DIGITAL INNOVATION IN EDUCATION ON A GLOBAL SCALE DURING THE PANDEMIC

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Abstract

The strategies and processes used in e-learning are quite effective. The advantages of online learning techniques might help us get through these difficult times. It is student-centered and provides a great level of time and location freedom. This article explores the revolutionary educational innovations in pandemic. It discusses the value of online learning, as well as SWOC (Strengths, Weaknesses, Opportunities, and Challenges) analysis of e-learning modes. And classify the effectiveness of the online education. Also discusses the growth of EdTech start-ups during pandemics and natural disasters, as well as recommendations for academic institutions on how to deal with the issues of online learning in a crisis situation.

Keywords: *e-learning, digital transformation, SWOC, EdTech start-ups.*

1. INTRODUCTION

The COVID-19 had both beneficial and negative educational consequences. Every day, the impact of the COVID-19 epidemic on the learning and well-being of education systems, children, and young people grows. People enjoy studying while spending time with their families. "Now is the time to improve protection of the right to education by rebuilding better, more equal, and robust education institutions. The goal shouldn't only be to get things back to how they were before the outbreak; it should also be to solve the weaknesses in systems that have long impeded schools from being effective."

Objectives

- To explore the revolutionary educational innovations in pandemic.
- To Conduct a SWOC (Strengths, Weaknesses, Opportunities, and Challenges) analysis of

online learning in the context of the Corona Virus pandemic and natural disasters.

- To classify the effectiveness of digital education during Covid-19.
- To investigate the growth of EdTech start-ups and online education.
- To give recommendations for how to make online learning work in a crisis situation.

2. REVOLUTIONARY EDUCATIONAL INNOVATIONS IN PANDEMIC

As the lockdown is lifted and students prepare to return to their schools and institutions, it is critical to maintain protection and reduce the chance of further outbreaks. This section discussed the six breakthrough developments in pandemic to support education for the many issues encountered by students and instructors by organizations and governments during the corona virus pandemic. School-in-a-Box Kits in the Philippines to Camel Libraries in Ethiopia are among the innovations. The following are the revolutionary educational innovations in pandemic.

- Philippine Schools' School-in-a-Box Kits
- A Tree Classroom for Students in Koraput, Odisha
- Messaging Aids Parent Networking in Vietnam
- Camel Libraries to Support Education in Ethiopia
- Radio Aids Children in Indonesia
- Initiatives for Interactive E-Learning in Kenya

2.1 School-in-a-Box Kits by Philippine Schools

The Navotas Schools Division, a restricted division of 24 Metro Manila schools, has prepared a NAVOSchool-in-a-box kit for each student in a division sponsored by the Department of Education and the City Government. Each elementary school student will get a container including educational packets, books, donated classroom supplies, a hygiene package, and toys provided by the Philippine Toy Library and other organizations. This kit is also one of the significant pandemic education advances.

Figure 1. School-in-a-Box Kits by Philippine Schools

The bundle also includes a parental guide to home study experiences as well as information on how to construct the learning environment so that children can study from home. Figure 1 depicts Philippine Schools' School-in-a-Box Kits.

2.2 A Tree Classroom for Students in Koraput, Odisha

Children in the Dudhari hamlet of Koraput, Odisha, have created inventive and precarious means to promote schooling as a result of poor cellphone service. It is now common to see tiny children with cell phones in their hands, awkwardly placed on tree branches, fighting to keep their balance while listening to lectures and taking notes. The desire to complete their studies, no matter what!

Figure 2. Tree Classroom for Students in Koraput, Odisha

The government's 'SikshyaSanjog' initiative, which tries to integrate youngsters in their education through the use of Whatsapp, is another one of the educational innovations in Bangladesh. Large-scale Whatsapp groups have also been established, in which teachers maintain connections with

students and research materials are promptly shared. However, due to inadequate cellular networks, students are unable to use the government-provided services.

2.3 Messaging Aids Parental Networking in Vietnam

The online chat app Zalo is used to provide programmes for children and parents alike in the country of Vietnam, and is one of the innovations in pandemic to assist education. Zalo is one of the most popular messaging apps in Vietnam, with one in every five individuals using it, outnumbering others such as WhatsApp and Messenger. Figure 3 illustrates how messaging assists parents in connecting to networks in Vietnam.

Figure 3. Messaging Aids Parental Networking in Vietnam

Both voice and text messaging systems are utilized to complete activities for all children, including those with disabilities. These messages also ensure that parents or guardians have a toolbox full of resources to help them plan their children's schedules for the day.

2.3 Camel Libraries to Support Education in Ethiopia

As a result of COVID-19 restrictions on public assemblies, over 26 million Ethiopian kids are currently absent from school. The Camel Library was created as a solution to this problem by the Save the Children organization.

Figure 4. Camel Libraries to Support Education in Ethiopia

It is another vital mention in our list of pandemic education ideas that began in 2010 and now includes 21 camels, with the effort presently serving over 22,000 learners in 33 villages. Camel Libraries in Ethiopia to Support Education are depicted in Figure 4. The camels transport up to 200 books in wooden crates fastened to their backs, which are then delivered to children.

2.5 Radio to help Children in Indonesia

Recognizing the positive impact of immersive and interactive radio on children's academic learning, Save the Children established KelasLintasUdara, a radio broadcasting show that involves local education experts in advocating for society to boost students' development through school closures.

Figure 5. Radio to help Children in Indonesia

Figure 5 shows the use of radio to assist children in Indonesia. It is one of the educational breakthroughs in the epidemic to support the education of Indonesian students. The services provide a venue for parents to share their experiences and perspectives on homeschooling and constructive parenting with their children. Projects of a similar nature are presently underway in Rwanda and Ethiopia.

2.6 Interactive E-Learning Initiatives in Kenya

As a result of the COVID-19 pandemic, educational institutions around the world have been forced to temporarily close in order to protect their personnel and students. More than 15 million Kenyan students are projected to study from home, prompting Huawei Technologies, a multinational technology corporation, to launch an eLearning project. Figure 6 displays Kenya's Interactive E-Learning Initiatives. The Learn ON initiative offers high-quality resources in an open forum, as well as supplementary money to ensure learning continuity. Thus, the six pandemic improvements to promote education around the world had been investigated.

Figure 6. Interactive E-Learning Initiatives in Kenya

During a pandemic, digital education has significant influence on numerous disciplines in social-economics around the world. We employ bibliometric analytic methods for over 2000 publications in the Scopus database relevant to digital education in the year 2020, when the corona virus is expected to spread globally. The discovery demonstrates that breakthrough educational innovations in pandemics, School-in-a-Box Kits for Students in Odisha's Koraput, Messaging Helps Parents Network in Vietnam, Camel Libraries in Ethiopia to Support Education, Radio to Help Children in Indonesia, Interactive E-Learning Initiatives in Kenya The results suggest that evaluations identified four major groupings to investigate and discuss. 1) Digital Education Rapid Shift Online Teaching and Learning for the Covid19 Pandemic 2) Digital Education and Rethinking for a Sustainable Community During the Covid19 Pandemic; 3) Digital Education for Medical Education and Healthcare in Hospitals; 4) Digital Education and Digital Innovation Development During the Covid19 Pandemic. These findings are intended to benefit stakeholders who are studying and working in digital education during and after the Covid-19 pandemic.

3. SWOC ANALYSIS

3.1 STRENGTH

3.1.1 Maintains students' regularity and discipline

A virtual classroom requires students to arrive on time and to attend the lesson with an open mind. It has aided in the formation of a habit for them, so that they have a specific goal for each day and do not waste time on insignificant things. They are given homework and assignments to help them stay focused and disciplined in their study. As a result, online programmes ensure that students continue to learn even when their institutions are closed.

3.1.2 Easily accessible from any location

Another significant advantage of online learning is that students can take classes from any location of their choice. To take the lesson, all they need is a decent internet connection, a PC, laptop, or a Smartphone. Students are no longer subjected to the daily annoyances of commuting to school. To join the lesson, they simply need to open their devices and sign in at the given time. Students' attendance has also improved as a result of this. Allow students to choose their own learning pace and ability.

3.1.3 Cost of education is reduced

This can be viewed as a significant advantage at a time when the epidemic has already impacted the budgets of many households. Online education have saved both schools and students a significant amount of money. Because the schools have been shuttered, the expense of their infrastructure and upkeep has been reduced. As a result, pupils' school costs have decreased, making education more affordable for them. Online education has significantly reduced the expense of transportation. Controlling and accepting responsibility for one's own learning pace might encourage certain students. It can alleviate the pressure of time and completion.

3.1.4 Students can keep away from distractions

Many pupils are self-directed learners who are easily distracted by large groups in the classroom. There may be some obnoxious kids in the classroom who will make it difficult for you to concentrate on what the teacher is teaching. In contrast, there is no such issue in online classes. Every student has direct interaction with the teacher, which aids in speedy learning.

3.1.5 Saves students from exposure to infections

Pupils in virtual classrooms do not need to attend to school or interact with other students. This prevents them from contracting any form of infection from others, which aids in the maintenance of a strong immune system. Furthermore, being at home allows children to eat fresh and healthy foods all day, which is essential for building their immune system and fighting any Covid symptoms.

3.2 WEAKNESS

3.2.1 Screen exposure may cause health issues among students

Students must sit in front of their devices' screens for extended periods of time during online sessions. Classes may last 4-5 hours, which can be exhausting for students. Some students

may have vision problems. Many students may have headaches as a result of prolonged screen exposure. Delays and failure to attain learning outcomes might result from poor time management. Students may acquire improper posture and other physical problems as a result of learning in front of a screen.

3.2.2 Students struggle to focus on the screen

One's gadget must be linked to the internet in order to take online classes. This makes many social media and other sites freely accessible, which becomes the most distracting factor for pupils. Thus, the most difficult difficulty for students while listening to online lectures for long periods of time is to maintain concentrate. Control and accountability may be challenging for inexperienced students. Such circumstances can be avoided by remaining an active learner and engaging in meaningful and relevant dialogue with the teacher.

3.2.3 Network breakdown and other technology issues

This is possibly the most common and significant downside of online learning. Despite the fact that countries have worked much harder to establish a good internet system, a constant connection with adequate speed remains an issue in many smaller cities and villages. A broken internet connection or a limited internet range can disrupt the child's learning. Students may be discouraged from attending lessons on a regular basis and studying their curriculum as a result of this.

3.2.4 Lack of social interaction

When children are in school, they can learn a lot from their peers. They learn to be patient, overcome disappointment, and compete while spending time with their classmates. Many students make it a practice to improve their learning by participating in group studies and vibrant group discussions. In an online class, however, there is little to no physical interaction between students and lecturers. Learners may be unable to learn in the absence of instructions and guidance from teachers. This might lead to children feeling alone, which can have a negative impact on their grades.

3.2.5 Increased the responsibility of parents

Online education has increased the responsibilities of parents of students by requiring them to supervise their children more carefully than was previously done by teachers in the classroom. They must keep an eye on their children to ensure that they are paying attention in the virtual class and not wasting time on other things. Because of the additional function of the invigilator, many

parents are finding it difficult to manage their own work and their children's lessons at the same time.

3.3 OPPORTUNITIES

Digital transformation can help improve communication and education. Collaboration between the school and the family is critical. Integrating ICT into teaching practise can improve the learning process's effectiveness. While studying the resources, students can improve their ICT skills. When children are taught how to utilise the internet critically, their performance can improve. The internet can be utilised to help in communication and education. Outside of the classroom, ICT can be adopted and utilised. One of the benefits of utilising ICT is the ability to look up information. The teaching style is critical. Students must be more engaged and conscious when it comes to using ICT for studying and communicating (Comi et al., 2017).

Mobile-based assessment is also regarded as an example of ICT implementation and digital transformation in education. Medical, biology, engineering, mathematics, scientific technology, and other subjects can be taught utilising digital transformation (Alrofouh et al., 2019). A smartphone can also be used for mobile learning. When utilised correctly, a smartphone can help with academic success (Amez & Baert, 2020). Specific teaching techniques can improve pupils' performance (Andrey Zakharov, Martin Carnoy, 2013).

Laptops and mobile phones are examples of mobile technology used in learning tools (smartphones). These devices are transformed into learning tools with enormous potential for improving the learning process. According to a meta-analysis and study synthesis of 110 experimental scientific publications, mobile devices are useful tools in the classroom and for outdoor learning (Sung et al., 2016).

The use of ICT in learning can improve learning competency and convenience. Based on the study contract and deadline, students can complete online evaluations at any time and from any location. A physical presence is not required for online learning. It is possible to do it asynchronously (Kyriazi, 2015; Pokhrel & Chhetri, 2021; Wei et al., 2021).

Some teaching methods are superior to others. The type and quantity of specific homework also play significant roles. The type of coursework and technology employed are critical. Students should be assigned assignments and tasks that are appropriate for their level. Specific methods of evaluation and assessment must also be explored (Andrey Zakharov, Martin Carnoy, 2013). Solving difficult problems Students should be educated about the 1st INTERNATIONAL

CONFERENCE ON EDUCATION AND TECHNOLOGY "Beyond the New Normal Challenges in the World of Education Towards Society 5.0" in order to improve their success and comprehension (Abidah et al., 2020; Anix & Fauziyah, 2018; Eichmann et al., 2019).

Training is required for digital transformation. The finest training begins as soon as possible. Training at the high school level, for example, will be superior to training at the university level. The active participation of the students influences the learning outcomes. To achieve intelligence excellence, behaviour and competency are essential. Students should improve their skills in independent learning, recognising, and evaluating relevant scientific knowledge. As a result, success in the learning process necessitates the cooperation and collaboration of all instructional staff. Special courses are necessary to supplement learning activities. Online evaluation of learning outcomes necessitates evaluation of the learning process (Lile & Bran, 2014). To complete the teacher's assessment, self-assessment and peer-review assessment are required (Lile & Bran, 2014; Santos et al., 2016).

To measure the pupils' abilities, a technology-based assessment (TBA) might be employed. This type of assessment is used by huge colleges and foreign schools all around the world. Online evaluation, on the other hand, necessitates both student participation and teacher belief. According to a survey involving 494 science teachers and 1774 students from 32 schools, student interaction is critical in learning activities. The pupils' computer proficiency is very important in the learning process (Chien & Wu, 2020). Teaching pupils to adapt to instruction is a critical skill that teachers must learn. Conceptual learning must be supported by motivation and metacognition. Some difficulties include a lack of time and materials, as well as a lack of teaching expertise (Izci & Siegel, 2015).

Behavioral intervention evaluations, such as computer-assisted learning, frequently find beneficial impacts throughout all stages of the school life cycle, but they are typically less than those observed with the most effective computer-assisted learning models. Concurrently, technology-enabled behavioural interventions, such as large-scale text message campaigns, are often very low-cost to conduct and have immense potential as a cost-effective educational technique. In the future, researchers should concentrate their efforts on determining when technology-based behavioural nudges are most successful. With the emergence of new technologies such as machine learning, we can do more research to help us determine the root cause of the problem. Students enrolling in online-only courses may struggle to learn.

Mixed learning outcomes, on the other hand, are frequently equivalent to those of completely in-person courses. This demonstrates the feasibility of combining online and in-person learning at a low cost. As the online learning sector grows, a new study is needed to explore how new models, such as MicroMasters programmes and nanocredentials, may impact or democratise learning. The educational technology sector is rapidly evolving, and cutting-edge tools and apps are sometimes considered obsolete after only a few years. When making purchase decisions, school officials frequently look for resale value (Escueta et al., 2021). MOOCs (Massive Open Online Courses) are another sort of online learning that may be beneficial (MOOC). This form of learning necessitates active learning and student willingness to apply the Freedom To Learn Program (Irene et al., 2020).

3.4 CHALLENGES

Many countries have embraced computer-assisted instruction and technology in the classroom. Recent studies had been conducted. According to the findings, there was some potential theoretical insight and an increase in the students' achievement. The first hurdle is for teachers to prepare learning materials. Slides and tests should be thoroughly prepared ahead of time. The materials must be provided as efficiently as feasible. These behind-the-scenes operations are critical. The well-prepared materials will have a significant impact on students' learning and achievement. These slides have the potential to make lessons more appealing. Students' willingness and interest in learning might be piqued by good audiovisual content. As a result, digital transformation in education can assist teachers in more successfully managing their teaching materials (Comi et al., 2017).

Difficulties in integrating digital transformation in education into practises are challenges in implementing digital transformation in education. The availability of equipment such as computers, software, tablets, or instructional programmes is insufficient to improve pupils' performance. Teachers and students must be digitally literate and have ICT abilities. ICT can be utilised to create interactive learning materials and to develop learning materials. Attractive audiovisual content is critical for effective classrooms. Teachers' aid in guiding students through the use of educational software is crucial to increasing students' achievement (Apriani et al., 2020; Comi et al., 2017; Honggonegoro & Nuryanto, 2020).

Student-Centered Learning is an important principle that must be practised. It is a significant difficulty when it comes to establishing online learning. Issues pertaining to real-life

difficulties should be given in order to develop students' competency. Teachers can assist pupils in developing critical thinking skills. This will be useful when the kids go to work in the future. The good influence of critical thinking while adhering to Student-Centered Learning will be achieving a professional attitude in one's future employment (Puscas, 2015).

The primary online learning technology is e-learning (electronic learning). The teacher is no longer the primary focus of learning. Students should engage in active learning. Students can study anywhere, at any time, and on multiple occasions with e-learning. The technologies used to enable online learning are computers, laptops, or cellphones. The advantage of online learning is that it saves travel time (Ferri et al., 2020). E-learning necessitates internet access, satellite communication, and cellphones. Open Educational Resources (OER), Flipped Classroom (FC), blended learning, and Massive Open Online Courses (MOOCs) are some of the principles used (Bal & Gupta, 2020).

OERs follow the 5R model, which stands for Retain, Reuse, Revise, Remix, and Redistribute. The ability to download content is referred to as retention. Being able to reuse content implies being able to utilize it in a lesson or create a video. The ability to edit or translate text is referred to as revising. The term "remix" refers to the ability to combine two or more pieces of content to generate a new piece of content. Being able to redistribute content means being able to share it with others (Bal & Gupta, 2020).

According to researchers, the digital divide is about being able to integrate digital technology into important social activities and realizing its benefits, rather than simply having access to or using it. Young people must comprehend and be able to make informed decisions about how to use digital technologies in meaningful ways in their daily lives. In addition, we believe that the digital divide has an impact on the design and development of such technology. It is vital that the next generation approaches digital technology critically and effectively, which means they should consider how it could and should be rather than simply accepting it as it is. The following criteria must be met in order for this to occur:

Despite the greatest efforts of governments, the education sector, students, and parents, remote learning is expected to face five challenges.

1. Infrastructure limits online education. Because of the enormous number of students and professors utilising the online platform at the same time, the network can become overcrowded, resulting in crashes. Furthermore, gaps in the infrastructure of information and communication

technology (ICT) may be significant and cause problems. Network coverage is limited in distant areas, which might contribute to educational inequalities.

2. When a significant number of students and teachers use the online platform at the same time, the network can become overcrowded, and crashes can occur. Infrastructure gaps in information and communication technology (ICT) may potentially be considerable and generate problems. In remote places, a lack of network connectivity might result in educational disparities.

3. Online educational technologies are currently underutilized; online courses are viewed as an adjunct to traditional learning. When offline learning is used as the primary mode of instruction, it can be difficult to complement it.

4. Online learning can have an impact on educational quality. Teachers may be cautious to apply these new methods since they have no past experience with online education. Teachers' attitudes about technology use, as well as their willingness to learn about new online tools, can vary.

5. When teaching and studying at home, both teachers and students have problems. A home setting, for example, may not be conducive to learning owing to noise, housekeeping obligations, and other distractions, making it difficult for children to pay attention and complete their activities and schoolwork. Teachers may not have had enough room to conduct online learning, and distractions may have hindered their effectiveness. Finally, bad hardware and a shaky home network connection may have an impact on teaching and learning.

It is unknown which teaching approach and methodology would be most beneficial for online learning. While "Suspending Classes Without Interrupting Learning" helps to prevent fast copying of offline curriculum to online education, there is still no widely accepted consensus on how teachers and students should avoid such copying. More research is also required to determine how to account for and include the specific characteristics of online education into daily online teaching and learning.

Education is strongly linked to innovation and is driven mostly by a desire to contribute to social and economic prosperity. During a pandemic, digital innovation serves as a platform for digital education in teaching and learning, as well as information and knowledge transfer to the community. To adapt to the changes imposed by new technology, digital transformation in the education sector has needed the involvement of long-term management.

4. EDTECH START-UPS AND ONLINE EDUCATION

EdTech start-ups are quickly becoming a major business area in India. Let us look at some of the start-ups in the education industry in India that are progressively rising and altering the globe in terms of the Indian education landscape. The following is a list of the best EdTech start-ups in India. *Ed – Tech Companies of India.*

- Byju's
- Toppr
- Vedantu
- Meritnation
- Unacademy
- UpGrad

  and many more like these.

A Brief Overview of Some Ed-Tech Companies in India

4.1 BYJU'S – Think & Learn Private Limited

BYJU'S is a Bangalore-based EdTech start-up created in 2011 by Byju Raveendran. It currently has $5.4 billion in total equity. BYJU'S has also received other honours, including the CRISIL Emerging India Award and the Deloitte Technology Fast 50 Award, and is available on both the Android and iOS platforms.

BYJU'S Classes is a learning software that offers preparation for competitive admission exams such as IIT-JEE, CAT, UPSC, GMAT, GRE, Engineering & Medical, as well as supplement courses for grades 6th to 12th. BYJU'S provides online and tablet classes with multi-test and assignment answers, personalised feedback, and in-depth analysis. According to the firm, after using BYJU'S app, 93 percent of parents noticed a significant improvement in their children's academic performance. BYJU'S has 15 million regi stered users, with 9 lakh paying annual subscriptions and an 85% renewal rate. According to the firm, the average app engagement rate is 53 minutes per day.

4.2 Toppr

Toppr is a Mumbai-based startup started in 2013 by Zishaan Hayath. Goal-based learning, adaptive question practise, a performance report, concept sheets, and previous year question papers are all included in the Toppr app. It also provides courses for medical and engineering exams,

board exams, and Olympiads. Toppr is an online test preparation tool for students in grades K-5 through K-12 that focuses on school curriculum syllabus and admission examinations like as JEE, UPSC, NEET, SAT, and others. It provides structured courses that include interactive video lectures, practise question sets, professional doubt clearing, and an all-India test series.

4.3 Vedantu – Vedantu Innovation Private Limited

Vedantu is India's biggest online teaching platform, allowing students to learn LIVE with some of India's best-curated professors. Vedantu's distinguishing feature is the calibre of its teachers. It boasts 500+ professors who have taught more than 1 million hours to 40,000+ students in 1000+ cities from 30+ countries. Vedantu was formed by IITian friends who have been teachers for over 13 years and have taught over 10,000 students. VMSI Krishna, Anand Prakash, and Pulkit Jian, the founders of Vedantu, launched their first enterprise in education, Lakshya, in 2006, which was eventually bought by a publicly traded firm called MT Educare (Mahesh Tutorials) in 2012. The founders of Lakshya taught and supervised over 10,000 students and educated over 200 teachers.

4.4 Meritnation - Applect Learning Systems Private Limited

Pavan Chauhan launched Meritnation, an online education start-up based in Delhi, in 2008. It has evolved into one of the most effective websites for online learning. They provide learning content for children in grades 1st through 12th - CBSE, ICSE, and other prominent state boards. Meritnation offers study materials, tests, proficiency tests, and Olympiad packs to its consumers. It provides a full social network experience for education, and the app analyses each student's progress and presents tailored recommendations as well as analytical data reports to highlight areas of strength and growth.

4.5 Unacademy - Sorting Hat Technologies Private Limited

Unacademy is a Bangalore-based EdTech company that provides an online learning marketplace for courses and was started by Heemash Singh, Sachin Gupta, and Gaurav Munjal. In 2015, the YouTube channel was moved to an online learning platform. Despite this, you can still discover a lot of educational films on their YouTube channel. Hemaash Singh founded Unacademy in 2010 as a YouTube channel, and it has since grown to become a household name in India's education technology business. Unacademy is an Indian e-learning start-up. More than 30,00,000 (3 million) students have received lessons from Unacademy. They have partnered with some of

the most well-known and experienced educators to instruct the kids. There are approximately 2400 online courses available.

The majority of the courses on this site are free. Unacademy's mission is to provide all education in the globe for free, and it has delved into a variety of sectors such as Banking, CA, CAPF, UPSC, CLAT, CAT, JEE, Pre-Medical, and more. The video tutorials are available in a variety of languages, and students may follow tutors and purchase courses directly from their homepage. The majority of their business plan is based on their platform's Plus Subscription function.

4.6 UpGrad – UpGrad Education Private Limited

UpGrad is an EdTech portal that offers higher education programmes online. They offer an immersive learning experience through the use of cutting-edge technology and well-designed courses. Ronnie Screwvala, Mayank Kumar, Phalgum Komapalli, and Ravijot Chugh created UpGrad in 2015. UpGrad was founded in 2015 on the belief that in an ever-changing market, professionals must constantly upskill themselves in order to remain relevant.

Table 1. ***Ed – Tech Start-up Companies of India***

BYJU'S The Learning App	toppr
Vedantu LIVE ONLINE TUTORING	meritnation.com
unacademy	UpGrad

5. CLASSIFYING EFFECTIVENESS OF DIGITAL EDUCATION DURING COVID-19

This study primarily includes an overview, detail, and thorough strategy to identifying literature about the effectiveness of digital technology in education during the Covid19 pandemic crisis based on database classification with a critical process to find genuine work done on the topic.

5.1 Digital education quick shift online teaching and learning for during COVID-19 pandemic

Despite the fact that digital education has a growing list of enormous benefits such as increased accessibility and outreach for teaching and learning, cost and time savings, flexibility in location, cost savings in terms of travel, and making education more inclusive, digital education was not fully implemented in the educational system until the Covid19 pandemic hit the world. For starters, digital communication platforms are useful tools for educational institutions that survived, and even won, the Covid19 crisis. Digital education has provided a platform for teaching and learning to continue for student achievements; during a pandemic, digital education was practised at all levels of the education system, from preschool to higher education, and it is projected to be applied to resilient post-COVID-19 by strength benefits for stakeholders to satisfy.

The posts or discussion (text/image/poster) and videos one way and multiple ways together virtual meeting discussing these all-educational institutions or schools share are more focused on either the press gentry or the public information model. Digital communication is used to guide, inform, and support staff and students as they transition from face-to-face to online classes via digital platforms, either asynchronous or synchronous; virtual experiment films are also a tool to support students in this situation for learning attainment. According to these studies, integrating learning theories with technology has changed students' thinking and ways of creating information, and as a result, learning achievement is rising and kids are growing up. Several research have emphasised online learning approaches as a means of engaging and promoting students' learning satisfaction and achievement.

Another advantage is that digital education is used to ensure that students in their final year can continue with their education and graduate as planned when they are forced to stay at home due to the corona virus. This supplies a considerable number of high-skilled labour resources for the labour market, particularly for digital employment, and contributes to national economic development around the world. Computer communication skills are reviewed for students studying

accomplishment and career development. Aside from teaching and studying, digital education connects researchers all around the world to a variety of interesting topics. With national borders closed and cross-country travel limited, the evolution of digital education creates a new platform for global exchange and knowledge sharing. Virtual international conferences are being implemented in many universities across the world, creating ample space for staff and students to share and discuss; global classes are taking place all over the world.

Remote education studies revealed some problems, in addition to the benefits of digital technology for teaching during the Covid-19 pandemic. Teachers face a difficulty in terms of being prepared to use technologies to engage with students and online teaching methodology when full online teaching and learning is implemented during the Covid19 pandemic. Students' learning performance as measured by online learning assessments reveals issues, particularly in medical education. Some disciplines related to physical skill development are confronting many challenges, such as sports education and medical practice. Some institutions failed to achieve student achievement during the early semester epidemic, with over half reporting that they reduced the expected level of work for students (including eliminating assignments or tests) and switched to a pass/fail model of online learning. This teacher education force is undergoing innovative training in order to adapt to the future digitalization of education.

This teacher education force is undergoing innovative training in order to adapt to the future digitalization of education. Solutions for improving learning outcomes through distance education are also being discussed, such as universities reshaping curriculums and outcomes, as well as providing adequate facilities for technical equipment to run smoothly, teachers and students investing enough time, training, and practice for readiness, as well as critical digital pedagogy: student engagement, involvement, and participation in online learning activities is critical for success in online courses devising.

5.2 Digital education during pandemic and rethinking for sustainable community

When children are required to stay at home and parents are required to work from home due to the COVID-19 epidemic, schools are closed, and digital education evolves to give a platform for pupils to continue to be educated through online learning. More than millions of youngsters around the world have continued to learn at home in order to broaden their experiences and gain constructive knowledge for long-term community development.

The pandemic has demonstrated how communities can educate children; parents serve as teachers, supporting children at home or learning from one another via a digital platform. Digital education has not only assisted children's learning, but it has also had a significant impact on the human capital labour market for training, knowledge sharing, and experience related multi-fields for eco-social community development, such as online business, online transportation, especially in low-income areas or villages, and most women quickly learn how to use online business from a digital technology for enhancing knowledge to self-care, protecting, and maintaining one's life.

People in developing countries must swiftly gain new knowledge and skills in order to obtain lawful employment. When the digital economy creates new career opportunities in the workplace, digital technology is the greatest option. As a result, members of the community began to learn and find work, such as drivers and customers learning how to use the app for transportation; factory workers learning how to manage their jobs when they work from home; and restaurants opening online services and delivering food to homes during lockdown times. During a pandemic, digital education helped to improve the digital competency of community workforce members, allowing them to adapt to the new digital working environment. Another advantage of digital education is that it reduces psychological and psychiatric issues in some people and promotes peace and safety when a pandemic crisis badly hits the community. However, several concerns surround the challenges of sustainable growth based on digital education. The availability of Internet access in the community becomes an enviable aspect for people to communicate with one another during lockdown.

The pandemic allowed community officials to rethink school functions as well as re-imagine and re-design education for the future; before to the pandemic, knowledge was mostly imparted to pupils from teachers in schools. During a pandemic, however, digital education creates a blended learning environment for education, even if it is aided by TVs, cellphones, feature phones, laptops, and tablets. Google Classroom has created a slew of integrated learning platforms that can be readily linked to YouTube, Lexia, Khan Academy, and other educational resources.

Members of the community use digital tools to construct virtual storytelling sessions that contribute to knowledge sharing for long-term development. Some academics examined financial resources and financial management for children from low-income homes in order for them to have access to adequate digital tools, as well as equitable educational opportunities. According to Iyengar R. post-COVID-19, education systems should acknowledge community-driven support

systems, employ technology to bridge the digital divide in learning, and achieve educational equity for all students worldwide.

5.3 Digital education for medical education and healthcare in hospital

During the Covid19 epidemic, digital education has a direct impact on medical education. The pandemic has caused extensive disruption in medical education and professional training, with instances including reduced instruction due to the redeployment of medical educators to clinical care, as well as quarantine and the impact of disease on medical educators and students. The reason for this is that a large number of professors, doctors, nurses, and students who are involved in activities for patient treatment in hospitals are suddenly facing an increase in the number of deaths caused by a coronavirus, especially this virus outbreak in the world, which poses serious risks to hospital staff and students.

As a result of the Covid19 pandemic's huge impact on medical education, significant changes have occurred, and digital education has been immediately implemented innovatively to preserve teaching and learning in a challenging environment. These encounters range from clinic and ward rounds to interactive patient sessions to training in interpersonal and interprofessional communication and clinical skills that programmes must alter to accommodate digital education. Instead, readily available technology such as videos, podcasts, rudimentary virtual reality, computer simulations, and serious games are assisting educators and facilitating student learning and training in these areas. With real-time mobile video tools and apps, medical educators may remotely advise students. Simple internet platforms, such as websites and blogs, can provide basic information while also providing chances to host films demonstrating critical skills, such as procedural clinical skills and communication.

The application of emerging educational technology, such as artificial intelligence for adaptive learning and virtual reality, is extremely likely to be critical components of revolutionary change and the future of medical education. These innovations in the medical education continuum have primarily replaced current techniques to providing medical education, pushed by the urgency to implement a workable and practical answer to the crises, with educators using ordinary technology. In general, the current response to the pandemic has been increased awareness and acceptance of currently accessible technologies in medical education and the broader education sector.

5.4 Digital education and digital innovation development during COVID-19 pandemic

Education has a strong correlation with creativity and is mostly motivated by the desire to contribute to social and economic growth. During a pandemic, digital innovation provides a platform for digital education in teaching and learning, as well as the transfer of information and knowledge to the community. Without a question, digital education provides the finest environment for professors, teachers, and students to generate innovative ideas and products for the advancement of digital innovation.

Digital innovation has a tremendous impact on social developments during a pandemic. Although professors and students work from home via digital education, there are many challenges in "movement control order" by lockdown policies applied globally to prevent epidemic outbreaks, and there is an emerging digital innovation product to assist social people in safe by healthcare and overcoming the difficult situation. Simultaneously, digital innovation in universities is utilizing the power of collaboration and collective intelligence to design and execute more robust and durable entrepreneurial activities. Digital innovation is linked to the digital entrepreneurial ecosystem in training by emphasizing the integrated digital-output and digital-environment perspectives.

In order to adapt to the changes imposed by new technologies, digital transformation in the education sector has necessitated the engagement of long-term management. To begin with, when digital finance has become widely used in economic systems around the world, —many apps created for use on smartphones in digital servitization innovation conveniently and effectively during a pandemic. Following that is a market method for achieving long-term industrial development. Digital innovation is strongly linked to long-term industrial development, and technological innovation helps to bridge the gap between flexible environmental policy and long-term economic development. Following that, diverse digital engineering creates products such as robotics, nanotechnology, synthetic protein, cellular agriculture, gene-editing technology, artificial intelligence, block chain, and machine learning that have an impact on a variety of fields such as agriculture, industry, and hospitals. This results in the development of interpersonal abilities among higher education students when employing information and communication technologies for digital innovational learning and outcomes.

6. RECOMMENDATIONS

6.1 Phone monitoring apps and protecting family in the digital age

Smartphones have definitely simplified many parts of life for our multi-tasking society. However, for parents, the same smart phones have exposed their children to possible risks and dangers that necessitate continual supervision. The good news is that there are numerous free and paid phone monitoring apps available to assist parents in keeping a digital eye on their children and protecting them from improper information, online predators, and other cyber risks. Parental tools features and capacities are available in phone monitoring apps. Here are some of the most important features to look for in parental monitoring software.

6.2 Internet controls

The internet is full with important information, and youngsters may need to utilize cellphones for school research at times. That is why it is critical to utilize a parent monitoring programme that only allows you to block and filter out Web Pages containing unsuitable content. An outright ban on internet access is counterproductive. More complex programmes scan pages in real time and block them if they include banned terms or subjects. Some surveillance apps even capture the photographs or videos your children view and provide screenshots of their screens.

6.3 Communication monitoring

According to a 2010 study conducted by the University of New Hampshire, 9% of youngsters who use the internet received unsolicited sexual solicitation. If you want to be sure your child isn't one of them, you'll need a full phone surveillance programme that includes chat and text monitoring. These programmes can notify parents if their child attempts to reveal personal information, log their keystrokes, and email parents a transcript of both sides of text and chat conversations.

6.4 App blocking

According to the New England Journal of Public Policy, because applications are popular with children of all ages, it's no surprise that online predators frequently approach children through chat rooms, social media apps, or the chat component of a game. Parental controls can restrict certain apps, take screenshots of children's screens, and listen in on chats.

6.5 Control interface and alerts

Parents, believe it or not, cannot be glued to their phones at all times. As a result, an online portal that parents can access via computer is an important phone monitoring software function. If

your youngster engages in illegal activities, some applications will send you an alert to your phone. If you receive an alert, you can lock down your child's phone.

6.6 Screen-time management

For good reason, screen time is one of the most talked-about, hot-button problems surrounding children and cellphones. A JAMA Pediatrics study indicated that spending too much time in front of a screen can impair a child's ability to develop healthily.

A screen time management system is included in almost every child monitoring software on the market. When a child surpasses the predetermined amount of screen time, there are a variety of consequences, ranging from fully removing phone access to allowing youngsters to request more time.

6.7 Reduce some parenting anxiety

Smartphones will only become smarter as technology improves. Parents must ensure that their phone monitoring app stays up with evolving technologies. When used to their full potential, phone monitoring applications, in conjunction with attentive and involved parenting, can protect families from the risks that present in an increasingly interconnected world.

7. CONCLUSION

The groundbreaking educational breakthroughs in pandemic were investigated in this study. The SWOC (Strengths, Weaknesses, Opportunities, and Challenges) examination of online learning was carried out in the context of the Corona Virus epidemic. During Covid-19, the effectiveness of digital education was graded. It was assessed the expansion of EdTech start-ups and online education. Recommendations were made on how to make online learning work in a crisis situation. Both digital education and traditional schooling have advantages and disadvantages. Students will be able to take ownership of their learning thanks to educational technologies. Students taking responsibility of their learning is the new normal of education, which is gradually taking shape. Finally, student’s and teacher’s infrastructure and abilities are impediments to digital transformation. Opportunities include extensive research scopes, changes, and creativity that can be pursued throughout the digital revolution. As a result, both teachers and students must adjust to the educational system's digital revolution.

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