institutions on how to address issues specific to distance education. The aim of the present study would be to critically evaluate the changes in the mode of dissemination of educational content at the time of the COVID-19 pandemic and the role played by information technology in the same. The study would also focus on the contemporary developments in the field of EdTech and how the same was helpful in ensuring that learning remains unhindered at the time of the pandemic.

KEYWORDS: Rise of EdTech Startups, Evaluate the Changes in the Mode of Dissemination of Educational

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INTRODUCTION

AIMS OF THE RESEARCH

- To investigate the emergence of new EdTech companies and the rise of online education.
- Goal: to undertake a SWOC study of online education in the face of the Coronavirus epidemic and other natural calamities.
- Assist online education in times of crisis by providing advice and guidelines for its use.

RESEARCH METHODOLOGY

The research is descriptive and seeks to comprehend the significance of online education in times of crises and pandemics like Covid-19. Previous research was used to identify the issues with online education and proposed remedies. In light of the urgency of the issue, a SWOC analysis was performed to better comprehend the many advantages and disadvantages of this particular learning strategy. The data for this study was gathered from a variety of sources, and a content analysis was

used as the research methodology for assessing that data. We have thought about the study's qualitative components. All of the information in this analysis comes from previously published sources. The accumulated literature was subjected to a thorough systematic evaluation.

Information is gathered through (a) periodicals, (b) reports, (c) search engines, (d) business websites and scholarly articles, (e) research papers, and (f) other academic publications.

INTRODUCTION

All of us have fond memories of rushing to the front of the class to have the best view while simultaneously dreading being reprimanded by the instructor for not having done our homework. We believe that classrooms, instructors, students, desks, chairs, and blackboards are essential components of a successful educational system. The epidemic, however, has altered our perspective and led us to consider that learning may occur in settings other than traditional classrooms students and instructors are now engaging in classroom activities through computer screens. Let's examine how the spread of COVID-19 has affected classroom instruction in this pandemic education essay.

A virus-like Covid-19, which affects everyone equally, was completely unexpected. Covid-19 brought about a lot of adjustments to our environment, and it took some getting used to. Because of the widespread effects of Covid-19, all schools were forced to close. To lessen the effect of Covid-19, most authorities had opted to temporarily shut down campuses. It was later reopened for a small number of grades, which led to a spike in infection rates before being shut down permanently.¹

Despite the closure of schools, students continue their education via other means, such as online courses and radio programs. Though on the whole, this is a positive development, it has had a devastating impact on the lives of many individuals who lacked the financial means to participate in online education. Many students lack the resources necessary to participate in online courses. Teachers, used to using Blackboards, chalkboards, books, and traditional classroom procedures, are learning new digital teaching techniques, but they are adapting quickly and effectively to help their students.

Educated parents are helping their children through the epidemic, but we need to be sensitive to the plight of the many parents who are unable to read and write and who feel powerless to assist their children's education because of the virus. Some Indian students attend classes just because it's the only way they can afford to eat. Many kids whose families couldn't afford to send them with lunch were able to acquire the nourishment they needed thanks to the wonderful midday meal plan. Many children were going hungry as a result of the schools being closed. Exams are constantly being postponed or cancelled, leaving students confused and teachers with little time to teach the material.²

Most children who are of school age work to help support their families. At a time when there is uncertainty regarding survival and available food for the next day, education doesn't remain the top priorities for the households to which these children belong. As a result, many people in the rural areas think twice before making an investment in the education of their children. Considering the gender gap, females and transgenders are more likely to be deprived of education as compared to their male counterparts. Low-income institutions and schools have also been hit hard by the epidemic, leading to their closure. Amid Covid-19, both good and bad events are occurring. Online lectures, webinars,

¹Alexander, S. (2001). E-learning developments and experiences, MCB University Press, Volume 43, No. 4/5.

²Boumedyen, Kaneez , Rafael Victor , Birkut- ul- Mauz,Nizwa (2011). E- Learning: An effective pedagogical tool for learning. International journal of innovative technology & creative engineering, vol.1 no.4

digital tests, as well as other forms of virtual interaction between students and professors are made possible by technological advancements in the field of education. Unfortunately, however, this option is not open to nearly as many students as it should be

Everything being done is for the pupils' safety so that they may avoid exposure to the deadly virus while remaining at home. We weren't expecting it, but it's here now, and we'll have to ride it out together. If a similar pandemic were to strike in the future, however, it would behoove us to prepare for it by modernizing our infrastructure and devising strategies for dealing with the crisis, as well as by ensuring that every child continues to receive an education.

It's safe to say that online education will continue to grow in popularity and prominence for some time to come. Students especially benefit from online learning since they don't have to wake up as early in the morning to be ready for school. Wherever they may be, students may have access to a wealth of educational resources. As it is difficult to keep a young child's attention for an extended period, interactive worksheets and activities found in online learning environments are ideal for this age group. Children are never too weary to study or play since the two activities balance each other out perfectly.³

During the epidemic, children are seldom able to communicate with their peers and instructors because of this unique method of instruction. Given that children often gain the most from spontaneous social interactions, this might make them uninteresting. Moreover, they may be adversely affected by their excessive usage of mobile devices or computers owing to online study. E-learning, however, is the most viable option for students in this day and age. Even if the epidemic has thrown off the usual educational schedule, there is still an opportunity for a fresh start with online courses.

CHAPTER 1: COVID 19 AND EDUCATION

Special Education and the COVID-19 Pandemic

Children with special needs have been hit harder than their typically developing peers by the spread of COVID-19. The Individuals with Disabilities Education Act and Section 504 of the Rehabilitation Act of 1973 provide legal protection for children with special needs in the United States to ensure they get a suitable education. Together, these pieces of law are supposed to make it possible for students with special needs to obtain "a free adequate public education... in the least restrictive setting."

Children with autism frequently get applied behavioural analysis (ABA) as part of their tailored educational plan. In applied behaviour analysis (ABA), therapists mould and reward little steps toward desirable new behaviours. Training using discrete trials is chunking a behaviour into manageable chunks and rewarding incremental progress toward that behaviour over and again. It is a kind of intense one-on-one treatment in which the therapist works closely with the kid for a considerable amount of time (20-40 hours each week). This treatment works best when began at a young age in children with autism and is frequently initiated in the family.

Organizations offering ABA services had the obligation and flexibility to implement safety standards in partnership with certification boards since ABA employees were designated critical workers from the beginning of the epidemic.

³Bonk, C. (2002). Research related to the effectiveness of elearning and collaborative tools. http://www.trainingshare.com/download/aus-tralia/TAFE_sydney/tools.ppt (accessed 17th February 2018)

In the wake of the epidemic, high school students have suffered significant losses. Shelter-in-place advice has impeded what should have been a moment of more autonomy. Proms, graduations, sports games, and college tours have all been rescheduled or scrapped, and these memories can never be recovered.⁴

A larger percentage of adolescents exhibited symptoms of depression and anxiety as a result of the pandemic; one research found that 14.4 percent of adolescents had PTSD and 40.4 percent felt both melancholy and anxiety. Another poll found that whereas 92% of teenage guys were satisfied with life before COVID, after lockdown circumstances that number dropped significantly to 72% of respondents. Life satisfaction among teenage females decreased from 81% before the COVID pandemic to 62% during it, with the lowest values reported by the oldest teenage girls during the COVID-19 limitations. 27 Girls were more likely than males to report a rise in family disputes during the school closure for COVID-19 (27% vs. 21%).

The effects of the pandemic on teenagers' social and emotional development were investigated in a research done in Norway. Respondents were asked to assess how often statements like "I comforted a friend yesterday," "Yesterday I tried my best to care for a friend," and "Yesterday I sent a message to a friend" applied to them on a scale from 1 (not at all) to 6 (very lot). In addition, they assessed how objects represented their mood by giving them a number from 1 (not at all) to 5 (very well). They discovered that teenage estimates of their own emotional state, as well as their empathy for others and willingness to take part in social action, dropped precipitously during the epidemic.⁵

"A poll of 24,155 inhabitants of Michigan predicted an escalation of suicide risk for lesbian, gay, bisexual, and transgender kids as well as those youth questioning their sexual orientation (LGBTQ) connected with rising social isolation. Domestic abuse against LGBTQ adolescents increased by 66% while they were in shelters. 30 LGBTQ kids are another example of individuals already at heightened risk of suffering disproportionate consequences of the epidemic."

Now more than ever, doctors need to ask their patients about their emotional well-being, including how they are doing in school, how they are staying in touch with their friends, and how they feel about the impact of recent acts of violence on their communities. During this public emergency, it is important to ask families whether they need help with issues like food insecurity, housing instability, and lack of access to mental health care.

Although medical school is an adult educational experience, it is included because of its impact on the medical field and our younger colleagues, and by extension, all experiential learning programmes.

"In the new COVID-19 era, medical schools have been obliged to make substantial and swift adjustments to several levels of their curriculum to protect both student and patient safety throughout the pandemic. Students starting their clinical rotations have undergone the most substantial modification to their experience. COVID-19 has led to some of the same changes high schools and colleges have taken, particularly, the substitution of big in-person lectures with small group activities small group discussions, and virtual lectures."

"The change to an online approach for medical education has been swift and affected both students and instructors. In a poll by Singh and colleagues, of the 192 students responding 43.9% rated online courses to be inferior than real classes during the epidemic. In another investigation by Shahrivini and colleagues, 35 of 104 students questioned, 74.5% students felt separated from their medical school and their friends and 43.3% thought that they were unprepared for

⁴Barron, Tom (2000). e-learning - A Review of Literature. The future of digital learning. e-learning, Vol. 1, No. 2.

⁵Barker, P. (2000). Designing Teaching Webs: Advantages, Problems and Pitfalls. Educational Multimedia.

their clerkships. Despite the lack of evidence from before COVID-19, it is anticipated that the modifications made in response to COVID-19 may exacerbate feelings of uneasiness and under-readiness for clinical practise.”

Studies in gross anatomy have long been a staple of the medical education curriculum, and these studies have traditionally been performed nearly exclusively in person, in close proximity to a corpse. According to a study conducted by Harmon et al.³⁶ of 67 gross anatomy instructors, just 8% of those polled were still teaching their classes in person, while 34%–43% had switched to online resources like corpse photos and dissection recordings.

“Many third- and fourth-year medical students have encountered periods of cancellation for clinical rotations and augmentation with online learning, telemedicine, or virtual rounds because to the COVID-19 epidemic. Since the onset of the epidemic, medical schools have had to develop new and imaginative methods to continue teaching and exposing students to clinical situations. The usage of internet conferencing services has proved crucial to continuing education. Google Hangouts is one example of a web-based service that may be used to facilitate a collaborative learning setting without breaking the bank.”

Schools have also embraced a hybrid approach of instruction, in which students watch recorded lectures asynchronously, on their own time, and then participate in live, virtual lectures, during which faculty members answer students' questions on the course subject. By introducing this new structure, students have been given more choice in terms of constructing a timetable that meets their requirements and may lessen stress.⁶

Pandemic developments have profoundly altered the process of college admissions, medical school applications, and residency applications. For US medical residencies, 72% of candidates will, assuming the tendency from 2016 to 2019 continues, travel across states or countries. This degree of travel is more perilous given the proliferation of COVID-19 and the unavailability of generally acknowledged ways to carry out such a huge migration securely. It's the same with universities and medical schools.

Recognizing and planning for the possibility that students graduating from medical school or any other programme that requires in-person instruction would enter the workforce underprepared is essential. These competencies will be taught at a later stage of education. It's possible that our hospitals, along with the rest of the clinical fields, may hire less-qualified entry-level residents in the form of doctors and nurses.

CHAPTER 2-THE GROWTH OF EDTECH

The Rise of Edtech Startups during the Corona Period

As an example of educational technology that has evolved through time, consider the usage of writing slates in Indian classrooms around the year 1100. In 1440, Johannes Guttenberg created the first printing press; in the 1600s, the abacus helped pupils grasp math's foundational concepts; and in 1913, Thomas Edison advocated for film clips to replace instructors. The Multiple Choice Question (MCQ) machine, designed by Sidney Pressy in 1927, was the first of its kind. Online learning was pioneered in the 1960s at the University of Illinois, and in 1994, with the introduction of Educomp, India embarked on its EdTech path. Around 2010, a new wave of EdTech startups emerged to revolutionize the educational system. Byju's Learning Platform, a popular educational program, ranked among 2019's highest-valued educational

⁶Supra Note 2

technology corporations. Since then, though, several other businesses have emerged to challenge Byjus.⁷

In the middle of this crisis, EdTech startups are capitalizing on the correct possibilities by making available free online courses to students. EdTech startups and educational applications were recommended by UNESCO as a means of supporting students during this challenging period. During and after demonetization, digital payment firms like Paytm, Mobiwik, Tez, PhonePe, etc. saw significant expansion. With the current epidemic, EdTech startups are anticipating better results. EdTech startups are making the most of this opportunity by making available to students a wide variety of free online courses and other e-resources. Although this is a problem, the availability of energy and a steady internet connection is a larger obstacle, since many Indian towns, particularly smaller ones, still endure periodic electrical shortages. According to the studies, the corporations' efforts are paying off. They've seen a significant increase in their consumer base, which may be transitory but is still beneficial if they can maintain even a small percentage of their current clientele.⁸

Specifically, Let's See Examples

- The University of Canterbury was destroyed by the 6.3 magnitude earthquake that hit Christchurch in February 2011. The institution was given a second chance because of the revitalizing effects of information technology and distance education (Todorova & Bjorn-Andersen, 2011)⁹.
- After Hurricane Katrina wrought havoc in New Orleans, Southern University remade itself as an online learning school. Displaced students were given access to education via a variety of online courses and mobile devices (Omar et al., 2008).

The latest catastrophe comes in the shape of Covid-19, which is sweeping throughout the globe like wildfire. To stop the spread of the Coronavirus, all of the schools, colleges, and institutions in the most hit districts have been ordered to go into lockdown. Therefore, many educational institutions are turning to online education to ensure that the teaching and learning processes are not hindered.

In recent years, there has been a rise in the number of people in India who choose to get their education online. The cost of taking a course doesn't have to break the bank thanks to the proliferation of online resources offering MOOCs. Many Indian educational establishments still had reservations about adopting an online curriculum. The threats presented by the Coronavirus epidemic, however, ushered in a new era of distance education and online education. *Teachers provided them with remote instruction on a variety of platforms, including Google Hangouts, Skype, Adobe Connect, Microsoft Teams, and others*, but ZOOM stood out as the most effective. A set of guidelines for online behavior and directions on how to participate in courses were also provided to students to ensure a productive learning environment (Saxena, 2020).

Vitality

Educators or instructors in the role of facilitators confront several challenges while implementing these EdTech innovations, such as determining when to use them, minimizing their impact on student learning, and improving students' abilities via the use of technology. Teachers need to do more than just get students to show up to class; they need to keep

⁷Bonk, Curtis Jay, and Charles Ray Graham. "The handbook of blended learning." San Francisco, CA: Pfeiffer (2006).

⁸Supra Note 1

⁹Boumedyen, Kaneez , Rafael Victor , Birkut- ul- Mauz, Nizwa (2011). E- Learning: An effective pedagogical tool for learning. International journal of innovative technology & creative engineering, vol.1 no.4.

their attention, solicit their thoughts, and evaluate them in a variety of ways. This will provide for a rich and productive classroom setting. A teacher will always be necessary, but edtech can make a difference in the classroom. Even if schools and universities have been put on lockdown owing to the severity of the Covid-19 outbreak, students may still benefit greatly from the services provided by EdTech firms during this difficult period (Brianna et al., 2019).

The procedures and practices of e-learning are very effective. Online education's advantages may help us weather the storm. It is designed with the student in mind and provides a great level of portability. With the use of e-learning strategies, we may adapt our processes and procedures to meet the requirements of individual students. The abundance of accessible online resources is crucial to the success of any educational institution. To keep a human element in their lessons and connect with their pupils at this difficult time, teachers might utilize a combination of audio, video, and text. This has the potential to foster a more collaborative and dynamic classroom, where students feel comfortable providing instant feedback, raising questions, and generally making the learning process more engaging. In times of crisis, such as natural disasters, man-made disasters, or pandemics like Covid-19, the accessibility of e-learning is invaluable. Closed locations and hazardous traffic conditions may be a major inconvenience, but thanks to e-learning, we won't have to let that stop us from furthering our education from the comfort of our own homes or offices.

Individuals can converse and even operate online without the necessity for face-to-face connection because of the advancements in technology that have been made in recent years. As a consequence, various adjustments must be made as businesses embrace cutting-edge tools for communication and collaboration (Mark & Semaan, 2008).

Prospects

Since most universities have already adopted this paradigm, online education is poised to see a surge during this period of economic uncertainty. During the height of the Corona Virus pandemic, online education, telecommuting, and online collaborations all saw dramatic increases in use (Favale et al., 2020). Now is the time for schools to take advantage of this breakthrough technology by mandating online instruction for both faculty and students. The population has historically been apathetic about new forms of education. This calamity will usher in a new era of e-learning, one in which the positive aspects of these tools become more apparent. There is a great deal of room for startling inventions and digital advancements to be introduced at the moment. Currently, EdTech firms are pitching in to aid in the battle against the epidemic and ensure that education continues unabated. Teachers may use technology in the classroom and create adaptable lesson plans to help kids learn. Both teachers and students will be put to the test while using online courses. Students' problem-solving, critical thinking, and flexibility will all improve as a result. Users of any age may access the online resources here and take advantage of the portability that comes with online education. There is a great deal of room for innovation in almost every facet of the educational process, from instruction to assessment to outcomes to credentials to degrees, and so on. This includes the booming field of educational technology startups. And as the demand for online education continues to rise, new EdTech companies have a fantastic chance to provide innovative solutions to the education industry.

Relevance of EdTech during COVID-19

The pandemic forced the world to function online. Despite the gradual return to normalcy, a huge part of the present-day world has irreversibly gone online due to the uncertainty of future outbreaks. No one really knows how severe the next pandemic may be and when would it strike. All one knows is that one has to be prepared for all sorts of contingencies.

Considering the same, it shouldn't be very difficult for one to appreciate the need for technology in the field of education. Learning requires creativity and innovativeness which are extremely difficult to accomplish had it not been for technological innovations. However, due to rapid strides in technology, Education has permeated the field of education and has greatly manifested its presence. The need for EdTech was bolstered in the field of education during the COVID-19 Pandemic. The global spread of the COVID-19 pandemic has had devastating effects on academic institutions. Across the globe, models imply that children will lose some of the ground they've made in their education when schools are closed (or partially closed). Children from underprivileged families may be significantly more vulnerable to school failure as a result of these stresses. The World Bank Group's Technology and Innovation in Education (EdTech) team conducted a qualitative exploratory study to better understand the effects of these shocks and to analyse the perceived effectiveness of remote learning solutions. This included a synthesis of the main national education actions deployed by a group of selected countries to mitigate learning losses. Because of the increased attention brought on by the COVID-19 epidemic, numerous new and interchangeable terms have emerged in the realm of technology used to improve educational performance. By "edtech," I mean the integration of digital tools and strategies into formal and informal learning environments. This may include both low-tech methods, such as radio and television in areas with weak connection, and more sophisticated internet methods.

Problems that might arise during times of interrupted education include learning loss, dropouts, mental health issues, enormous gender and inequality differences in access to resources, and increased instances of gender-based violence (even in digital environments).

If properly applied with sufficient resources and in accordance with recommendations from academic and practitioner research and overarching frameworks connected to duty of care, technology has the potential to alleviate and even eradicate these educational issues. After receiving funding from UN international organisations, locally appropriate edtech initiatives seemed to be thriving, with widespread support from parents who suddenly found themselves in the role of teacher. Public and private organisations were working together to reduce student absences from school. Immediately following the outbreak of the pandemic, governments sprang into action to implement multimodal solutions (or edtech approaches involving more than one form of digital and/or analogue technology) to ensure that students could continue their education despite the widespread cancellation of classes. Technological solutions were adaptable and provided clear guidance on how to best reach a country's most disadvantaged students. However, there is a danger that the focus on technology to assist education systems may decrease when in-person school attendance becomes the norm again. If you want to be ready for the next time interrupted education happens, you need to keep working on building up your edtech ecosystem even if it's already a reality for some or all of your students. The cost to society in terms of lost human potential is unfathomable. Perhaps more than any other group throughout the epidemic, teachers were given a manifestly severe job in maintaining continuity of learning over great distances with just a few days or hours' notice. The abrupt shift to digital facilitation and/or distance learning necessitated an altogether new repertoire and approach to pedagogy, and was frequently delivered in a venue (digital devices) that was wholly foreign to teachers. Performance and morale among educators were at an all-time low as a result of the high demands placed on them and the unanticipated and tragic attrition that occurred when some educators became ill with the coronavirus. The growing acceptance of digital and remote pedagogy means that educators' calls for improved opportunities for training, resources, and guidance in this area cannot be ignored.¹⁰

¹⁰Supra Note 3

The Increasing Use of EdTech Post COVID-19

In fact, when schools are closed, educational systems have to quickly come up with and implement alternative remote learning methods, such as radio, television, and other online tools. However, access to this ed tech varies across and within countries, with high-income students and communities being far more likely to have access to online, virtual schooling than their low- and middle-income counterparts. So, it's important to wonder how widespread school closures around the world will affect students' ability to learn and advance in school, especially those in low and middle-income communities. How will the COVID-19 school closures affect gender disparity, socioeconomic status, and geographical differences in children's access to quality education?

In February of this year, with funding from the Asian Development Bank and in partnership with J-PAL-India, we surveyed households in Chennai, in the state of Tamil Nadu, to find out the answers to these questions. Chennai, the state capital of Tamil Nadu, is the most populous city in the southern Indian state. Chennai's population density means that most families can choose between several different types of schools, making it an ideal place to investigate how private and public institutions in the city used educational technology differently before and after the COVID-19 pandemic. As a pioneer in widespread educational reform and the application of ed-tech among developing countries, India provides a fruitful setting for the collection of data for this study. Because of its large and varied population, it contains lessons that can be applied to a wide range of situations. Even among the children whose schools had begun remote instruction, only slightly more than half attended all of the classes, which is deeply concerning given that one in five children in our sample attend schools that do not offer any remote instruction during the school closures. Studies have shown that in low-income countries, where girls are more commonly expected to help with household chores and/or care for younger siblings, the effects of school closures may vary by gender. Our research, however, reveals a promising trend: compared to boys, girls are more likely to regularly participate in educational activities and to have access to digital devices for learning. However, this finding highlights the need for additional research into the reasons boys may be falling behind in school and the strategies that may prove most effective in raising educational attainment for both girls and boys in India and other low-income countries. Governments, institutions of higher education, educational institutions, students, and professionals around the world are all pouring money and resources into the education technology industry. It is predicted that by 2030, worldwide investment in educational technology will have reached a whopping USD 10 trillion[1]. This business in India is predicted to develop at a CAGR of 52% to reach a USD 2 billion market by 2021[2], propelled in large part by the rising popularity of online learning and made necessary by the state-wide lockdown. Over 37% of India's roughly 1.35 billion population is in the 5-24 age bracket, making them an ideal target market for EdTech. Other factors contributing to the industry's rapid expansion in the country include the increasing availability of the internet and smartphones, the rising disposable income of Indian households, and the sheer size of the Indian population. As the education technology (EdTech) industry expands, more opportunities for innovation in the classroom and the online learning space arise, but so do new threats to companies that operate in EdTech. Having many agencies with overlapping responsibilities for regulating the EdTech industry is a huge problem. Even while schools in India are striving to work together with various sector authorities to improve the quality of the online learning experience, there is currently no specific law in place to regulate this. While still adhering to the RTE Act's general framework, each states are given the authority to establish their own regulations and policies. It is also within the purview of the individual states to establish policies that regulate distance education. Nonetheless, there has been little action on this front from states. The Ministry of Human Resource

Development (MHRD) has said that it is developing its own set of rules to manage online education at the K-12 level. However, this idea is still under development, and at now, the only reliable means of providing online education are government-sponsored initiatives. As classroom learning is expected to continue to remain closed for a while, the nationwide lockdown due to Covid-19 provides some hope for the development of online education, and it may prove to be a blessing in disguise for the government to concentrate on uniform regulations governing this sector for the development and benefit of the EdTech industry. Protection of intellectual property rights, compliance with data privacy laws and issues arising from it, foreign direct investment regulations when a foreign party is making investment in the sector in India, protection of proprietary software/technology, accreditation of certificates proposed to be issued by the EdTech service providers, and tax considerations are all factors that investors in the EdTech space need to keep in mind.

The SWAYAM programme is only one of the numerous steps the GOI has made to expand access to and use of online education. The Education Policy's three guiding principles—access, equality, and quality—are the inspiration for this programme. The goal of this initiative is to help students who have been excluded from participating in the mainstream knowledge economy cross the digital divide. In the next July 2020 semester, SWAYAM will provide access to 82 non-engineering courses for undergraduates and 42 such courses for graduate students. Another programme providing a national digital infrastructure for educators is called DIKSHA. DIKSHA places a priority on preparing educators to provide students with a high-quality education by making use of existing digital infrastructures that are both scalable and adaptable.

The Government of India (GOI) has been urging the heads of universities and colleges to use online education in light of the constraints placed on traditional classroom instruction because of the Covid-19 outbreak. On May 19, 2020, the government of India (GOI) launched a novel initiative: the National Test Abhyas App, an artificial intelligence-powered mobile application developed by the National Testing Agency to assist students in preparing for the Joint Entrance Examination (Mains) and the National Eligibility and Competency Examination (NEET). On May 17, 2020, the government of India also unveiled the "Aatmnirbhar Abhiyan" (self-sufficient India project). [8] The Government of India has launched the E-vidya plan to increase people's access to digital education via various channels.

About 4,450 EdTech startups are now active in the nation, serving a wide range of markets, from K-12 through vocational and professional training and skill development to secondary and higher education. Competitors from other countries are mostly interested in reskilling, vocational training, and certifications, whereas India's education industry is dominated by K-12 and competitive test providers. Coursera, LinkedIn Learning, Udemy, Edx, Khan Academy, and Google Classroom are just a few of the worldwide players that have found success. In an effort to bring the dynamics of instructors and students in a conventional classroom into a virtual one, the Indian EdTech sector has experimented with several new ideas. While the pre-Covid-19 world was slower to accept these developments, several current off-the-shelf technologies and advances have lately seen widespread adoption in educational establishments. As a result of technological advancements, the traditional model of education is shifting to one in which the focus shifts from instructor to student. Through increased accessibility to information and a more realistic classroom environment, smart classrooms are making education more accessible and equitable for all students.

Several institutions of higher learning have developed creative responses to the challenges posed by Covid-19. Some colleges and universities now provide "education on demand," a system that allows distance learners to record their online lessons so they may view them at their own pace and time rather than during scheduled class hours. UGC has urged that universities and colleges implement several crucial steps to safeguard the psychological and mental well-being of

students in light of the diminished personal touch for students. It's not hard to find a private company that offers online training or tutoring for a wide range of college-level or professional-level courses. These independent groups might pool their assets and work together to improve the quality of the online education they provide by sharing their knowledge and enhancing each other's services. In India, boards are likewise doing their part to guarantee that students' educations do not break down. The Central Board of Secondary Education (CBSE) is pushing for more schools to use online learning platforms and equip their pupils with digital material. CBSE-Shiksha, a podcast created to help schools communicate with faculty, students, and parents, has also been released. ISCE has teamed up with the TV station ABP Ananda to start broadcasting their classes in Math, English, and Science to students in grades four through twelve.

Despite the fact that India is now home to the second-highest number of EdTech businesses in the world, the country has a lot of potential to increase its current market share of just around 2.09%. Some of the obstacles to the sector's growth in India include muddled regulations governing the education sector, inconsistent government policies, a lack of financial incentives for research and innovation in the EdTech space, sporadic internet connectivity, especially in rural areas, and other socioeconomic barriers. Greater emphasis and attention is required from an economic and regulatory standpoint because of the absence of a centralised body responsible for regulating all parts of the industry and the lack of cooperation between the federal government and individual states and their numerous boards and institutions. However, the EdTech industry is expanding rapidly, and with proper preparation and legal counsel, investors may successfully traverse the complex legal and regulatory hurdles that exist in the space, resulting in substantial financial gains. Many online learning platforms, notably BYJU'S (established in 2011 and currently the most highly valued edtech business in the world), are providing free access to their services in response to the overwhelming demand for them. According to BYJU'S Chief Operating Officer, Mrinal Mohit, the firm has experienced a 200% rise in the number of new students utilising its product since introducing free live lessons on its Think and Learn app.

Meanwhile, since mid-February, when the Chinese government ordered 250 million full-time students to continue their educations online, Tencent classroom has seen massive use. About 730,000 students, or 81% of K-12 students in Wuhan, now take lessons through the Tencent K-12 Online School, making it the greatest "online movement" in the history of education.

There are other businesses improving their services to be a one-stop-shop for educators and students. ByteDance, a Singapore-based tech company, created the collaboration suite Lark as an internal tool to handle the company's meteoric growth. Lark has since expanded to offer features such as unlimited video conferencing time, auto-translation, real-time co-editing of project work, and smart calendar scheduling to educators and students. Lark increased its worldwide server infrastructure and technical prowess to guarantee constant connection throughout the outage.

DingTalk, Alibaba's distance learning solution, experienced a similar influx and had to scale accordingly: "To support large-scale remote work, the platform tapped Alibaba Cloud to deploy more than 100,000 new cloud servers in just two hours last month — setting a new record for rapid capacity expansion," said DingTalk CEO Chen Hang. The Los Angeles Unified School District has partnered with PBS SoCal/KCET to provide local educational broadcasts to students of all ages via a variety of digital platforms. Bitesize Daily, released by the BBC on April 20th, provides 14 weeks of curriculum-based learning for children in the United Kingdom. The programme has celebrities like Manchester City star Sergio Aguero teaching part of the subject. Others predict that a new hybrid model of education will develop, with major advantages, despite concerns that the unplanned and abrupt shift to online learning would result in a bad user experience

that is un conducive to sustainable growth. According to Wang Tao, VP of Tencent Cloud and VP of Tencent Education, "I think that the integration of information technology in education will be further expedited and that online instruction will finally become an inherent component of classroom education." Several academic institutions have made the change with little difficulty. In only two weeks, for instance, utilising "DingTalk ZJU," Zhejiang University was able to provide more over 5,000 courses online. Coronavirus Science, offered by Imperial College London, is the most popular new course on Coursera for 2020. In fact, many people are already singing its praises. One such person is Dr. Amjad, a professor at The University of Jordan who has been using Lark to educate his pupils. Chat rooms, video conferences, polls, and shared documents let me get in touch with my students quickly and easily, which is very helpful during this epidemic. My pupils agree that Lark simplifies their interactions with one another. There are, however, obstacles to be overcome. Some students without access to reliable internet and/or technology struggle to participate in digital learning; this gap can be seen across countries and between income brackets within countries. For example, while 95% of students in Switzerland, Norway, and Austria have a computer to use for their schoolwork, only 5% of students in the lowest income bracket in these countries have access to a computer. Even though some schools and governments have been providing digital equipment to students in need, such as in New South Wales, Australia, many are concerned that the pandemic will widen the digital divide. In the United States, there is a significant gap between those from privileged and disadvantaged backgrounds. The general consensus on children, especially younger children, is that a structured environment is required because children are more easily distracted. To get the full benefit of online learning, there needs to be a concerted effort to provide this structure and go beyond replicating a physical class/lecture through video capabilities, instead using a variety of collaboration tools and engagement strategies. BYJU's Mrinal Mohit says that making learning fun and effective through the use of technology is crucial because children learn through their senses. "Over the period, we have observed that clever integration of games has demonstrated higher engagement and increased motivation towards learning especially among younger students," he says.

Consistent with the findings of Mouza et al. (2014), where participants experienced a significant gain in all sub-components of TPACK, our findings show that faculty members possess adequate knowledge in all sub-components of the TPACK model, indicating that teachers have sufficient knowledge and skills regarding technology use in their pedagogical practises. Acikgul and Aslaner (2020) find a similar phenomenon, thus it follows that teachers' content knowledge is sufficient. On the other hand, empirical studies have shown that teachers were primarily confident in their pedagogical abilities. However, faculty members' technological knowledge (TK) was found at the lowest level across all other domains, which indicates that teachers lack the skills necessary to effectively integrate technology into the teaching and learning process (Chai et al., 2010). However, the other reported lowest competence of faculty members was found in the domain of TPACK¹¹. This finding echoes the finding of Lye (2013), who indicated that teachers had low TPACK and they need improvement in many areas of TPACK. In addition, the study found that male teachers had higher TPACK than female faculty members. This finding is consistent with the findings of Koh et al. (2010), who found that male teachers had more favourable attitudes, competencies, and knowledge with respect to technology use. This result indicates that female faculty requires more support to gain their competencies in all the sub-components of TPACK.

Experts suggest that the inclusion of contextual knowledge (XK) may reveal the situational and institutional limitations that teachers work within. The study also suggests that the new technological instructional context in the COVID-19 phase appeared as an important moderator for teachers in upgrading their competencies in terms of TPACK. The post-

¹¹Technological Pedagogical Content Knowledge Framework

COVID-19 reactivation and recovery processes do not appear to consider that the teaching and learning processes as before. This suggests that future research should not only aim to understand human behaviour while studying or teaching virtually, but also to understand the TPACK model and build better ways to integrate technology into educational settings.

CONCLUSION

The study aimed at appreciating the changes brought about in the field of education due to the COVID-19 Pandemic. Various challenges were brought about due to the pandemic especially in the developing and underdeveloped countries where access to learning has been a challenge even before the pandemic struck. Fighting the upheaval couldn't have been possible had it not been for the innovations in the technology and a specific focus of the technological sector on dissemination of education. To stop the spread of the COVID-19 epidemic, UNESCO reports that "most governments throughout the globe have temporarily shuttered educational institutions." Over sixty percent of the world's student population is affected by these countrywide closures. As a result of localised closures in a number of other nations, millions of students in other regions will also be affected. More than 1.5 billion children had their education halted this spring because over 200 nations shut down their classrooms. In light of this unprecedented catastrophe, we must critically examine our educational institutions. Already, the COVID-19 epidemic has had catastrophic effects, and its ripples will be felt for quite some time in terms of society and the economy. Educational disparities that existed before the crisis as a result of characteristics such as gender, disability, immigration, mother language, learning challenges, or other forms of socioeconomic disadvantage have been worsened by the crisis. The many negative effects of school closures have been especially severe for disadvantaged children and their families, as well as all learners with learning difficulties and special needs. This is because 40% of the world's poorest countries have been unable to support their disadvantaged learners in recent months. Our educational systems, even the most solid ones, have been exposed as vulnerable by the epidemic. The crisis has prompted a surge of invention and ingenuity, and this must be used to strengthen and expand access to equitable and inclusive educational opportunities. Accordingly, the purpose of this essay is to provide educational system stakeholders with a crisis-inspired insight into possible prospects for reform in the areas of curriculum, students, instructors, and educational environments. As a result of the COVID-19 crisis's extended closure of schools, stakeholders' connections to educational institutions and curriculum have shifted. Even while some students kept on with their studies, many were denied fair chances to do so and often lacked access to vital resources like computers and other study aids. As a result, school curriculum have to be reorganised to place more emphasis on a select few topics. Education system players came up with a number of recommended techniques to ensure educational continuity in the absence of both defined operational rules and a contingency plan addressing curricular priority. Academic abilities and knowledge in languages, mathematics, science, and history were advocated as priority in the curriculum, with the remainder of the curriculum, including the arts, being disregarded as less important. As a result, it's evident that schools need to be provided with clear rules for being ready for situations that might result in long-term closures. However, keep in mind that many educational systems have already revised their curriculum after realising that pupils seldom successfully apply what they've learned in the classroom. Indeed, the impression that education is uninteresting and obsolete was fueled by the fact that students' academic knowledge was seldom applied to real-world scenarios. The Organization for Economic Cooperation and Development (OECD) is only one of several international groups that has advocated for rethinking school curriculum to make them more engaging and difficult for pupils. The Canadian Council of Ministers of Education (CMEC) has placed an emphasis on developing transferable skills that may be used in a number of contexts, such as global competences. To sum up, assisting kids in acquiring essential competences or life skills is more important than ever. A competency-based logic, a socio constructivist viewpoint, an enhanced attention on learners, and a greater emphasis on genuine learning circumstances are

four tendencies in curricular reform in educational institutions. However, these mandated curriculum are often at odds with what really happens in the classroom. The global spread of COVID-19 has shed light on some of the difficulties and possibilities in the field of education. Experts in the field of education have recommended a new course of study that might be studied further after students return to the classroom, one that places a premium on providing students with chances for actual learning. Outdoor education is proven to be a promising route in terms of educational surroundings, as it helps with the control of space and physical separation, and it also provides excellent learning settings. Last but not least, extended school cancellations have brought to light the need of educator and pupil training. Teachers also need greater training in the appropriate use of technology tools to provide high-quality education in an era when pupils are expected to learn how to work more autonomously. It is also pertinent to consider the function of instructors in relation to their pupils and the nature of the teacher-student relationship in light of current events and the challenges with distant learning encountered by educational institutions. Teachers must take on a supporting role with students who may be experiencing negative consequences from the crisis, such as anxiety and a diminished motivation to study, both during distance learning and when schools reopen. Having a supportive connection with one's teachers is essential for students to recover from traumatic experiences like the one we're going through. Therefore, the educator takes on the role of a guide for the student's growth as an individual and as a contributing part of the larger society.

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