

Strengthening Online Education: Challenges and Opportunities in India

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Abstract:

The present article fundamentally has the spotlights on the need for strengthening online education in India by focusing on the challenges and opportunities of online and digital modes of education. Identifying challenges in online education will help provide a clear view for the target audience regarding the status of the education sector in India. Opportunities for online education have been discussed in the past to suggest improvements but the current scenario concerning digital and online education has a positive scope and is a thing of the future. With the right initiatives taken by the government and the stakeholders, this mode of education can further assist in bridging the infrastructural gaps. This article is an attempt to highlight the strengths as well as weaknesses countered by the online education system in India. Even in the COVID-19, the digital platform helped provide stability, growth and adaptability to the regular syllabus. Information Technology through online teaching and learning coupled with technical software knowledge improved drastically the technical know-how. Besides this, it is also true that online teaching and learning are plagued with certain cons; such as poor infrastructure and limited internet connection; outdated software, which has led to the questioning of the very credibility of digital education in India.

Keywords: Online education, digital, regional discrimination, digital skills, flexibility in education, IT infrastructure, e-learning, student motivation, social interaction.

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I. INTRODUCTION

Education is an important pillar for the development of a country. Focussing on the advancement of the education sector will lead to innovations and allow us to reap the full benefits of the power of the human mind. During COVID-19, we all saw an increase in online education as physical distancing was prioritized (Raja and Rahman, 2021). Thus, primarily *this article* attempts to provide a perspective on the e-learning process in India as further actions for improvement can be taken based on this analysis. The present paper may interest the people that are affected due to this sudden change in education, i.e., the **learners and instructors**. The online education system fundamentally ponders over professionalism and high-quality, rich, engaging presentations that grab students' attention. Propagating learning effectively has been considered the main strength of digital education in India. Systematic two-way modes of communication are widened to pave the growth towards development. In the recent times of COVID-19, digital education has supported millions of students in India and entangled suitability growth for future adversity and compliances. Usage of systematic tools and methods has improved as well as the widened student engagement and reimbursed the efficacy of digital teaching. Despite this strengthening approach, digital education persists through challenging events providing breakthroughs in innovative modes of teaching. This article discusses both *pros and cons* of digital/online education in India and attempts to point at the gap in digital platforms, hampering students' and teachers' development significantly. Online education has increased in India, especially during the COVID-19, however, some problems have been observed regarding this sudden change in the traditional education system.

The reality of online education in India

The outbreak of the pandemic provided an opportunity to deepen the scope of online education in India. The background of online teaching in India is quite contrasting considering the drastic positive and negative impacts of online education. As lockdown was accepted as a safety measure against COVID-19, the traditional face-to-face teaching process shifted overnight. The changes in online education have been rapid and transformational due to the shift from the traditional education form (Palvia *et al.* 2018). The schools operated on a virtual platform for studying and as the shift was unforeseen and unplanned, there persevered a variety of issues. On one hand, these issues and challenges each became an aspect of the online regarding proper

scheduling of classes, lack of resources, lack of student engagement, lack of basic infrastructure, and on the other, the shift towards online teaching and learning provided the community multiple advantages. Online/digital education can significantly empower the learners of India in terms of personalized instructions as per requirement. There is a positive attitude toward online courses from the Government of India as well which suggests enhancement measures to be taken to improve the infrastructure for online education. The Government of India needs to evaluate whether the initiatives taken, are adequate to support the robust digital ecosystem for education (Khanapurkar *et al.* 2020). These initiatives that include online teaching even in physical education (hybrid mode), imply the goal of attaining universal inclusion regarding access and equity of education through online mode. The initiatives taken to strengthen the condition of digital learning echo the digital infrastructure of India through the initiative of attaining “Digital India”. In May 2020, the Indian government introduced an initiative named PM eVIDYA program as an attempt to make e-learning more accessible to teachers and students (IBEF, 2021). The program aims to assist 25 crore students to strengthen digital education through converging all the activities related to digital learning. The program includes learning designed for hearing and visually impaired students as well. In India in 2016, the value for online primary and secondary supplemental education was estimated at 73 million U.S dollars (Statista, 2021). These initiatives of the Indian Government in strengthening the online mode of education can also be coupled with decreasing drop-out rates, thereby increasing the Gross Enrolment Ratio (GER). In the future, online education can be seen as a hub for quality learning integrated with each stage of formal education.

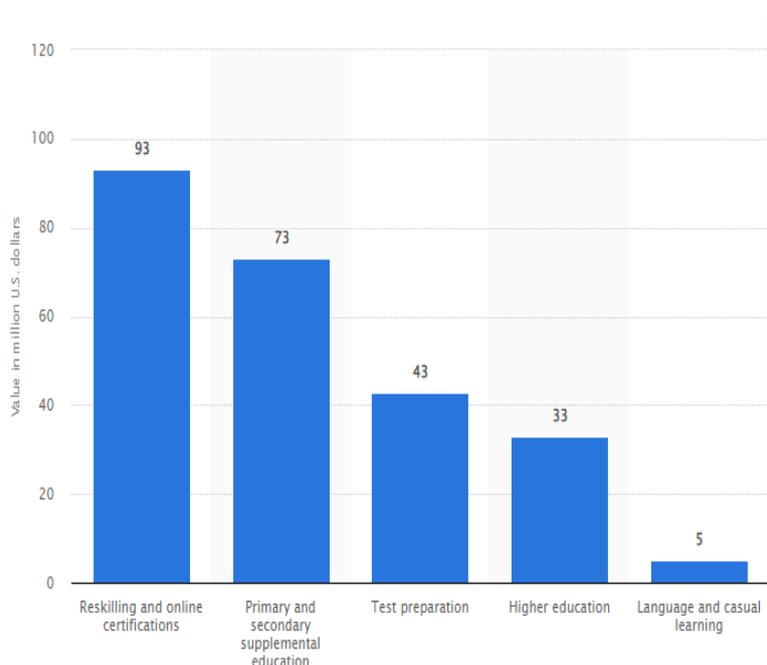


Figure 1: Value of online education in India
(Source: Statista, 2021)

In the aspect of safety regarding the worldwide pandemic, online education ensured the safety of the teachers and learners. The virtual mode eradicated the possibility of the spread of the virus. The online mode has been preferred to provide uninterrupted and seamless education (Tari and Amonkar, 2021). Online education is supported by bona fide management styles dedicated to enhancing the scope of learning for the students as well as time effective measures for the instructors. It assisted the teachers to concentrate on the core of education rather than associated concerns such as attendance, keeping records, etc.

The online courses have opened an avenue for students regarding self-paced study schedules that can be associated with striving for the student. In India, crowded classrooms may have contributed to the learning gap among students. It is important to form a unified opinion on behalf of the significance of digital education through the use of technology. It processes students acknowledging the positive impact of online courses through tools such as webinars (Gupta and Sengupta, 2021). Online education creates a room for personalized education and that can attempt to bridge the gap of miscommunication between the student and the teacher. According to (Kem, 2020) though online learning has many merits, at the same time it is not free from challenges and limitations.

Primary students' challenges

Lower-level students have faced problems during the covid-19, as the digital skills of these students are low compared to higher-level of students.

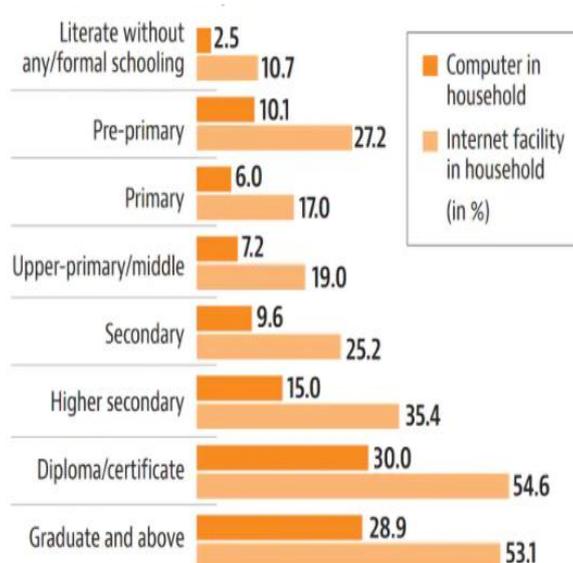


Figure 2: Digital opportunities in households
(Source: Hindustan times, 2020)

Availability of digital tools and technologies is more in households comprising graduate and higher-level students. However, this rate is low in the pre-primary and primary level of students as only **10.1% and 6% of** households have computers (Hindustan times, 2020). It can be analysed from this data that students belonging to primary and pre-primary levels have faced more challenges compared to the other students. Therefore, problems of online education are more severe in lower sectors of education in India due to the non-availability of internet connections and other digital tools. Focus on the improvement of digital learning is required to improve the education quality during the early phases of students' lives as it forms the very base of learning. The student groups need special attention as they are beginning to accustom to the education system thus, issues during this time are required to be mitigated to observe future growth.

The adaptability of the students and teachers to a new model of education was challenged where **digital ability and skills** became a requisite for online and digital education. Students and teachers both have faced problems in the digital education system, as initially, both were reluctant to develop content digitally as they are used to physical teaching and learning methods. The impact of this situation can be observed in the digital learning process as feedback-based teaching has been disrupted (India bioscience, 2020). The use of digital technologies has increased during the pandemic helping to improve the use of information technologies in our traditional Indian education systems. However, it has become an issue of concern during that period, as the introduction and usage of digital technology were limited and were not yet popular in our country. The sudden use of technology-mediated teaching and learning made a huge impact on the overall use of these technologies due to technical inequality (Tari and Amonkar, 2021). Therefore, teachers faced issues regarding transformation and adaptation to the digital mode of teaching and learning. Further, online education has increased the **regional disparity** in India, with the ability of states in providing digital access proving to be different.

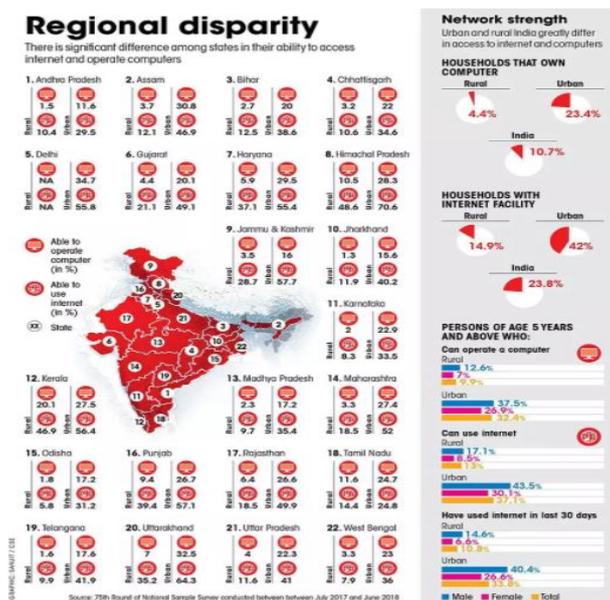


Figure 3: Regional disparity in India for accessing to internet (Source: We forum, 2020)

Regional disparity in India is already a big challenge as differences in the development of regional and economic growth can be observed. However, this situation worsened during the pandemic lockdowns and restrictions providing a clear picture of the severe state of technical disparity in various regions of India. As an *example*, each state of India has a different ability of internet access which increases the division among these states (Weforum, 2020). On the other hand, this gap is further widened between the rural and urban areas where only a margin of rural households (4.4%) have access to computers in comparison to urban ones, (23.4%). Therefore, it is safe to say that the impact of these online education challenges in India has been different in different areas. It can be analysed that students and teachers living in areas with lower access to computers and internet connections have faced more problems in adapting to the new system in comparison to others. Moreover, the impact of online education during COVID-19 becomes more severe due to the current economic disparity in India.

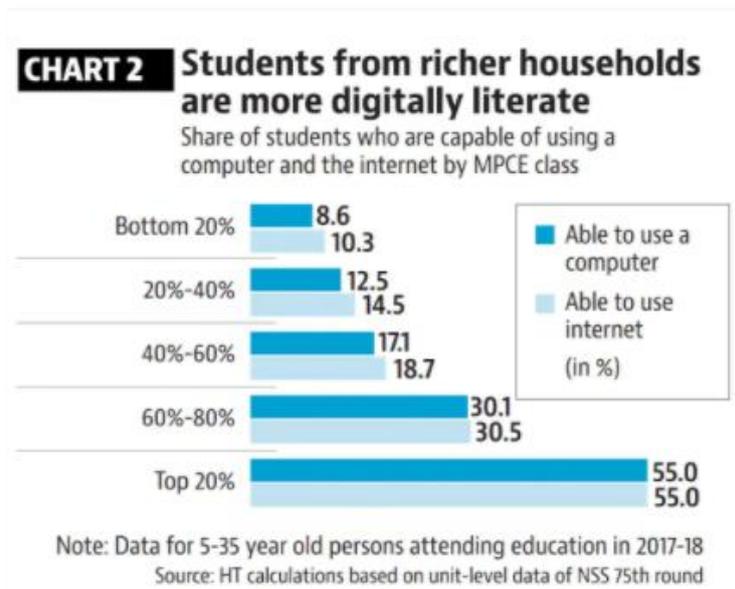


Figure 4: Digital literacy based on the wealth of households (Source: Hindustan times, 2020)

India has a huge economic disparity, meaning that the gap between the rich and poor is large. Thus the impact of this economic disparity can be observed within the education sector as well. Students and teachers from well to do families have better access to digital platforms and technologies (Muthuprasad *et al.* 2021).

Therefore, they get to improve their digital skills and abilities, as accessing these mediums is easier. **For example, only 8.6%** of students from poor households, which fall under the bottom 20%, can use computers (Hindustan times, 2020). Whereas, **55%** of students from the top 20% of better people of India can use the computer and internet. Thus, this online education process has not affected them adversely compared to the lower-ranking people. From figure 3, It can easily be analysed that the impact of online education is different depending on the access to resources of people.

Online teaching and learning are focused on theory-based education thus; it has a lower scope of practical learning or putting it simply, there is an **absence of Practical Learning** Therefore, challenges in the practical learning of science-based streams have been observed, **for example**, the medical students of India have faced this hindrance due to a lack of practical classes (Nimavat *et al.* 2021). It can be assessed that due to the lack of practical learning learners have strived to improve their knowledge on a particular topic. This situation becomes worse for the disabled or specially-abled learners as they need special attention in the learning process. **For example, 79%** of teachers have faced problems teaching students with special needs without direct physical contact (India bioscience, 2020). Therefore, stakeholders have faced challenges to overcome issues related to online education to make it an acceptable and effective mode of education. Another important factor is, **focus on the concept and evaluation** has reduced due to the online mode of learning. Students have compromised with the learning process, as the scope of the evaluation is less in the online mode (Raja and Rahman, 2021). On the other hand, evaluation of the concept of a subject has been neglected, questioning the quality of education in online mediums (The Hindu, 2021). The impact of quality education can be observed in the improvement of the learning and teaching process. However, the lack of focus on concepts and lack of evaluation has negatively impacted the quality of education.

Questionable Credibility of Degrees

There are educational institutes that primarily concentrate on recognizing digital degrees. Despite these positive approaches, many fraudulent, as well as non-accelerated degrees are being offered in the offline mode. As mentioned by Gubarenko *et al.* (2020), digital scams that occur not only hamper the credibility growth of online education but also bring redundancy to digital programs. A sense of isolation retards student growth and forces them to lose self-discipline. On-screen time demerits students' punctuality and reconstructs the school degree to be insignificant as well of no value. Students are bound to carry their educational model on a self-learning basis that delays educational ideas. As referred to by Gilroy *et al.* (2022), thorough training for instructors is considered to be important to change students' minds toward online/digital education. In online education, the exams that are being held are considered valueless as students get the accessibility to copy data from the internet and take the assistance of books to complete their examinations.

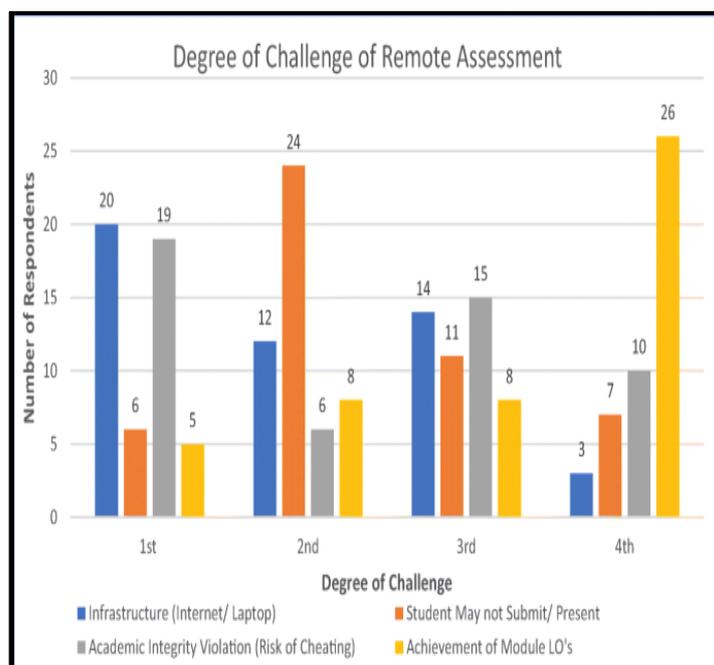


Figure 5: Degree of questionable credibility rates
(Source: Weforum.org, 2021)

These attributes not only develop complexity in their career but at the same time slows down the growth of knowledge. Students of India procuring courses on online teaching due to poor knowledge fail to crack hard end examinations in future days and are bound to remain jobless. As mentioned by García and Weiss (2020), degrees are considered to be invaluable and scam hampers their career growth on a distinct basis. Online degrees have failed to be accepted in outside countries and applicants' qualifications are considered invaluable. The quality of questioning of students has deteriorated and inflexibility in staff programs brings distress to the degree of credibility of students in India. Student accountability growth has failed to be encompassed and regulates the growth of digital education at a random pace.

IDENTIFICATION OF THE OPPORTUNITIES

Online education has raised concerns of people in India as several challenges have been faced due to certain changes in the traditional education process. The description of these challenges and issues has helped to provide an overview to the audiences of the current state of the online education system in India. However, to harness all prospects of these educational changes, identification of opportunities of this teaching and learning model is required.

Access to unlimited topic

The use of online platforms can increase the chances of accessing learning materials as the internet can provide a better opportunity to collect study materials related to learning. Students have been able to improve the learning process with the help of e-learning materials as providing unlimited resources is easier on these online platforms. Thus, students have to access the materials easily compared to other offline mediums in schools. For instance, notes and learning resources from teachers have been shared widely with the help of these online platforms (Dashora *et al.* 2021). On the other hand, as per Joshi (2021), access to other e-learning materials from the internet has helped students in the learning process. The availability of these learning resources can easily be done in a shorter period by spending less money. Online materials are cheaper compared to physical ones therefore; it is helpful for the less privileged students, as it is affordable to collect these. It can be analysed as per this evaluation that students have also obtained opportunities to improve the learning process through this online education. This leads to confidence and less dishonesty in their learning process. The learners save time adapting to standard courses using online tools and platforms

Students have to become more operational online, as access to teachers is limited in this sector. Therefore, students can complete the given activities and tasks in time with little help from teachers, thereby improving self-reliability. This has resulted in the improvement of critical thinking skills among students, as diverse thinking abilities to complete the tasks have been followed (Mishra and Shukla, 2021). The increasing flexibility has helped students to focus on their creativity as well as mental ability, which has a positive impact on learning. The Indian educational system is known as one of the most stringent education systems globally that provide lower chances of freethinking to students (Simut *et al.* 2021). However, the COVID-19 increased the freedom of students in learning through the online learning process in the Indian education system. **For example**, students have more chances to experience leisure time, as they don't have to commute long-distance for school (Gherheş *et al.* 2021). This has reduced the rigorous student schedules leading to improved critical thinking ability by adopting different ideas.

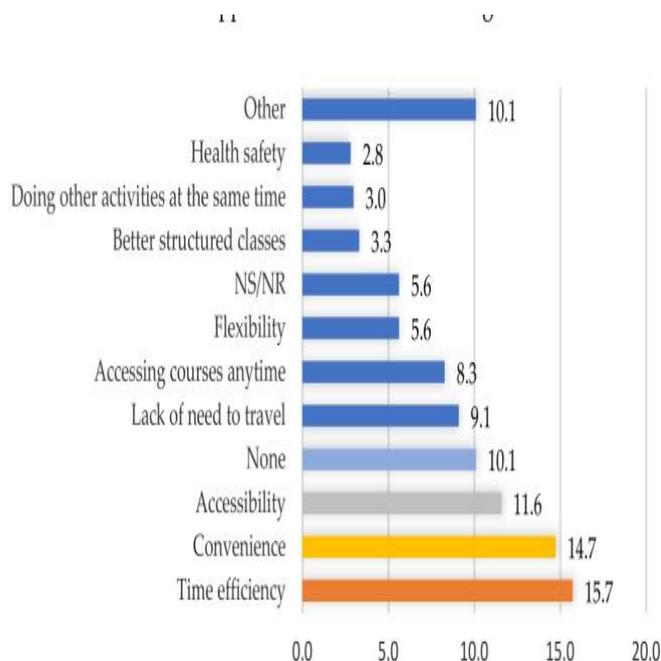


Figure 7: Advantages of online learning
(Source: Gherheş *et al.* 2021)

The **expansion of digital learning** skills is one of the most evident opportunities that has helped students to improve their careers. The digital agility of educators has improved due to continuous involvement with digital platforms and technologies. Therefore, improvement in digital skills and knowledge has been observed during this online learning process. Digital skills are more important in the higher education sector compared to the lower sectors (Suganthan *et al.* 2021). Thus, the online transformation of the education process has provided an opportunity for students to familiarize themselves with the whole process of digital teaching and learning. In other words, these students get to possess digital skills that can be beneficial for them in the future. It also increases student gratification in the education system as **50-70% of** educators have responded to learning as a satisfactory and enjoyable medium as per **NCERT** (The Hindu, 2021). Moreover, figure 7 indicates the improvement in the quality of education through online learning.

It is pertinent to understand that the forced use of online education has enhanced the use of digital learning platforms and applications, indicating a positive impact on education quality improvement.

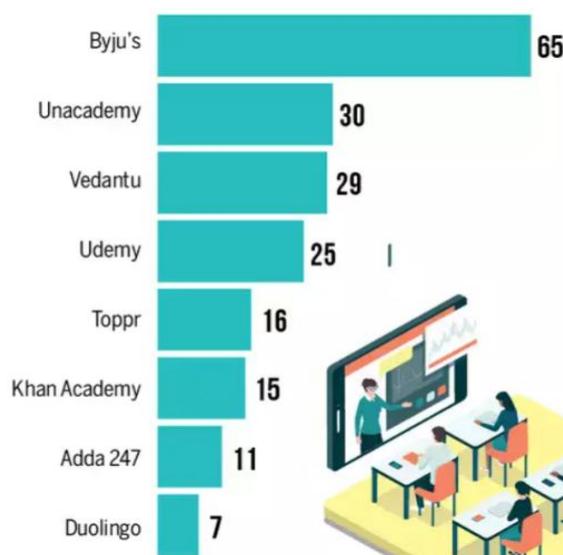


Figure 8: Share of using digital learning apps by students
(Source: India times, 2020)

Indian education has drastically transformed during this pandemic. This can be attributed to digital learning which has now come into the mainstream mediums. *For example*, as shown by figure 8, as digital platforms have been prioritised, **65% and 30%** of students are using *Byju's and Unacademy, respectively*, as their digital learning partner apart from regular school classes (Indiatimes, 2020), leading to an increased chance of improving their digital skills. Also, attending digital classes can be assessed as an opportunity for indulging in extracurricular academic activities, improving chances of learning beyond the curriculum. This gives the learners an opportunity of observing their improvement in academics and therefore suggest measures to improve the education standard and quality. Learning digital and technical skills like coding has become easier with the help of these educational platforms. This also provides an opportunity to develop specialized (skill) knowledge. Both learners and facilitators have learned to apply their skills to improve digital learning and convert this opportunity to their advantage as it can be altered as per individual requirements.

One of the most significant opportunities gained from online courses is that it provides a great deal of **flexibility** to the students. In terms of online courses, the students can re-evaluate the study materials in their own time without being hurried. In the words of (Kem, 2022) this leads to confidence and less dishonesty in their learning process. The learners save time adapting to standard courses using online tools and platforms. As the internet and other online tools have been globally recognized, they provide an opportunity for further flexibility in the education system (Kara *et al.* 2019). In addition to this online courses can provide flexibility or relaxation in the places the student chooses to sit and in the manner. This suggests that online courses can take away formality and introduce ease in their arrangement. The sense of flexibility can be more effective as a teaching method and it can make learning significantly less daunting. There are several advantages of the flexibility that can be obtained from online courses. The lack of restriction imposed by formalities of a classroom can take away the fear, whereas the relaxation can allow the student to concentrate more intensely on their studies. As a result of flexibility, the students have become self-directed learners, which is important in the foundation of competency as a student (Mukhtar *et al.* 2020). On the other hand, it can even encourage a lifetime of self-learning capacity among the students.

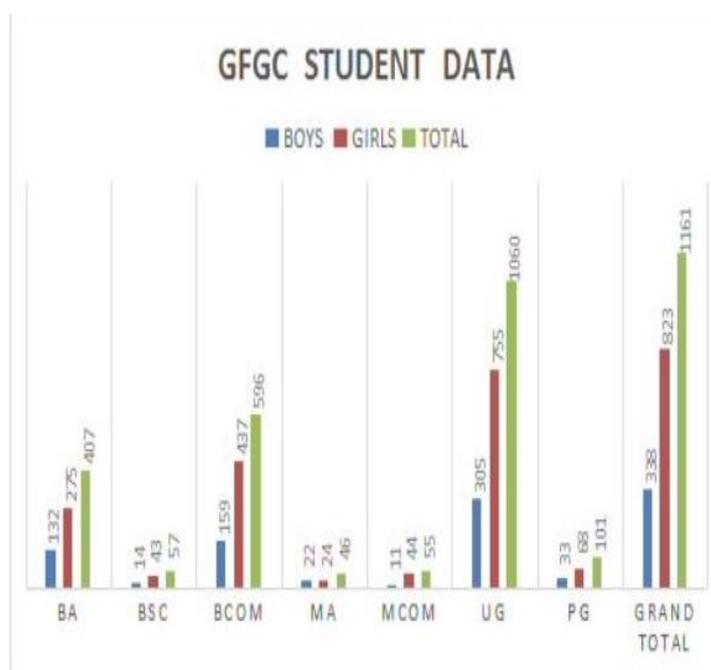


Figure 09: Challenges of online education in Karnataka based on gender
(Source: Forbes, 2020)

In India, there are 481 million active users on the internet and the reliability has gone above 11.34%. Internet penetration in regions of urban areas in India has grown up to 20.26% (Jinda and Chahal, 2018). Moreover, in crucial COVID-19, online education was raised to be essential simply to keep the students up to date with what is happening in the class and school. In a time when all parents were finding it difficult to manage their children at home due to unexpected school closure, online and digital education played an essential caretaking role in schools, which post-pandemic is seen positively in society as, during the COVID-19, the role of technology has made a drastic change in economic, social as well political functioning and at the same time strengthened these systems in India. The public education system is now more equitable as well as inclusive and has moulded and extended itself to provide significant empowerment opportunities for the learners.

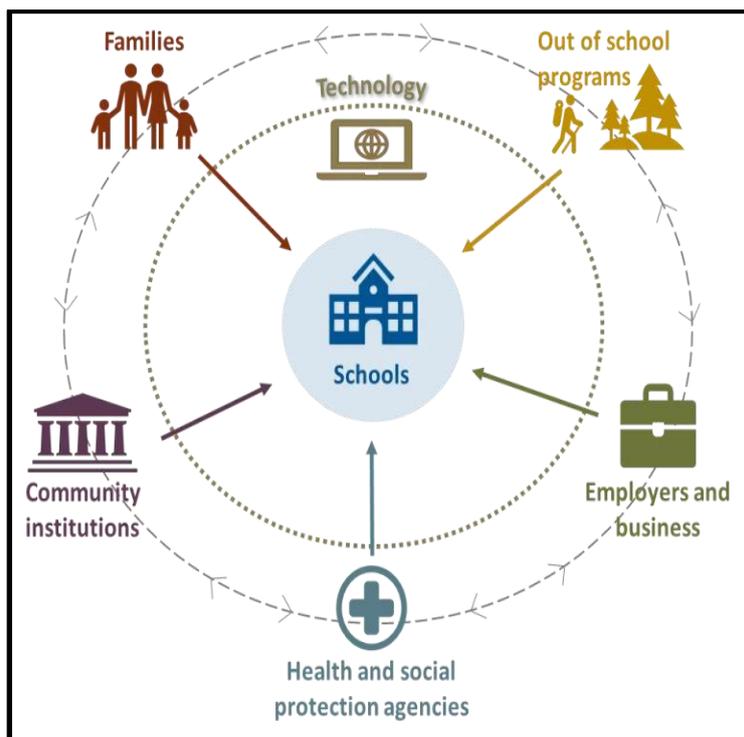


Figure 10: School support in form of online education
(Source: Brookings.edu, 2020)

As can now be determined from the pre-pandemic analysis, 1.5 billion students remained out of school and the quality of education affected 90% of learners and 30% of those learners that belonged to rural regions, failed to get ample access to digital mode of education (Brookings.edu, 2020). Alternatively, it has also been seen that the global community has sleeked mobilized approaches in order to support education all over India. Students are being taught at home by the modes of ICT strengthening growth and flexibility. Online education also provides *easy access to resources* and enables content learning on the suitability of the learner. Students get easy access to resources at home, cafeteria, or on the train in the limited time they have. According to van den Berghe *et al.* (2019), content in digital education generally gets a preloaded and easy download of lectures; videos become suitable, convenient and easily accessible. The cost of digital education has been structured to be low in comparison on face to face education. As referred by Shehzadi *et al.* (2020), the cost of books is also reduced, as digital lectures and notes are easily available.



Figure 11: Saving time and resource
(Source: Pnewswire.com, 2021)

This stability reduces the burden of extra education expenses for parents. Tuition fees are also reduced due to online teaching and learning. Free lectures from different educational applications are also available and students have easy access to the study materials. Moreover, rural students also can forgo the extra costs for education (*travelling, transportation, food, etc.*) due to their financial state. Hence, technology-assisted education strengthens the reliability and accessibility of learning significantly and systematically.

Self-motivation and discipline are considered essential to bring completion in an assignment and upload the same on a time basis. As Shafi et al. (2021) mention, difficulty in carrying education independently becomes a burden to students of India as they lose interest in education. Staying systematically organized, meeting course tasks within deadlines, and struggling with online programs brings thorough flexibility to the minds of students and, at the same time, enriches their definite modes of behavioural skill. Students require the push to avail themselves of proper class access that motivates students' mentally.

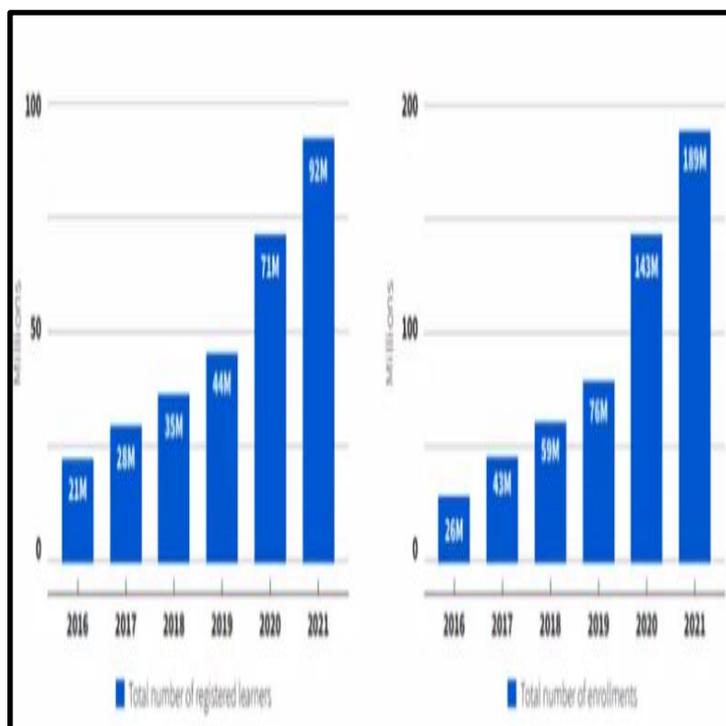


Figure 12: Upward trend in online education due to flexible motivation
(Source: Weforum.org, 2021)

As schools colleges were shut, this has impeded both educational institutes and students from bringing completion to their course outline. Mamas *et al.* (2021) state that a degree of inconvenience and educational innovation through modes of digital setup motivates students to shift towards flexibility and growth. A creative approach through digital IT techniques allows students to render growth and motivation in education. Alternatively, utilizing *Blackboard, Microsoft team, Zoom, and other online platforms* generate growth of educational flexibility. Mode and quality of teaching and learning are being moulded and both learners and facilitators seek and prefer the flexibility to cope with educational expectations and requirements.

II. CONCLUSION

According to a UNESCO report, India is expected to accelerate digital learning and benefit from the global digital education initiative. Many other countries together with India, are expected to drive the change from the traditional classroom education approach to the new age of digital education approach and help initiation of further and better opportunities in the online/digital education sector on a global scale. Considering the above discussion, it will be safe to conclude that the use and progress of online education in India has been noteworthy, despite the so-called 'challenges' it poses to the traditional educational approach, the teachers and the students, themselves. Analysing the challenges and the opportunities regarding the scope of online education in India is useful to assess the current scenario. The disparity, according to regionalism, imposes a hindrance to the success of online education. Similarly, the disparity based on the economic condition is another factor that impedes digital education success in India. It is important to recognize the opportunities in this sector because digital education is unavoidable as per the global trend. Therefore, the government of India has immediate action to improve the basic infrastructure of online education in India through policies and programs. These

initiatives will certainly help provide the proper tools, and these tools will encourage the teachers and the students to accept the advantages of online education.

Thus, it can be concluded that online education has both strengths and weaknesses in students to bring reliability to professional careers. Through assistance in completing the syllabus in covid-19 situations, reimburse students toward welfare approaches. Alternatively, thorough guidance towards IT knowledge enrolls students to prevail definite stability in online careers. Moreover, student motivation growth is being procured through providing definite online educational approaches. Simultaneously, time and resources are being saved on a flexible basis and bring growth to education. Despite all these strengths, some challenging aspects hamper the systematic model of online education. Inefficient digital setup and growth, random technical issues develop problems for many rural students in India. Low internet coverage, poor audio and video capability, and unavailability of updated computer software have developed high complexity in digital modes of education. In rural areas of India, random power cuts make students lose important notes and data that create insignificant approaches in the online mode of learning.

REFERENCES

- [1]. Adnan, M. and Anwar, K., 2020. Online Learning amid the COVID-19 Pandemic: Students' Perspectives. *Online Submission*, 2(1), pp.45-51.
- [2]. Anastasiadis, T., Lampropoulos, G. and Siakas, K., 2018. Digital game-based learning and serious games in education. *International Journal of Advances in Scientific Research and Engineering*, 4(12), pp.139-144.
- [3]. Brookings.edu (2020). *Beyond reopening schools: How education can emerge stronger than before COVID-19*. Available At: <https://www.brookings.edu/research/beyond-reopening-schools-how-education-can-emerge-stronger-than-before-covid-19/>, [Accessed On:19 March2022]
- [4]. Chang, Y.S., Hu, K.J., Chiang, C.W. and Lugmayr, A., 2019. Applying Mobile Augmented Reality (AR) to teach Interior Design students in layout plans: Evaluation of learning effectiveness based on the ARCS Model of learning motivation theory. *Sensors*, 20(1), p.105.
- [5]. Dahlstrom-Hakki, I., Alstad, Z. and Banerjee, M., 2020. Comparing synchronous and asynchronous online discussions for students with disabilities: The impact of social presence. *Computers & Education*, 150, p.103842.
- [6]. Dashora, J., Chandrakumar, K. and Saxena, K., 2021. THE SCENARIO OF ONLINE EDUCATION IN INDIA: THE NEW NORMAL.
- [7]. Diplomatist.com (2020). *IT Industry: Boosting India's Growth*. Available At: <https://diplomatist.com/2020/08/29/it-industry-boosting-indias-growth/>, [Accessed On:19 March2022]
- [8]. Evenhuis, I.J., Jacobs, S.M., Vyth, E.L., Veldhuis, L., de Boer, M.R., Seidell, J.C. and Renders, C.M., 2020. The effect of supportive implementation of healthier canteen guidelines on changes in Dutch school canteens and student purchase behaviour. *Nutrients*, 12(8), p.2419.
- [9]. Ferri, F., Grifoni, P. and Guzzo, T., 2020. Online learning and emergency remote teaching: Opportunities and challenges in emergency situations. *Societies*, 10(4), p.86.
- [10]. Forbes (2020). *Challenges of online education in Rural Karnataka*. Available at: <https://www.forbesindia.com/article/iim-bangalore/challenges-of-online-education-in-rural-karnataka/62349/1> [Accessed on:14 March, 2022]
- [11]. García, E. and Weiss, E., 2020. COVID-19 and Student Performance, Equity, and US Education Policy: Lessons from Pre-Pandemic Research to Inform Relief, Recovery, and Rebuilding. *Economic Policy Institute*.
- [12]. Gherșeș, V., Stoian, C.E., Fărcașiu, M.A. and Stanici, M., 2021. E-learning vs. face-to-face learning: Analyzing students' preferences and behaviors. *Sustainability*, 13(8), p.4381.
- [13]. Gilroy, S.P., Waits, J.A. and Kaplan, B.A., 2022. Applications of operant demand to treatment selection I: Characterizing demand for evidence- based practices. *Journal of the Experimental Analysis of Behavior*, 117(1), pp.20-35.
- [14]. Gubarenko, I.V., Kovalenko, V.I., Kovalenko, E.V., Miyusov, V.A. and Sokolova, O.A., 2020. Methods of social interaction learning for students of non-profit organizations. *International Journal of Criminology and Sociology*, 9, pp.1898-1905.
- [15]. Gupta, S.K. and Sengupta, N., 2021. Webinar as the future educational tool in higher education of India: A survey-based study. *Technology, Knowledge and Learning*, 26(4), pp.1111-1130.
- [16]. Hindustantimes, (2020), *issues-facing-online-education*, available from <https://www.hindustantimes.com/india-news/issues-facing-online-education/story-SaG9rbmlRjRnALWqPspjII.html> [available on 17.03.2022]
- [17]. IBEF (2021). *DIGITAL EDUCATION INITIATIVES*. Available at: <https://www.ibef.org/blogs/digital-education-initiatives#:~:text=The%20government%20introduced%20the%20PM,benefit%20~25%20crore%20school%20students.> [Accessed on:14 March, 2022]
- [18]. Indiabioscience, (2020), *online-education-in-india-the-good-the-bad-and-the-ugly*, available from <https://indiabioscience.org/columns/education/online-education-in-india-the-good-the-bad-and-the-ugly> [available on 17.03.2022]
- [19]. Indianexpress.com (2020) *Lack of regional language content, infrastructure: Online education double trouble for hinterlands*. Available At: <https://indianexpress.com/article/education/lack-of-regional-language-content-infrastructure-online-education-double-trouble-for-hinterlands-6360040/>, [Accessed On:19 March2022]
- [20]. Indiatimes, (2020), *e-learning-which-are-the-most-used-apps*, available from <https://timesofindia.indiatimes.com/business/e-learning-which-are-the-most-used-apps/articleshow/76894305.cms?from=mdr> [available on 17.03.2022]
- [21]. Jindal, A. and Chahal, B.P.S., 2018. Challenges and opportunities for online education in India. *Pramana Research Journal*, 8(4), pp.99-106.
- [22]. Joshi, G., 2021. New Edge Of Education: Perspective Of Teachers And Students Towards Online Education In Higher Education Of India.
- [23]. Kara, M., Erdogdu, F., Kokoç, M. and Cagiltay, K., 2019. Challenges faced by adult learners in online distance education: A literature review. *Open Praxis*, 11(1), pp.5-22.
- [24]. Kem, D., (2020) Reshaping Education: Teaching and learning powered by ICT. *International Journal of Advanced Education and Research*, Volume 5, Issue 5, 2020, Pages 68-72.
- [25]. Kem, D., (2022) Personalised and Adaptive Learning: Emerging Learning Platforms in the Era of Digital and Smart Learning, Volume 5, Issue 2, 2022, Pages 385-391.

- [26]. Khanapurkar, R., Bhorkar, S., Dandare, K. and Kathole, P., 2020. Online Education in India: Building a Framework for Better Learning Outcomes. *ORF Occasional Paper*, 282, pp.5-46.
- [27]. Lantz-Andersson, A., Lundin, M. and Selwyn, N., 2018. Twenty years of online teacher communities: A systematic review of formally-organized and informally-developed professional learning groups. *Teaching and Teacher Education*, 75, pp.302-315.
- [28]. Majuri, J., Koivisto, J. and Hamari, J., 2018. Gamification of education and learning: A review of the empirical literature. In *Proceedings of the 2nd international GamiFIN conference, GamiFIN 2018*. CEUR-WS.
- [29]. Mamas, C., Daly, A.J., Cohen, S.R. and Jones, G., 2021. Social participation of students with an autism spectrum disorder in general education settings. *Learning, Culture, and Social Interaction*, 28, p.100467.
- [30]. Mishra, P. and Shukla, S., 2021. Online Teaching in India during COVID-19: Opportunities and Challenges. *Mishra, P., & Smita, (2021). Online Teaching in India during Covid, 19*, pp.20-28.
- [31]. Mukhtar, K., Javed, K., Arooj, M., and Sethi, A., 2020. Advantages, Limitations and Recommendations for online learning during COVID-19 pandemic era. *Pakistan journal of medical sciences*, 36(COVID19-S4), p.S27.
- [32]. Muthuprasad, T., Aiswarya, S., Aditya, K.S. and Jha, G.K., 2021. Students' perception and preference for online education in India during the COVID-19 pandemic. *Social Sciences & Humanities Open*, 3(1), p.100101.
- [33]. Nimavat, N., Singh, S., Fichadiya, N., Sharma, P., Patel, N., Kumar, M., Chauhan, G. and Pandit, N., 2021. Online medical education in India—different challenges and probable solutions in the age of COVID-19. *Advances in Medical Education and Practice*, 12, p.237.
- [34]. Palvia, S., Aeron, P., Gupta, P., Mahapatra, D., Parida, R., Rosner, R. and Sindhi, S., 2018. Online education: Worldwide status, challenges, trends, and implications. *Journal of Global Information Technology Management*, 21(4), pp.233-241.
- [35]. Prnewswire.com (2021). *USD 2.28 Billion Growth in the Online Education Market in India |Skill development and Employment to Drive Market Technavio*. Available At: <https://www.prnewswire.com/news-releases/usd-2-28-billion-growth-in-the-online-education-market-in-india-skill-development-and-employment-to-drive-market-technavio-301247964.html>, [Accessed On:19 March2022]
- [36]. Raja, P. and Rahman, M.M., 2021. Difficulties of Quality Education in Higher Education in India. *International Journal of Multidisciplinary: Applied Business and Education Research*, 2(12), pp.1374-1378.
- [37]. Shafi, M.M., Neyestani, M.R., Mirshah Jafari, S.E. and Taghvaei, V., 2021. The Quality Improvement Indicators of the Curriculum at the Technical and Vocational Higher Education. *International Journal of Instruction*, 14(1).
- [38]. Shehzadi, S., Nisar, Q.A., Hussain, M.S., Basheer, M.F., Hameed, W.U. and Chaudhry, N.I., 2020. The role of digital learning toward students' satisfaction and university brand image at educational institutes of Pakistan: a post-effect of COVID-19. *Asian Education and Development Studies*.
- [39]. Simuț, C., Petrila, L., Popescu, F.A. and Oprea, I.M., 2021. Challenges and Opportunities for Telecommuting in the School System: Building a Sustainable Online Education in the Context of the SARS-Cov-2 Pandemic. *Sustainability*, 13(18), p.10296.
- [40]. Statista (2021). *Value of online education market across India in 2016, by category*. Available at: <https://www.statista.com/statistics/746584/online-education-market-value-by-category-india/> [Accessed on:14 March 2022]
- [41]. Suganthan, C., Carolin, A.M., Nagarajan, S. and PS, R., 2021. Delivering ESL Lessons Online to Engineering and Technology Students during Covid19 Pandemic: Opportunities and Challenges.
- [42]. Tari, S. and Amonkar, G., 2021. Impact of covid on higher education in India. *Educational Resurgence Journal*, 2(5), pp.22-27.
- [43]. Tari, S. and Amonkar, G., 2021. Impact of covid on higher education in India. *Educational Resurgence Journal*, 2(5), pp.22-27.
- [44]. Thehindu, (2021), *e-learning-in-India-a-case-of-bad-education*, available from <https://www.thehindu.com/opinion/lead/e-learning-in-india-a-case-of-bad-education/article32672071.ece> [available on 17.03.2022]
- [45]. van den Berghe, R., Verhagen, J., Oudgenoeg-Paz, O., Van der Ven, S. and Leseman, P., 2019. Social robots for language learning: A review. *Review of Educational Research*, 89(2), pp.259-295.
- [46]. Weforum, (2020), *how-covid-19-deepens-the-digital-education-divide-in-india*, available from <https://www.weforum.org/agenda/2020/10/how-covid-19-deepens-the-digital-education-divide-in-india/> [available on 17.03.2022]
- [47]. Weforum.org (2021). *These three charts show the global growth in online learning*. Available at: <https://www.weforum.org/agenda/2022/01/online-learning-courses-reskill-skills-gap/>, [Accessed On:19 March2022]
- [48]. Wolff, L.A., 2020. Sustainability education in risks and crises: Lessons from Covid-19. *Sustainability*, 12(12), p.5205.

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