# Use of EdTech in Indian Education during COVID-19

PRASOON GUPTA
*Research Scholar, Department of Economics, Ram Nagar P.G. College, Ram Nagar, Barabanki (U.P.)*

***Abstract-*** ***Technology has made a significant contribution to education development and has had a significant impact on school education in India during the last few decades. In its consecutive national education programmes, the Indian government has placed a strong emphasis on education technology (ET). Edtech did not receive enough financing till 2019, but the Covid-19 pandemic propelled online learning and gave rise to multiple EdTech start-ups in India and around the world. These Edtech firms have been around for nearly two decades and have promised a bright future in education. Education is thought to be the single most important factor in bringing prosperity to millions of people in Asian countries. For a long period, however, the principal mode of delivery remained unchanged. Despite the fact that certain institutions have begun to use digital technologies, the education industry has been sluggish to absorb and incorporate new technology into its processes. The same was based on the assumption that, at the very least in school education, the digital mode of instruction could eliminate the work of several teachers. The purpose of this study is to outline the current state of EdTech start-ups in India as well as their future prospects. The current study also assesses the Edtech firms Strengths, Weaknesses, Opportunities and Challenges (SWOC) analysis in the Covid-19 scenario.***

***Indexed Terms-*** ***Education Technology, Digital learning, Edtech Start-ups, COVID-19.***

## I. INTRODUCTION

In certain ways, the Covid-19 pandemic caused the world to abandon traditional face-to-face learning in favour of online or virtual learning. It was a defining moment for several Edtech companies, allowing them to capitalise on the pandemic. "Most of the terms (for example, online learning, open learning, web-based learning, computer-mediated learning, blended learning, and m-learning) have in common the ability to learn from anywhere, at any time, in any rhythm, and with any means using a computer connected to a network." (Cojocariu et al., 2014; Dhawan, 2020). The flexibility and convenience provided by remote learning are expected to spark interest and expectations for online learning in a hybrid model in the near future. The distinction between classroom-based and virtual learning, on the other hand, would definitely dissolve or disappear (Lockee, 2021). If the gap between traditional and online education is closed, immediate results in GER and revolutionary changes in higher education will result. Higher education might be made more equitable and accessible to all people, regardless of their location or background (Cashion and Wu, 2021). Traditional institutions were unprepared to tackle the digital challenge, despite the fact that distance learning students were experienced with virtual learning. Prior to the pandemic, the goal of remote education was to provide access to learners who couldn't get a standard education in schools, colleges, or universities. The goal of distance education was to make society more equitable. Using digital tools and current communication networks, online learning attempts to make the teaching-learning process more student-centered and provide a flexible environment. Students can access online learning without being confined to a single location, university, or geographic region. With the use of digital tools and content, it is scalable, and assessment is simple to administer at a fraction of the cost. It also allows both the learner and the teacher to give immediate feedback. However, it will be fascinating to see how remote learning fares in the typical classroom after the epidemic. The Ministry of Education and state governments are struggling to find an inclusive solution to the crisis in school education precipitated by the COVID-19 pandemic, providing various “alternative schedules,” “Standard Operating Procedures” and online teaching-based solutions (*Times of India* 2020; *Hindu* 2020). The search for a meaningful response is already showing its Janus-faced character primarily on account of the

extent to which digital access can be a part of the solution. A divide is emerging as an issue of concern, and estimating the size of this problem is essential if we want to find meaningful solutions to a situation that seems unlikely to return to normalcy and business-as-we-knew-it until March 2020. At a time when accessing new data on the current status of digital access of students and their teachers is difficult, this article presents findings from a small online survey we conducted in which 212 schoolteachers from across the country participated, to understand their situation, teaching–learning conditions and challenges and those of their students, as perceived by them.

## II. ADOPTION OF EDTECH DURING PANDEMIC

For the first time, many schools and higher educational institutions had migrated to digital space for the purpose of delivering instruction, and it had happened suddenly. However, the transition from offline to online mode was not easy because none of the stakeholders, including instructors, students, and staff, were taught to use their new process delivery technologies. Many sought to recreate classrooms and laboratories with available resources in order to better understand their pupils at their level. Many institutions have begun to invest extensively in technology-driven procedures such as hardware, software content, and training in order to create online and hybrid models of education that will improve efficacy and address accessibility concerns in remote areas. When students or learners return to campus, there is a need to integrate classrooms, seminars, and conference rooms with Edtech-based services in order to augment and support current teaching. Virtual learning is not going away, according to every institution today, even after the epidemic in the following year. With the help of Edtech businesses, virtual learning is writing a new chapter in the history of learning. It's redefining how educational services are delivered in an institutional setting. The problem, though, is determining how the school ecosystem is equipped to embrace the pandemic's digital revolutionary prospects.

The survey was designed to assess ground preparedness in the use of education technology (Edtech) by teachers during COVID-19. A total of 212 teachers from urban (145) and rural (67) (see detailed respondent profile in Table 1, p 17) areas responded to our invitation to participate in the online survey they received via WhatsApp, Telegram and email. The link to the survey was sent out by us through our various social media channels and known teacher group contacts, whom we also requested to further broadcast the invitation. The survey tool was available in Hindi and English[1] and consisted of 35 close-ended and 5 open-ended questions. Key information areas included the respondents:

i. Current key concerns (personal and professional).
ii. Access to devices and internet.
iii. Nature of online activities.
iv. Desired professional development in the near future.
v. Support expressed for teaching through EdTech.
vi. Opinion regarding ease and difficulty of teaching topics online.
vii. Suggested strategies for continuing education in the times of COVID-19.

Responses obtained between 21 April 2020 and 31 May 2020 have been included in this analysis. Of the 212 teacher respondents, 184 responded to the English tool and 28 to the Hindi tool.

**Table 1: Respondent Profile**

| | N | | | Type of School (%) | | | Gender (%) | | Age (in Years) (%) | | | Highest Education Qualification (%) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Teachers | HM | Govt | Pvt | Aided | M | F | 51–65 | 36–50 | 18–35 | >PG | PG | UG | +2 |
| Urban | 145 | 112 | 33 | 51 | 22 | 27 | 41 | 59 | 24 | 52 | 24 | 9 | 68 | 19 | 4 |
| Rural | 67 | 53 | 14 | 61 | 9 | 30 | 52 | 48 | 19 | 55 | 25 | 6 | 61 | 27 | 6 |
| | 212 | 165 | 47 | 54 | 18 | 28 | 45 | 55 | 22 | 53 | 25 | 8 | 65 | 22 | 5 |

Legend: HM=headmaster/mistress, govt=government, Pvt=private, M=male, F=female, PG=post-graduation, UG=undergraduation.

Teachers were from government, private and aided schools from urban and rural areas. The sample included men and women with about 50% of them being in the age group of 36 to 50 spread over different states—Goa (49), Telangana (44), Haryana (30), Mizoram (23), Maharashtra (16), Chhattisgarh (13), Karnataka (11), Delhi (8), others (Tamil Nadu, Andhra Pradesh, Madhya Pradesh, Gujarat, Uttarakhand, Punjab, Rajasthan, Tripura, and Uttar Pradesh) (18).

## III. EDTECH MARKET

When students or learners return to campus, there is a need to integrate classrooms, seminars, and

conference rooms with Edtech-based services in order to augment and support current teaching. Virtual learning is not going away, according to every institution today, even after the epidemic in the following year. With the help of Edtech businesses, virtual learning is writing a new chapter in the history of learning. It's redefining how educational services are delivered in an institutional setting. The problem, though, is determining how the school ecosystem is equipped to embrace the pandemic's digital revolutionary prospects. There has been a dramatic increase in the number of students studying online in India since March 2020. The lockdown and fear of Covid-19 has taken schools, colleges and educational institutions online. Some edu-tech platforms have seen their user base double in the last 10 months in both segments- paid and free unique users in the K12 and post K-12 segments. Today, the number of students online stands at 90 million and will only grow from here. According to a report by RedSeer and Omidyar Network India, the online education market for class 1-12 is projected to increase 6.3 times in the next one year and create a $1.7 billion market. The post K-12 market is set to grow 3.7 times to touch $1.8 billion. Edtech platform upGrad reached a million users recently. It grew 100% in 9 months from the start of the financial year and is targeting Rs 2,500 crore in revenue for FY21-22. The platform has forecasted that it will reach the 2 million user mark within the next 18 months. Job-seekers and recruiters are becoming better at traversing online mediums. When recruitment was frozen online learning platforms helped job-seekers to upskill seamlessly. “upGrad has been instrumental in getting over 1200 learners placed in 450 + reputed brands” says Ronnie Screwvala, Chairman & Co-Founder, upGrad. According to upGrad Data Labs, an internal arm for producing industry & company-specific data-driven reports & insights, the average pay hikes were to the tune of 46% we ll above the industry standards of 20-30%.

For BYJU’S also, with the onset of the pandemic there was a massive uptake in users, with over 40 million new students using their learning apps. Students from metros and non-metros alike have been increasingly accessing BYJU’S lessons. Student engagement rates increased by 30%, with students spending 100 min on the app instead of 71 minutes, per day.

## IV. FUNDING OF EDTECH START-UP

India has steadily progressed up the innovation and start-up ecosystem ladder. Today's Indian Edtech ecosystem makes use of cutting-edge technology to attract investors, venture capitalists, large corporations, and governments. Many of them were successful in attracting financing by using prototypes. They were successful in attracting significant investments, which will fuel the sector's continued expansion, particularly during and after the Covid 19 pandemic. The edtech sector provides angel and corporate investors with lucrative financial returns while also contributing to the country's educational cause. The need for Edtech services resulted in a wealth of venture capital (VC) and listed equity investment opportunities. The Covid-19 dilemma isn't going away anytime soon, and it will resurface in some shape or another. In such a situation, it will accelerate the investment in innovative Edtech start-ups. As per recent statistics collected by Tracxn Technology Limited, a Bangalore-based company that helps Investors discover start-ups, as many as 8768 EdTech Startups companies are now in India (Tracxn, 2021). Four of them – Byju's ($16.5 billion), Unacademy ($3.4 billion), Eruditus ($3.2 billion), and UpGrad ($1.2 billion) have become unicorns now (Business Insider India, 2021). The mode of entry of Edtech companies in India is through one or more combinations of (a) Joint venture; (b) Partnership; (c) Franchising; (d) subsidiary as per the provisions of Indian Company Laws. As per the industry disclosure, out of the top 10 companies which attracted investment ranging from US$ 5 to 200 million in 2020, eight were in the test-preparation segment, one each in K-12, skill development, enterprise solution, and certification. Penetration into the higher education sector is still lacking. China's investment began at $0.6 billion in 2014, grew to $10.2 billion in 2020, and then abruptly decreased to $2.7 billion in 2021. The United States will see a tremendous increase from $2.5 billion in 2020 to $8.3 billion in 2025. Europe's growth is roughly identical to India's, with $1 billion in 2014 and $3.0 billion in 2021. India has surpassed Europe as Asia's leading investor in Edtech start-ups, despite

the sector's lack of diversity. Indian Edtech start-ups raised $4.7 billion in 165 deals in 2020, making them the third most preferred funding sector. E-commerce ($10.7 billion) and Fintech ($8 billion) are the first two most-preferred funding industries. In 2020, India's top-tier Edtech start-up Bjyus alone received $1.9 billion in financing. Edtech is projected to thrive as a result of the lengthy lockdown caused by the spread of new coronavirus types over the world. In 2021, India overtook the United States as the most popular destination for Edtech funding. Bjyus spent approximately $4 billion to acquire 10 Edtech start-ups at the start of 2022 in order to have a first-mover advantage in the industry. These ten Edtech start-ups are divided into three categories: test preparation-2, K-12-2, and K-12-3.On-demand tutoring -3; reading platform -1; and computer vision/Augmented Reality (AR)-1.

## V. STRENGTH, WEAKNESSES, OPPORTUNITIES AND CHALLENGES OF EDTECH

Based on the literature review and trends in the Edtech start-ups ecosystem, the Strengths, Weaknesses, Opportunities, & Challenges (SWOC) analysis has been done. In the elementary and higher education sectors, India is now on a growth track. The enormous migration of people from countryside to cities produced the ideal environment and opportunity for Edtech start-ups to meet the needs of the new millennium's "content hungry" urban populace. More demand for digital information, interactive e-learning, entrance test preparation, distance, and digital learning arises as internet connections improve (e.g., 4G and 5G). It fueled an increase in Edtech demand, and most city-based schools and universities are now overly reliant on digital and e-learning solutions for academic delivery. These present great potential for Indian Edtech start-ups. Edtech companies, on the other hand, are currently confronting a number of obstacles. The Indian Copyright Act and the Patent Office cause delays in obtaining copyright. The certification takes about 3 to 4 months to accomplish on average. In institutions, there is a lack of digital readiness. The majority of these institutions are supported by government agencies such as the Directorate of School or Higher Education at the state level, as well as the University Grants Commission at the federal level. Edtech enterprises' growth in India is also hampered by a lack of reliable IT and connectivity/bandwidth, particularly in rural, backward, and hilly areas. In India, the Edtech sector is fiercely competitive, overcrowded, and squeezed into a small space. Only a small percentage of the 4500 Edtech businesses in existence have scaled up and established a positive earnings before interest, taxes, depreciation, and depletion (EBITDA) margin. Higher education regulatory authorities oppose Edtech businesses collaborating with HEIs to offer online degree programmes. Because India is a multilingual country, Edtech services must be customised, and corporations may face higher costs and delays from regional players. The majority of businesses concentrate solely on the K-12 and Test-Preparation portions of the industry, ignoring the higher education competition. Due to a lack of diversity in the market offering, cost could not be used to calculate cost. Apart from scale-up, there is a growing need for players to focus on differentiation. Most Edtech startups fail because they can't keep their customers, resulting in product failures. There aren't enough finances to invest in high-cost digital initiatives that will help online learning and sustainability. High advertising diminishes the likelihood of receiving money from investors and government subsidies. Companies invest 200 to 400 percent of their operational revenues on internet advertising and promotions in the hopes of obtaining the necessary scale of expansion. When businesses reach a certain level of size, they cut their marketing costs by 40 to 50 percent. Because of social pressures to perform well in competitive examinations in order to access university education, the Indian education system has remained exam-oriented. It may take a longer time for schools and HEIs to adapt to a new digital culture. With the exception of a few, the majority of EdTech investors are specialist or generalist venture capital firms, and many of the larger venture capital-funded companies are nearing the point when these investors are seeking for an exit. A growing percentage of IPOs (Initial Public Offerings) are either listed by venture capital firms or rejected by their corporate owners. As a result, public monies are required in the EdTech sector. In India, the public sector has been the driving force behind digital transformation in all forms, and the

government is investing heavily in a number of initiatives. All governments and innovators have made significant investments in education in recent years. It has, in some ways, aided Edtech startups in gaining traction. During the Covid-19 era, millions of people began adopting app-based learning. Adaptive and individualised learning is gaining popularity among students and young adults. Several urban schools have begun to implement new technology, and young teachers are increasingly stepping up to help students learn more effectively. According to estimates published by the Government of India's Invest India initiative, India will be the most prominent and fastest-growing digital economy with a significant customer base in 2020. India has surpassed the global mark of 2018 billion app installations, accounting for 14% of all app installations. The University Grants Commission and the All India Council for Technical Education recently issued guidelines to all universities and technical institutions to ensure that no Edtech businesses are used to provide online degree programmes. Such collaborations between private universities and Edtech businesses, according to the UGC and AICTE, would amount to franchising, which would be in violation of the conditions of recognition for awarding or offering such online degree programmes. While the government promotes digital education in all sectors, the objective of regulatory organisations in higher education is to prevent education from becoming commodified. Covid-19 has altered the landscape of education. Even large universities are adopting e-learning and thus in turn saving on investment in more physical infrastructure. This is also making education more accessible and affordable. Ever since the pandemic, upGrad enabled over 100 universities and colleges, including MHRD's NIRF Top 100 universities to replicate their classes online. “In 2020, a batch of 2859 learners, marked IIIT Bangalore's largest convocation in the past 21 years and perhaps also the largest ever online course convocation in India.” says Ronnie Screwvala, Chairman & Co-Founder, upGrad. Edutech platforms have an important role to play in supporting physical institutes’ shift to online learning and working with them to give students the best possible learning support.

Strengths:

a) Cost efficient;
b) Flexible learning;
c) Effective learning;
d) Personalized learning;
e) Accessibility to an inaccessible markets;
f) Scale and integrity;
g) Industry-academia interaction;
h) Skill development;
i) Brings better coordination and governance; and
j) Easy to collect feedback and analysis

Weaknesses:

a) Edtech cannot be a substitute to traditional education;
b) Commodification of education;
c) Distraction by students and they always tempted to use devices for procrastination;
d) lack of critical inputs from teachers and less transparency;
e) Students are not intrinsically motivated and no proper feedback mechanism;
f) Possible dilution in quality of offering;
g) Privacy and security of data issues;
h) Cultural mindset-Indian education system is continued to be an examination oriented;
i) Customer mindsets- Clients are looking for value addition to the existing services;

Opportunities:

a) Digital Communication;
b) Adaptive Learning;
c) Personalized Learning;
d) Content hungry Urban population: Improved internet connectivity;
e) Job opportunities to tech savvy people and gig or freelance jobs;
f) Government support for digital transformation in education sector;
g) Corporate Training Programmes and Management Development Programmes;

Challenges:

a) IPR issues;
b) Digital readiness and Non availability of robust IT and connectivity/bandwidth in non-urban areas;
c) Facing Stiff competition;
d) Less profit margin;

e) Regulatory bodies in the higher education sector are not supportive for collaboration with universities;
f) Misalignment in approach- Global vs local;
g) Crowded Edtech landscape: focusing only on K-12 of Test-Preparation segments;
h) Lack of differentiation and retaining the customers;
i) High acquisition cost of customers- spending more money on advertisement and marketing;
j) Investment landscape: Investors are specialist or generalist venture capitalist.

## VI. FUTURE OF EDTECH IN INDIA

After the pandemic hit the world we saw a boom in the ed-tech startups which has brought a revolution in the education sector. With schools, colleges, and coaching institutes shut for days and months, it was educational technology and online education which kept the learning unhindered. According to reports, by 2026, the online education industry is set to grow upto 11.6 billion. These numbers suggest that ed-tech is not just a temporary adjustment due to the COVID times but has come to mark itself as a permanent solution to all the issues which the education sector has endured in the past. Education has apparently only become more achievable with the advent of online education and education technology. It is ever-expanding and reaching new heights every day. Anyone with a smartphone and internet connection can gain knowledge for online education has no bar of demography. Now, many prestigious foreign universities have tied up with Indian colleges and universities and are offering a variety of courses online thus saving students from the cumbersome process of relocating to another country and paying hefty education loans. Students from the comfort of their homes can now get an easy and world-class education. With the help of education technology and investment in online education, education can reach every nook and corner of the country. Since geography is no bar now, any willing student or learner living in the remotest area can have access to quality education. Now every parent and child can fulfil their aspirations to have a better future. Because of online education, the demand for educators is also increasing. The advent of many learning platforms growing and expanding every day, requires an ample number of well-qualified teachers. Hence, education technology and online education solves two major problems in the Indian Education System i.e Educating the maximum number of students in the country along with providing better job opportunities to the teachers or learners. Ed-tech is one of the fastest-growing industries in India these days. According to reports, in the last five years, the industry has gained an investment of around $4 billion and it is estimated to expand by around $30 billion in the next 10 years. With such a huge level of investment, the future and prospects of this area are vast. There is a lot of work being done in making Augmented reality (AR), virtual reality (VR), and extended reality(XR) to make these courses online more cost-effective and reliable. The job prospects of students pursuing these courses will be in the high-paying domains and this will also revolutionise the entire education system.

## CONCLUSION AND SUGGESTIONS

The Edtech eco-system in India is growing due to four factors: (a) India's youthful population; (b) parents' increasing disposable income; (c) decreasing internet data costs; and (d) inexpensive handheld learning devices. Smartphone users are expected to more than double by 2025, from 500 million in 2020. Although Edtech start-ups have challenged the auxiliary coaching and test-preparation sectors, they have failed to penetrate the core education value chain. The integration of digital technology into the education system can be used to supplement rather than replace traditional schooling. When developing their products, edtech companies must keep the truth in mind. Despite the fact that the Covid-19 pandemic has advanced the use of digital technology in the education sector, Edtech businesses must continue to make persistent efforts to maintain stakeholder engagement. Continuous innovation and fresh offerings may be able to do this. When the pandemic is ended, schools/colleges reopen, and normalcy returns, student retention may be a challenge for Edtech platforms. Low client base, difficulty to decide the optimal price of offerings, lack of diversification, lack of product differentiation, and high customer acquisition are among issues faced by edtech start-ups. To compete in the crowded edtech sector, start-ups must employ

multi-pronged techniques. Scaling up, innovating, integrating, facilitating learner outcomes, and diversifying into related segments are all essential. To create a better user experience and deliver tangible parts of learning that cannot be delivered in a traditional, offline class environment, Edtech start-ups must leverage Augmented Reality (AR) and Virtual Reality (VR) extensively. Edtech startups must concentrate on gaining new digital skills in order to equip students for future career roles. Diversification in the adjacent Edtech market is also a viable option for a company's long-term sustainability. There are successful start-ups that provide students with study notes and tutoring. MOOCs are another way to tap into the higher education and business learning markets. It's now or never for higher education institutions to form strategic partnerships with Edtech firms. The program's quality of offerings has not been decreased, but it has been slightly upgraded in order to achieve growth and goals. The future of learning will rely less on physical infrastructure and more on digital space (Sikandar & Rahman, 2020), and Edtech can help improve GER by acting as an enabler. Edtech is expected to act as a catalyst, assisting institutions in improving their offerings and meeting the demands of education-hungry young people.

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