



Challenges and Oppourtunities of Digital Education in India

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

In the 21st century, a majority of individuals use the internet regularly to increase their knowledge and to foster general awareness in this era of globalization. Due to the recent Covid-19 pandemic people and students are facing problems in their study or gaining access to high quality knowledge. It has had a great impact in the whole world, affecting each and every aspect of society i.e. education, economy, social life, etc. In every sector we observe an increasing adoption of digital technologies. The education sector has additionally adopted new paradigms for imparting knowledge and skills. It has shifted itself from traditional media to digital classrooms. All educational institutions at primary, secondary and college/ university levels are adopting new pedagogies or androgogies to cater to this situation and maintain the continuity in providing knowledge to its students. India as a growing nation is continuously seeking to make improvements progressing within the education sector. Just as there are many challenges to the education system of India, the situation provides equally a number of opportunities to overcome those challenges and to form education systems far better education for the Digital learning of the 21st century.

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1. INTRODUCTION

“Digital education is the innovative use of digital tools and technologies during teaching and learning, and is often referred to as Technology Enhanced Learning (TEL) or e-Learning”. Digital technologies which include the Internet, mobile apps, sensors and others have the capability to sit up the learning process. Jindal & Chahal [1] find out on their study that online education has significant impact on the future Indian education system. Rebuilding the curriculum to make students more employable and using technology to impart the various skills in local languages can improve the speed of the development of online education in India. Gaikwad & Randhir [2] on their study found that increased internet connectivity and increased competition among the telecommunications players will help the development of online learning in both developing and underdeveloped countries. In India rapid development is possible through various e-learning systems, the major challenges to the digital education mainly in developing countries are technical and organizational problems and the readiness of faculty and learners (Andersson & Gronlund, 2009). Due to COVID-19 School schedules are interrupted and many schools are now totally dependent on digital education for learning and teaching process. The development of education infrastructure is very much needed for the introduction and upgradation of digital education. Therefore, Digitalization in educational sector needs adequate infrastructure investment, good electricity and tele network English speaking skilled teachers etc [3].

2. DIGITAL EDUCATION

Digital education, also known as Technology Enhanced Learning (TEL) or e-Learning, is the innovative use of digital tools and technology during teaching and learning. Exploring the use of digital technologies gives educators the opportunity to design engaging learning possibilities in their courses, which can take the form of blended or fully online courses and programmes [4-6]. It is a type of learning combination of context and method by electronic elements. It is sometimes confused with online learning or e-learning, digital learning encompasses the aforementioned concepts.

2.1 Importance of Digital Education

In modern world, digital education revolutionaries the old chalk and board process of learning in classrooms. It is modified the teaching and learning more flexible in this pandemic time. Digital education or learning never breakdown the continuation of education system in present scenario. Teacher and students should accept a new learning platform of this globalization time. Analyse the use of digital technologies offers teachers the enhance to design engaging learning opportunities in the course they teach and these can take the shape of combined or completely online courses and programs. Teachers and students can able to learn something new or innovative ideas through online education. Nowadays, digital education gradually covers maximum of students to grapple with new trending education system. Digital education makes students smarter. Learning tools and technology allow students to grow effective, self-directed learning skills. The students capable of analysing what they require learn to search and use online resources. Digital learning enlarges their efficiency and productivity. Furthermore, to appealing students digital learning tools and technology sharpen critical thinking skills which are the basis for the growth of systematic reasoning students, also develop positive feelings of exploitation offering the confidence they require want to learn even more new things [7-9].

2.2 Important Peripheral Components of Digital Education

- Classroom personal computer/ laptop/ tablets
- Projector
- Internet connectivity

2.3 Emerging Trends of Digital Education

- Flipped/ Digital Classrooms
- Learning Based on the Videos
- MOOCS (Massive Open Online Course)
- Google Classroom
- E-Pathshala
- Kahoot
- BYJU'S

3. NATIONAL EDUCATION POLICY (NEP) 2020 AND ONLINE EDUCATION

(https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf)

(NEP 2020 and Online Education – A Paradigm Shift - Higher Education Digest)

- The NEP 2020 has a special focus on online education. Universities and institutions in India along with NITs (National Institutes of Technology) and IGNOU (Indira Gandhi National Open University) will perform pilot research studies to maximise the benefits of digital learning. Online tools and systems like: - Digital Infrastructure for Knowledge Sharing (DIKSHA) and SWAYAM (Study Webs of Active learning for Young Aspiring Minds) could be upgraded with new perception to training content material, in-class resources, assessment aids, profiles and so on. that will be allowing seamless interaction. It also focuses on the development of public digital and interoperable infrastructure that may be used by a number of platforms [10-12].
- NEP 2020 emphasises the improvement of virtual labs wherein students can practice their theoretical knowledge and make course content available in different languages. The newly renamed Ministry of Education recommends setting up a selected specific unit to promote digital learning. The dedicated unit will include experts from the field of education, educational technology, administration, and e-governance who will focus on online learning needs of both the school and higher education. More focus will be given to the online assessment and examinations.
- The present age is driven by digital technology and the internet and World Wide Web have influenced the entire globe. The internet equipped both the education seeker as well as education provider and bringing them together under one virtual roof. As a end of result, the virtual classroom concept has already popularized throughout the globe. Therefore, within the modern-day generation, the role of online technology in providing the education is vital and with its flexible nature the online educational technology has grown in

popularity as compared to the centralised classroom education system, internet education is now more accessible to all types of people.

3.1 Challenges

1. **Network and geographical location:** The challenges faced by the students of India in digital education are to do with connectivity or communication issues. As India is a growing country and a country containing vast mountain ranges and surrounded on three sides by a major ocean is one of the major challenges for telecom operators to connect India to the rest of the world. There are many places in India where people cannot use mobile phones yet because of poor network connectivity in those areas [13-16].
2. **Poverty:** “Fundamentally, poverty is a denial of choices and opportunities, a violation of human dignity. It means lack of basic capacity to participate effectively in society. It means not having enough to feed and cloth[e] a family, not having a school or clinic to go to, not having the land on which to grow one’s food or a job to earn one’s living, not having access to credit. It means insecurity, powerlessness and exclusion of individuals, households and communities. It means susceptibility to violence, and it often implies living on marginal or fragile environments, without access to clean water or sanitation.” — United Nations, 1998
(https://www.learningforjustice.org/sites/default/files/tt_poverty_h1.pdf)
India has a large population below poverty. The majority people in India they are able to continue to exist for their daily food/meal for minimal cost of income. Then it is impossible to most of the parents can't afford a smart phone for their child to taking their education through online mode. It is a major imbalance of equal education to all the children.
3. **Diversity of language:** It is one of the most common cause of digital education. It is very difficult for providing content in all 22 languages in India. People in India cannot speak nor read English, of which most digital content exists.

List 1. 22 official languages of India

SI No	Language	State
1.	Assamese	Assam, Arunachal Pradesh
2.	Bengali	West Bengal, Tripura
3.	Bodo	Assam
4.	Dogri	Official language of Jammu and Kashmir
5.	Gujarati	Dadra and Nagar Haveli and Daman and Diu, Gujarat
6.	Hindi	Andaman and Nicobar Islands, Bihar, Dadra and Nagar Haveli and Daman and Diu, Chhattisgarh, Delhi, Gujarat, Haryana, Himachal Pradesh, Jharkhand, Madhya Pradesh, Jammu and Kashmir, Mizoram, Rajasthan, Uttar Pradesh, Uttarakhand, and West Bengal
7.	Kannada	Karnataka
8.	Kashmiri	Jammu and Kashmir
9.	Konkani	Dadra and Nagar Haveli and Daman and Diu, Maharashtra, Goa, Karnataka, and Kerala (The Konkan Coast)
10.	Maithili	Bihar, Jharkhand
11.	Malayalam	Kerala, Lakshadweep, Puducherry
12.	Manipuri	Manipur
13.	Marathi	Maharashtra, Goa, Dadra and Nagar Haveli and Daman and Diu
14.	Nepali	Sikkim and West Bengal
15.	Odia	Official language of Orissa
16.	Punjabi	Official language of Punjab and Chandigarh, 2nd official language of Delhi and Haryana
17.	Sanskrit	Himachal Pradesh, Uttarakhand
18.	Santali	Spoken by Santhal people mainly in the state of Jharkhand as well as in the states of Assam, Bihar, Chhattisgarh, Mizoram, Odisha, Tripura, West Bengal
19.	Sindhi	Gujarat and Maharashtra, especially Ulhasnagar
20.	Tamil	Tamil Nadu, Puducherry
21.	Telugu	Andhra Pradesh, Telangana, and Puducherry
22.	Urdu	Jammu and Kashmir, Telangana, Jharkhand, Delhi, Bihar, Uttar Pradesh, and West Bengal

(<https://www.studyiq.com/articles/the-national-language-of-india/>)

4. **Internet connection:** Major challenge faced by both students and teachers is slow and exorbitant internet connection which is the backbone of online education. For online education, need suitable place for internet connection. It has been especially faced in non-urban areas of developing countries which results in longer waiting times and ultimately increases student's frustration and confusion.
5. **Lack of Infrastructure:** There is overloading of servers and deficiency of other necessary infrastructure due to premature shift to online education due to covid-19. Furthermore, most of the students cannot manage to pay for a desktop/laptop that's demand mainly for practical/programming subjects for powerful online education.
6. **Digital Literacy:** In the college both students and teachers are not aware of latest technology. They aren't up to speed with the latest technology. Moreover, technology is changing day by day, so that everyone should update with this.
7. **Social Interaction:** Learners have a low level of engagement and interest due to the passive nature of the online lecture. The biggest obstacle in online education lead the child to isolation. In traditional classrooms, the participants have the opportunity to collaborate, communicate with each other. They can share experiences, problems, support, and friendship which helps them not only in real life learning but also improves their mental and physical health. This is required for better personal and professional development. This opportunity is not there in online classes. In nursing/medical education where it is required to have good communication between the staff and patients, Social

interaction becomes a mandatory requirement.

8. **Self-management of Students:** In online education there is no direct control of teachers on students so they need to be self-motivated and self-disciplined. In addition, the benefits of self-managed learning, we should provide the opportunities to according to their own interest and be responsible for what they do. Parents also pay an essential role to make them self-disciplined. Moreover, proper environment needs to be provided during online education so that they can focus on studies.
9. **Time Management:** Time management is always difficult for both students and teachers as well as it is challenging them. For students they need to management skills and keep a daily schedule for their online class and teachers also need the sufficient time for preparing a class. (Top 5 Challenges of Online Education 2022 - College Values Online)
10. **Evaluation and credibility of degrees:** In online education, it becomes a challenge to evaluate the students as teachers or Educational Institutes have no direct control over them especially in the scenario of Covid -19. Moreover, there are more chances or probabilities of fake degrees online so it becomes a question on the credibility of degrees.
11. **Language Barrier:** Online courses can be taught worldwide as well they can reach up to rural areas. But in that case, language becomes an issue if the course is published in a single language.
12. **Motivation:** Some students need the push to get to the class. In case of self-paced online programmes, student may procrastinate. The dropout rate in online education is very high. Self-motivation and discipline is required to complete the assignments and upload them timely. If you have difficulty working independently, staying organized and meeting deadlines, you might struggle in an online program.
13. Language of the Course India is a multi-linguistic country, and a vast majority of the population comes from rural areas. The content offered by most of the online courses is in English. Hence, those students who are not able to speak English struggle with the availability of language content. Hence, it is the duty of computer professionals, educators, administrators, language content creators, and content disseminators, to sit together and give a viable framework and standard solution to the learners knowing only Indian languages.
14. **Insufficient digital infrastructure** Although Government of India is taking initiative to develop digital infrastructure but a lot need to be done in this direction. High speed internet and stable power supply are the biggest problem. India stands 89th worldwide on internet speed and stability. According to the report of World Economic Forum, only 15 percent of the households have access to the Internet, and mobile broadband remains accessible to very few i.e. only 5.5 subscriptions for every 100 people. Further, currently reach of broadband is just about 600 corridors, largely in and around the top 50 to 100 Indian cities, leaving rural areas with poor connectivity. 5G networks technology is the requirement of today's which will increase the speed of downloading the data. (<https://www.vccircle.com/the-present-and-future-of-indias-online-education-industry>)
15. **Limited Social interaction** Since online education can be accessed at home or any other convenient place, there is very limited direct interaction with the teacher and other people doing the course. According to Dharendra Kumar (2010), especially those courses which are self-paced, there is very less discussion among the peers. Most of the discussion takes place through e mail, chat room or discussion groups. There isn't any campus atmosphere to improve social interaction. So, you are not able to develop any social links which do help in the career growth.

3.2 Opportunities in Digital Education

1. **The flexibility of learning:** As online education is accessed from the Web, so it is accessible anytime and everywhere where the internet is available. Students need not to travel from long distance to study a course. Moreover, the students who r working or having other liabilities have the opportunity to continue their studies.
2. **Cost-effective:** Online education is cost-effective because students do not have to pay hostel as well as transport charges.

Moreover, there is a lot of free E-content available on the Web. However, the quality is ranges from dubious through disputable to good quality. The Indian government is also facilitating for the same so that education can be reached, everyone.

3. **Improved skill and confidence:** There are numerous standardized courses available online and taught by knowledgeable and well-known educators. Now everyone has access to them which was not there in the case of traditional education.
4. **Better Employability:** Online education act as a medium to bridge the gap between candidates and respective employers. There is an abundance of courses available on advanced technologies in almost every domain i.e. cloud, IoT, Big Data, Software testing, Hospitality, Nursing, Coding, and many more. Students can maintain their skills as per industry expectations.
5. **Global Exposure:** Many reputed and prestigious institutions all over the world were earlier out of reach. It is because of their admission procedure and unaffordable nature. Now a number are offering online courses which are reachable as well as being accepted by employers.
6. **Blended Model:** Nowadays a blended Model is becoming popular in which students can take benefit from online learning as well as traditional teaching. Both student and teacher need to be present and online teaching methodologies are blended into traditional methods.
7. **Better impact on Health:** As teachers and students need not to interact physically so there is no harm from infectious disease. In this way online teaching protects the society from these kinds of diseases.
8. **More Productive classes:** In traditional classrooms teachers spend most of the classroom time in controlling students. Now in digital learning they can concentrate more on teaching.
9. **New Courses** Today the most popular courses in online education are related to IT which includes subjects like big data, cloud computing, and digital marketing. But in future demand for different types of courses in unexpected subjects such as culinary management, photography, personality development, forensic science, cyber law, etc. will increase.

10. **Develop high-quality digital learning programs:** High-quality learning programs useful to teachers, students, and administrators. digital learning mode helpful to all those. These programs easy to understand different pedagogies and methods to teachers.
11. **Teachers skills development:** Digital learning useful to teachers develops professional skills and easy to understanding content for students.
12. **Digital classroom:** Every college and institute maintain their won Digital class. The Digital class manages to difficult time to beat the overall classroom. Offering a spread of subject knowledge.
13. **Online Class:** Very few colleges and universities were doing online classes. Absolutely nothing with online education pre-COVID-19 the education getting to back. Planning and understand that online education getting to minimum knowledge source for brand spanking new revenues. The web class mostly full fills to academic activities.
14. **ICT teaching:** ICT related teaching and learning process very effective and straightforward process. There are numerous ICT tools useful by people like radio, T.V, Computer Etc., access to realize more knowledge. Present days we using Facebook, WhatsApp, Google classroom, Zoom & so on.... Useful to share information and communication technology.
15. **Providing Internet facility:** In rural areas people suffering from internet facility. So that, the government takes response to supply good connections in an internet facility for people. It's useful to country students' good online classes covered.
16. **Financing:** Digital education involves effective and efficient. Therefore, the government provides funding to develop digital classrooms.

4. CONCLUSION

Online education can change the whole future scenario in education if it can be implemented in joint collaboration with industry, universities and government Digital education helps to improve the education condition of a country. Now ICT has become essential part of teaching learning process. ow digitalization technology is the inherent part of our life. The main vision of digital education is can't breakdown the flow and

continuation of education in any condition. It is a good step for engaged students in teaching-learning process in this COVID-19 pandemic scenario also. Digital classrooms, online classes, ICT tools are developing education to give better opportunities.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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