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RESEARCH PAPER

Digitalization of education to bridge the learning barriers

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Abstract: In this era of digital generation, information and communication technologies provide new opportunities to learn in diversified means with no restrictions on time and location. Digital education provides win-win situation aiming enhanced participation of students by bridging the physical, psychological and socio-cultural learning barriers using effective teaching – learning methods. Young India with major inclination towards digitalization has made to bring up many digital initiatives in the education sector like SWAYAM, SWAYAM PRABHA, e-Shodh Sindhu, e-Pathshala, National Digital Library, DIKSHA, NPTEL etc. Internet users is expected to grow to about 735 million by the end of 2021. India being hub for the EdTech sectors, use of different internet learning methods plays an important role. Hence, internet learning methods like flipped classroom, blended classroom, gamification, mobile learning, adaptive learning, Massive Open Online Classrooms (MOOCs), Open Educational Resources (OERs), personalized learning, virtual labs, video-based learning and K-12 learning have been popularized in recent years. Due to Covid-19 Pandemic virtual education was encouraged with the use of the educating applications like YouTube, Zoom, Google search, Power Points, Microsoft teams and others. Even in agriculture sector use of digital technologies has helped in conducting many online courses, programs like Digital Krishi mela, YouTube livestreaming and other training programs in addition to use of social medias like WhatsApp and Facebook for the benefit of farmers and students. Earlier there was resistance for using digital platform by few, but Covid-19 pandemic made them to realize how virtual learning provides flexibility, comfort learning, improved teacher's credibility and address issues on health, privacy and concentration of students. To address internet coverage issue for online learning, GOI has initiated PM-WANI and BharatNet.

Key words : Digital education, Digital initiatives, Educating applications, Internet learning methods

Introduction

Online education is known to the world long ago with all the scope and opportunities held in it. The first distance learning course was offered through mail in Boston in 1728. Isaac Pitman taught Shorthand through correspondence in 1840. From 1919-1922 course offerings were started through radio waves and BF Skinner established first testing machine (1924). Television emerged in educational program (1930-60s) along with telephone based education was started in 1965. ARPANET (1969) connected all the computers of research institutions. During 1982 and 1989 computer based learning center and internet education programs came into existence respectively. In the year 1999 world's education system was introduced to the biggest digital platforms by that time viz., Blackboard and e-college, whereas by 2000s brought out online certificate programs and included e-learning in the lines of business. While year 2010 allowed us for social online learning, year 2020 has kept us locked with digital education through various online platforms like Zoom, Cisco WebEx, YouTube, Microsoft teams, MOOCs, Google sites and so on.

Digitization is one of the most important revolutions of human life. It has made our lives faster, easier and efficient. Implementing digital technologies helps to build more sustainable relationships. Current era being sophisticated with the digital techniques and tools, this technology brings an enormous opportunity to scale, automate, personalize and innovate. Information and communication technologies play major role in providing new opportunities to learn in diversified means with no restrictions on time and space. Digitalization has made its presence effective in the field of education by engaging students, teachers and parents into the deeper extent.

Digital learning is innovative use of digital tools and technologies for learning activities which may be synchronous or asynchronous. Digital learning tool is a program, app or software available on a digital device that are language, audio, visual and audio-visual based teaching and learning platforms. Digital learning tools enhance autonomous, administrative, collaborative and communicative learning. In this line, Digital education is defined as virtual learning over internet where different ways of learning emerge across all the areas and domains of education. It is also referred as Technology enhanced learning (TEL), e-learning, internet learning, web based learning, and online education. Digital education gives win-win situation aiming enhanced participation of students by bridging the physical, psychological and socio-cultural learning barriers using effective teaching- learning methods. This advanced technology led learning made education more productive by

closing gaps between learning and accelerating progress by connecting through global education and educators' communities. It can be used to customize learning to learners' level of interest, academic, and social needs. Rich texts, images, videos, audios, and games bring fun, excitement, collaboration, and a challenge to the experience of learning.

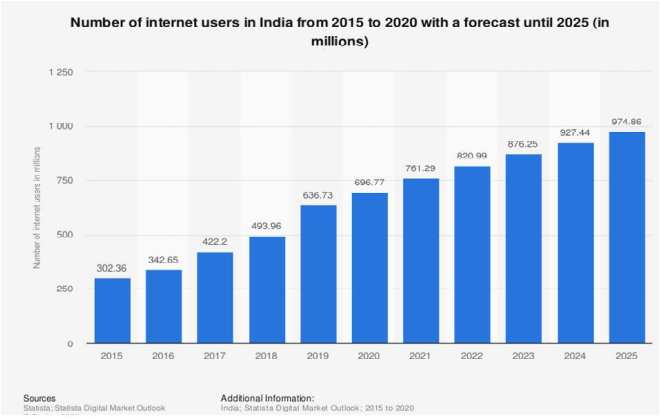
With this the current review article laid emphasis on the following objectives:

- ✓ To understand the concept and methods of digital education and learning barriers.
- ✓ To comprehend the role of digitalization of education in bridging learning barriers.

Online education in India

India is one among the largest and fastest-growing digital markets. Radical digital technologies improvement poised to grow Indian economy and uplift country towards advancement. India's major inclination towards Digitalization makes the education sector to evolve from traditional to technology based with creating many significant services and jobs due to some hanging fruits like

i. Internet penetration: In 2020, India had nearly 700 million internet users across the country. The internet users grew

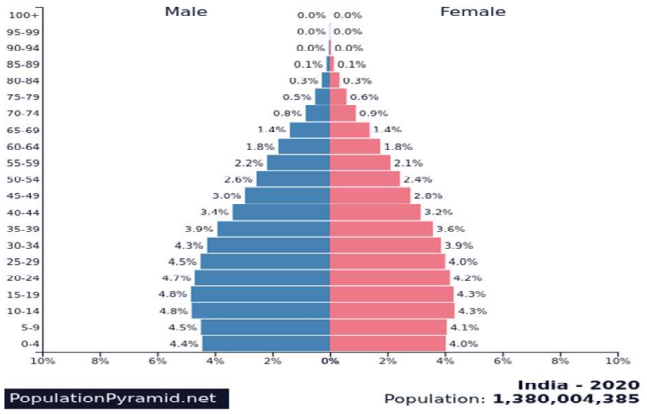


dynamically in both urban and rural regions with the expected number of 974.86 million users in the year 2025.

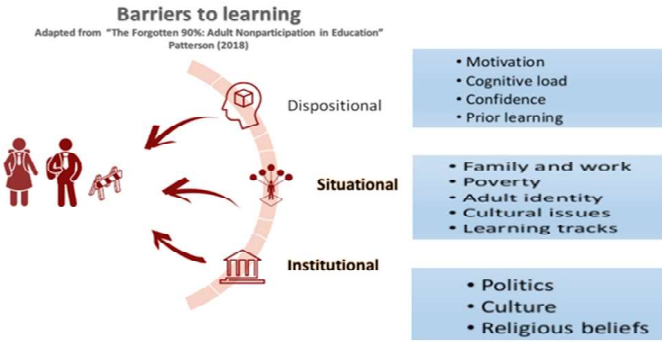
ii. Affordability: Being at 9th place out of 85 countries internet affordability by India's population and many credential courses are free of cost which makes the affordability to online learning materials easy for the learners and effective with growing credibility towards digitalization in education field. India stands at 57th rank out of 85 countries in overall in digital quality including Internet Quality (78th place), e-infrastructure (79th place), Electronic Security (57th position) and E-government (15th place).

iii. Demography: Nearly 48% of population in India between 15-44 age group with high aspirations but lower income is good target for online education and the acceptability of online channel is higher in younger demographic.

Mobile users in India stands at 448.2M in 2020 and expected to grow about 500M by the end of 2023. About 71% mobile



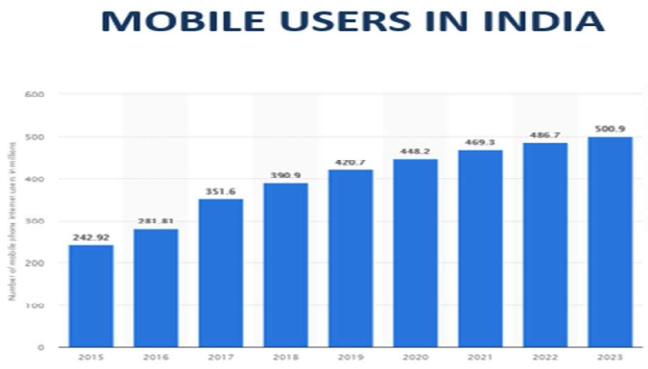
users are of 16-40 age group with rural India mobile users standing at 227M and urban India users are 205M users.



[Sandhya.K.,2020 (b)]

Learning Barriers

Learning Barriers are the factors that prevents a learner from being in a suitable state to engage in their lesson and learn, whether emotionally, physically or psychologically. Majorly learning barriers are of following types:



(Source: Barriers to learning,2019)

• **Physical and Situational barriers:** Inadequate infrastructure, transport and such other physical facilities effecting conventional learning methods are the physical barriers. Certain situations cause the situational barriers. Due to an unfavourable condition in life, mostly working related or family conditions, multiple responsibilities to carry out at the same time, financial problems etc. Time and Place provide access to learning material

anywhere at any time and also facilitates wide reach/ publish of information through e-learning.

• **Emotional barriers**: Emotional and Dispositional barriers, which are also referred to as psychosocial barriers described as low self-esteem and self-confidence; negative attitudes towards their situation as a learner or a previous negative school experience. The learner has more control over dispositional barriers, and attitudes towards learning and self-confidence can act as either a barrier or a support to learning. Beliefs, Attitudes and Values encourage learners to learn in their own pace and no or less scope for physical abuse.

• **Socio-cultural Barriers:** Caste, community, gender, social status, rich-poor based discrimination effects the education creating the socio-cultural barrier. But internet based learning shows no discrimination /differentiation between learners with respect to age, education, gender, social status and background, physical disabilities, motives, standards etc. in digital learning ensures the equality for education.

• **Institutional Barriers:** Institutional barriers are the intentionally or unintentional inconveniences faced from the educational institutions. The issues like designing of the course, lectures delivering method or even sometimes administration difficulties form institutional barriers. Online learning helps to bridge this barrier by self-supervised and building technology related skills with no discrimination, dominance, force over learning subject and pace.

• **Environment Barriers:** One-way teaching, differentiated attention towards students makes the learning environment less effective whereas online education creates enjoyable educational environment with incorporation of different teaching and learning styles, easy assessment / evaluation of students.

• **Behaviour and Action Barriers:** Difficulty in building interpersonal relationship (between peer and instructor), inappropriate behaviour, fear, abience and dependence makes the learner to build himself such barrier. Effective use of technology to enhance quality of learning through diversified methods. Seeking solutions to problems on their own and opportunity to work/ learn together.

Some of the other prevailing barriers to learning are Poverty, Gender, Infrastructure and Resources (Human, Financial and Material), personal, professional etc.

Emerging trends of digital education:

Flipped classrooms, blended learning, classroom technologies, mobile-learning, gamification, learning analytics, learning objects, personalized learning, open educational resources (freely accessible, openly licensed online platforms designed for independent learning, teaching and assessing), **MOOCS** (free online open courses with the purpose to integrate social network, accessible online resources to a learner in a large scale) video based learning and e-textbooks are some of the emerging digital tools. Digital educational apps such as Gradeup, toppr, BYJU'S, unacademy, eduZilla, Classplus, edurekha, better U etc. ensure active participation, sustained engagement and interactions of the learners with unlimited educational resources, innovative learning techniques.

Young India with major inclination towards digitalization has made to bring up many digital initiatives in the education sector like **SWAYAM** (Study Webs of Active Learning for Young Aspiring Minds: launched by MHRD on 9th July 2017 with the objective to take best teaching learning resources to all, including most disadvantaged.). **SWAYAM PRABHA** (covers diverse disciplines to all teachers, students and citizens by providing high quality education channel on 24*7 basis). **e-Shodh Sindhu** (launched in Dec, 2015 covering reviewed journals, bibliographic, citation and factual databases). **e-Pathshala (**launched in Nov, 2015 hosts high quality, curriculum-based, interactive e-content containing 23,000 modules, e-text & video). **National Digital Library** (launched in May, 2016 under Ministry of education, GOI contains textbooks, articles, videos, audiobooks, lectures, simulation, fiction etc.) **DIKSHA** (launched in Sep, 2017 portal contains curriculum content including video lessons, worksheets, textbooks and assessments). **NPTEL** (To build on the engineering and core science courses, 600 web and video courses all major branches of engineering, physical sciences at the UG and PG levels.

The digitalization also conquered the agriculture education, extension and research sector. The online agricultural learning earned immense popularity and grip with the apps and portals like Agriculture Education Portal (provides vital education information/ events/ schedules/ sources from Agricultural universities to students), KIRAN platform acting to connect and strengthen research and extension, Krishikosh and Shodhganga (consist research works majorly). The key elements to support the implementation of Digital Agriculture is abstraction (and Temporal) information Infrastructure (SDI) and affordable sensible phones and tablets to support the bi-directional flow of data and information to rural consumers. Digital Krishimela, YouTube livestreaming and other training programs in addition to use of social medias like WhatsApp and Facebook for the benefit of farmers and students during the pandemic.

New Educational Policy (NEP, 2020) is designed to maximise the benefits of digital and online education in India while mitigating the downsides. The new education policy has come with some initiatives comprising Pilot studies and installation of virtual labs. It has recommended some key initiatives listed below.

- Pilot Studies for Digital/ Online Education: Some of the educational institutions and universities such as NIOS, NITs, IGNOU, CIET and NETF will be asked to conduct some research to maximize the benefits of digital learning in India.
- Online Teaching Tools and Methods. platforms will be updated with some set of tools such as two-way audio interface and two-way video that can help the teachers to conduct online classing and monitor the progress of students.
- Digital infrastructure: The new education policy will include some investment in the creation of public digital and interoperable infrastructure that can be utilised by multiple platforms.
- Training for Teachers and Blended models of learning: Teachers will be trained to use online learning tools and platforms.

- Virtual Labs: Some digital platforms such as SWAYAM, SWAYAMPRABHA and DIKSHA will be asked to create some virtual labs where students can practice their theoretical knowledge. These labs will be equipped with all tools for improving the hands-on experiment-based learning experiences.
- Availability of Courses in Different languages: television, community radio and radio will be utilised for telecast and broadcasting purposes so that the students who can't access the digital media.
- Online Assessments and Examination: Some government bodies such as School Boards, NTA, proposed National Assessment Centre or PARAKH will work on designing a new assessment framework.
- Digital repository, Content creation and Dissemination: The system will be provided with the public system for rating by the user to analyse the quality and effectiveness backup system will also be provided for the dissemination of e-content to students.
- Standards of Online Learning: The standard of the content, pedagogy and technology for the digital education will be set by the NETF and other appropriate bodies enabling the government to set guidelines for classrooms, e-learning and methods for digital learning in India.
- Creating a Dedicated Unit for Digital Education: This centre will comprise of experts from the field of education, educational technology, administration, e-governance, digital pedagogy and IT.

There are many other things that are mentioned in the New Education Policy (NEP) 2020 such as introducing coding from class 6th, flexible choice of subjects from 9th to 12th and activity-based learning below class 2nd.

Challenges

Along with the advantages like credibility, providing core vocational skills, comfortable learning ways and pace, motivation to the learner and disadvantages like (distracting, unreliable resources, issues of privacy etc.) e-learning is also associated with challenges such as

- ❑ Resource and internet connectivity related challenges: Poor internet connectivity, inaccessibility & illiteracy in the field of digital technology in rural areas and some part of urban areas. To assist such problem government has planned for the way forwards like BHARATNET, PM –WANI.
- ❑ Shortage of trained teachers: lack of interest in digital teaching, fear of replacement by digital medium, overflow of information through digital learning resources. To handle the difficulties there is need for digital training and campaigns for teachers and parents
- ❑ Content related Challenge: Pushing all the digital content in all regional languages used in India becomes difficult for the agencies hence digital learning in diverse languages, translators must be encouraged.

Implementation: Many measures were taken to encourage the digital education. Some of them are as follows

- Campaign through media to bring awareness and encourage about digital learning.
- Provide financial support to learners using study loans, paid leaves or study allowances and low cost digital devices.
- Indian states also upheld the technology based learning through some of the digital initiatives such as Makkalavani, Parikshavani (Karnataka), VidyaVaradhi, Vidyakalasham, Vidyamrutham (Andhra Pradesh), GyanBriksha, Biswavidya (Assam), Akshara Vriksham (Kerala), Bolki BalBharati (Maharashtra) and also including other TV and Radio lessons.
- Effective implementation of New Education Policy, PM-WANI, BHARATNET, PM eVidya programme and others etc.

Conclusion

Digital technology provides better learning experience for the learners through easy wide range collaboration, reducing work load, providing instant results and feedback. Learning is skills acquired through the study, expertise or instruction. Online learning is the re-imagining of the tutorial method that maximizes the interaction with geographically ranged students. The elements of e-learning and traditional learning include similar factors such as motivation, content stimulus, opportunities, an assessment equipped with quizzes, tests, demonstrations and finally rewards and grades. Along with being cost effective, digital tools and technologies are flexible to incorporate the innovativeness in conventional education system for enhanced motivation towards the learners' goals. Further to bridge situational, institutional, behavioural and other learning barriers, educational institutes should develop flexible programmes, selective course facility, provision for media campaign and financial assistance for strengthening the education system.

References

Komolafe B F, Fakayode O T, Osidipe A, Zhang F, and X Qian, 2020, Evaluation of online pedagogy among higher education International students in China during the COVID-19 Outbreak. *Creative Education,* 11: 2262-2279.

Digital quality of life 2020., 2021, Journals of India: https://journalsofindia.com/digital-quality-of-life-index-2020/

Jena P, 2020, Online learning during lockdown period for covid-19 in India. *International Journal of Multidisciplinary Education and Research*, **9**:82-92.

Manu S and Virender S, 2014, E-learning: usage among Indian students. *International Journal of Scientific and Engineering Research,* 5:1353-1360.

Naila B and Crystal D, 2019, Barriers to learning. https://edtech.worlded.org/barriers-to-learning-part-1/ & https://edtech.worlded.org/barriers-to-learning-part-2/ .

Population Pyramid.net, 2019., India 2020. "Population Pyramids of the World from 1950 to 2100".

Sandhya K, 2020 (a), Number of internet users in India 2015-2025. India: Statista Digital Market Outlook. https://www.statista.com.

Sandhya K, 2020 (b), Number of mobile users in India 2015-2023. https://www.statista.com.