Journal of Contemporary Issues in Business and Government Vol. 27, No. 2,2021
https://cibg.org.au/

P-ISSN: 2204-1990; E-ISSN: 1323-6903
**DOI: 10.47750/cibg.2021.27.02.463**

# Digital Learning Ecosystem at Indian Higher Education System

**Anjani Kumar Bhatnagar**
Scholar Faculty of Management Studies Quantum University Roorkee, India
anjani.kb@gmail.com
**Dr. Uday Khanna**
Associate Professor Faculty of Management Studies Quantum University Roorkee, India
khannauday77@gmail.com
**Dr. Ajay Rana**
Professor Engineering & Technology Amity University Uttar Pradesh Noida, India
ajayphdmba@gmail.com

**Abstract:** Within a fleeting period, Digital Learning Tools and Applications, have taken a contemplative space in the lives of every individual, across all spheres ranging from homes to offices, education to businesses. This study investigates the significance and the contribution of Artificial Intelligence enabled Learning Tools in dealing with VUCA world challenges at the Indian Higher Education Institutions. Digital Learning Ecosystem will be a gamechanger in mounting the reputation of the Indian Education System by offering best-in-class education to every citizen envisaged through National Education Policy 2020 across the nation. Optimization of AI-enabled teaching-learning tools in India demands strong strategies, training, and investment through public-private initiatives. Artificial Intelligence- powered Digital platforms will flourish in Indian Education System but there will be a compelling need for a strong & viable heterogeneous paradigm to meet the expectations of students and raise the bar of teaching being divulged to students in India.

**Keywords**: Artificial Intelligence, Digital Learning, Ministry of Education, National Education Policy 2020, VUCA World

## 1 An Overview

The enhanced collaboration of human beings with machines is resulting in evolutions in the field of Artificial Intelligence, more solutions coming out of the research labs, and entering the mainstream of businesses (Zheng, Liu, Ren, et al., 2017). The visible results with the emergence

P-ISSN: 2204-1990; E-ISSN: 1323-6903
**DOI: 10.47750/cibg.2021.27.02.463**

and integration of Artificial Intelligence are highly staggering. As per the (PWC's: Global Artificial Intelligence Study, 2017), the AI industry could be worth more than $15 trillion by 2030, Cognitive Technologies such as robots, AI, Machine learning, and automation will replace 16% of jobs by 2025. Experts of technology & education are of the opinion that the advancement of artificial intelligence carries huge potential to transform the higher education than any other technological advances. (Klutka et al., 2018) mentioned the goals that AI demonstrates in higher education: Increase outcomes, increase access, increase retention, Lower cost & Decrease time to completion. Appropriate use of AI Tools is helping the education industry in personalizing the learning experience (Rouhiainen, 2019). Due to the unparalleled & sudden outbreak of pandemic, COVID 19 the education industry has got completely transformed from physical to virtual format well supported by AI enabled Applications & solutions (Pokhrel, S., & Chhetri, R., 2021).

Earlier studies were based on the possibilities that Artificial Intelligence carries and to deliver a refined analysis of how Artificial Intelligence is transforming the business operations and consequently the global economy (Soni, Sharma, Singh, Kapoor, 2020; Furman & Seamans, 2019). There is little research about the role of Artificial Intelligence in facing the VUCA (volatility, uncertainty, complexity, and ambiguity) World scenario i.e., global pandemic and at the same time complexities that administered while adopting the AI enabled solutions in Indian Higher Education System (Waller, Lemoine, Mense, Garretson, Richardson, 2019); Ramesh & Natarajan, 2019). Therefore, the aim of this study is to analyze the role of Artificial Intelligence & its application in combating the VUCA World Challenges & identify the gaps that the Indian higher education system has been experiencing in transitioning from physical to AI enabled virtual format. To do so, pandemic COVID 19 situations that have been correlated with the VUCA world metaphor to comprehend the role of AI alongside the transitioning of physical mode of education to the AI powered virtual format in Indian Higher Education Context have been investigated. The research questions (RQs) that emerged are as follows:

RQ1- How the Artificial Intelligence- powered Digital Learning Tools turned out to be a savior for Higher Education Institutions in fighting against the global pandemic?

RQ2- What are the components to integrate with Higher Education System to optimize student learning with the help of AI- enabled ecosystem envisaged under NEP 2020?

The contributions of this research are threefold. Firstly, it will provide a focus area for governments, institutions of learning, and businesses to invest more in the field of Artificial Intelligence due to its deeper penetration and demand amongst the youth. Secondly, it provides valuable insights into the challenges experienced by students & educational setups ups in India in using AI-enabled platforms in conducting virtual sessions. Thirdly, we suggest the key elements to get integrated into the education system for an enhanced learning experience and avoid social and financial biasing leading to inequalities amongst the students.

This article is structured as follows: Section 2 contains the literature survey i.e., the concept of Artificial Intelligence and its emergence, the study of VUCA world challenges with special reference to the global pandemic COVID 19 and theoretical foundation. Then, in Section 3 it

P-ISSN: 2204-1990; E-ISSN: 1323-6903
**DOI: 10.47750/cibg.2021.27.02.463**

presents the Artificial Intelligence contribution in Higher Education, followed by Section 4 which covers available digital learning modes used for content dissemination. Sections 5 & 6 contain the analysis, results, discussion, and conclusion of the study, respectively.

## 2 Literature Survey

India is regarded for its wealthy & globally recognized culture and heritage (Kapur 2018). Guru (Teacher)- Shishya (Student) relation is regarded as the most pious & cherished tradition in India (Bhavani 2020). It is very much stated & apparent from the broad range of examples that the accomplishment of students is directly connected with the preeminence of educator or instructor and the philosophies being imparted (Kaplan & Owings 2001). It is obvious to mention here that, efforts and sincerity from students are also desired to perceive the forecasted results (Jaegar & Freeman, 2010). Unlike primitive days, the use of Computers & Aided Technology in routine sessions, classroom teachings have become common (Raja & Nagasubramani, 2018). The delivery from the teacher's point as well as the descriptions/ assignments prepared by students are majorly performed and showcased with the help of Computer-Based Applications (Andoh & Totimeh 2012). These computer-based applications have turn out to be a part of the existence of every individual (Tosun & Baris, 2011).

The governments are promoting and spending immensely in the areas of AI- enabled Digital Learning (Discussion Paper NITI AAYOG, 2018) to support and add value to human intelligence and augment mankind in the manner they live and work. Even the recently announced New Education Policy (NEP) 2020, which consists of many revolutionary changes, situates strong emphasis on the overview of modern-day subjects such as Artificial Intelligence, Machine Learning, Virtual Reality, Design Thinking amongst many at relevant stages which will be undertaken to develop related skills amongst students at all levels (National Education Policy, 2020).

National Education Policy- 2020 will be going to replace the National Policy on Education with was released in 1986, is a comprehensive framework focusing on the elementary level of teaching to the education & teaching being imparted at the higher education level in the country (Panditrao, 2020). The desired changes or the reforms which NEP 2020 has brought are much needed to shift the focus of government & individual from fairness and accessibility of education to the disposal of superior edification to every citizen of this nation with an intent to hone the intrinsic skills of individuals and make them apt for the global scenarios (Aithal & Shubhrajyotsna, 2020). Through NEP 2020 the higher education system in India is moving from teacher-centric to student-centric, information-centric to knowledge-centric, marks-centric to skills-centric, examination-centric to experimental-centric, learning-centric to research-centric, and choice-centric to competency-centric (National Education Policy, 2020).

The use and relevance of digital learning tools start from the kindergarten stage which gradually increases till higher education. Irrespective of subjects of study, the use of computer applications is unavoidable (Habib 2017). Information Communication Technology is playing a significant role as a strong catalyst, adopted by almost every educational institution for conducting various

P-ISSN: 2204-1990; E-ISSN: 1323-6903
**DOI: 10.47750/cibg.2021.27.02.463**

activities such as online examinations, assessments, evaluations, making online payments, retrieving electronic manuscripts and papers. The utilization of computers- based applications at establishments of higher education in cultivating the teaching-learning process (Iskrenovic 2018), providing the facility of digital learning to millions of students who are not able to avail the advantages of higher education due to numerous limitations. Upon Graduating, the use of these applications is immensely desired in carrying out routine activities at the professional front (Peng 2017).

Profound availability of such applications, software, devices, and services are merely not sufficient if we do not have skilled manpower to utilize its benefits (Bruun 2018). In the recent past, strong emphasis is laid on computer training by public and private organizations. This has also helped in raising the understanding amongst the youth. When the entire world come to standstill due to the unexpected occurrence of Novel Corona Virus, COVID 19, these are the availability of Computer Applications and a literate set of people across organizations, schools, and colleges which is continuing to help us to have continued learning and functioning of businesses in the digital format (Jain, 2020, Rana, et al 2020). The contagion, COVID 19, has resulted in schools, colleges, and universities (all formats of academic institutions) closing their buildings for conducting face-to-face classes. For almost a year, post announcements of mandatory lockdown, the sessions/ lecture/ classes by schools, and institutions of higher educations have gone completely virtual and continued their routine deliveries (Chua & Valencia, 2020). The examinations, assessments, announcements of results have completely gone virtual at all education institutions in India and abroad, whereas U1, U2, U3, U4 etc are the other possible applications of AI in the education system Fig. 1.

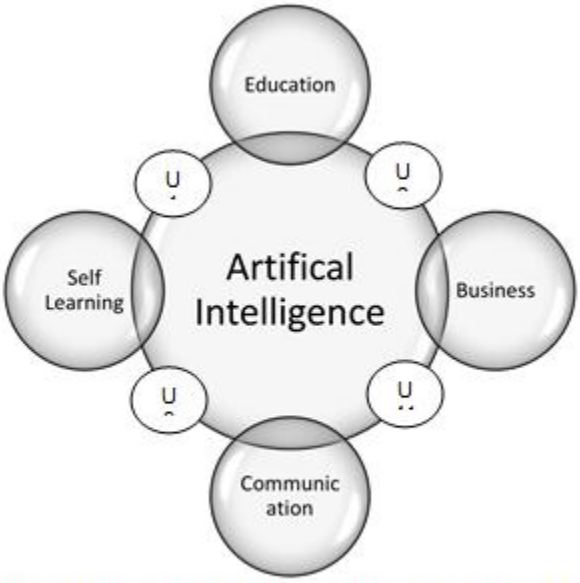


Fig. 1. Integration of AI- enbaled Digital System at all Levels in Education System [akbhatnagar, et al]

Digitalization is making the lives of people easy, effective, and fast. In most nations such as India, where technology is at a growing phase there is a huge knowledge gap and need for understating towards optimum utilization of AI- Powered Digital Learning Systems (Anisha

P-ISSN: 2204-1990; E-ISSN: 1323-6903
**DOI: 10.47750/cibg.2021.27.02.463**

2017). Looking at the current scenario, witnessing mounting interest of governments as well as the corporate segment into the field of Digitalization there is no scope of getting away or minimize the use of virtual landscape (West & Allen 2018). Digital Learning Tools will be advancing and penetrating deeper into our lives and making us dependent on technology.

### 2.1 AI & its Significance in Education System

Artificial intelligence has become a usual term these days but still, we can consider it as an evolving technology, aiming to enhance the the creation of logical calculation of answers, amounts, results systems that going to represent smart and adaptive behaviors, with a strong ability to learn from its surrounding, just like human beings (Davenport, T. H., & Ronanki, R., 2018). Artificial Intelligence "refers to programs, algorithms, systems, and machines that demonstrate intelligence" (Shankar 2018, p. vi), is "manifested by machines that exhibit aspects of human intelligence" (Huang and Rust 2018, p. 155), and involves machines mimicking "intelligent human behavior" (Syam and Sharma 2018, p. 136). It depends on several key technologies, such as machine learning, natural language processing, rule-based expert systems, neural networks, deep learning, physical robots, and robotic process automation (Davenport 2018).

On huge scales schools & higher education institutes are using Artificial Intelligence Based products in their regular mode of teaching to enhance the student knowledge environment & experience (Ramesh & Natarajan, 2020). As we can see that Artificial intelligence carries huge scope in terms of research, innovation, as well as employments, governments across the globe, are putting an extreme focus on learning new-age skills and modification of curriculum with cutting- edge technologies like Artificial Intelligence (OECD, 2016).

The possibilities with Artificial Intelligence are endless. In context to Higher Education on macro- level the contribution of AI can be classified as Institutional (Schools, Colleges, Universities, Training Centers are using AI platforms for the conduct of classes, assessments, evaluations, engagements; Live Surveys, Admissions, Payment of fees etc); Students Support (Browsing the content, Connect with peers and teachers, Anytime Accessibility); Delivery of Content (Self-Paced, Wide Range of Content, Choice Based) (Zawacki-Richter, et al 2019; Rana et al 2019) Fig.2:

P-ISSN: 2204-1990; E-ISSN: 1323-6903
**DOI: 10.47750/cibg.2021.27.02.463**

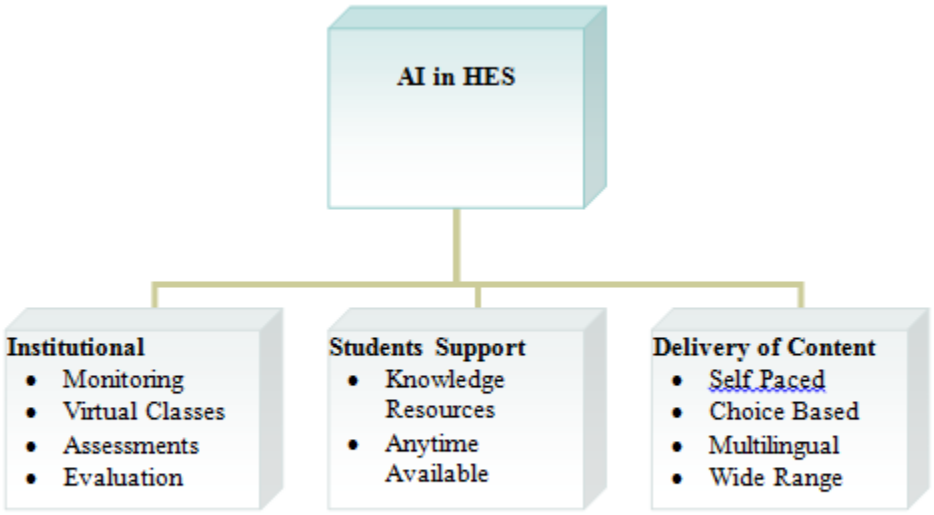


Fig. 2. Artificial Intelligence Application in Higher Education

## 2.2 Savior in the VUCA World

It was the US Army who first coined the term VUCA, an acronym for volatile, uncertain, complex, and ambiguous circumstances or environment to elucidate the untoward situations that accounted with the end of the cold war (Bennis & Nanus, 1985). Since then, the think tanks, industry stalwarts, bureaucrats, politicians, and other decision-making people have been applying this methodology to deal with troublesome situations to understand, examine and battle against the external factors influencing their businesses. There is a massive shift in the way of thinking and conduct of businesses across domains within a decade. Enhanced & frequent variations taking place on the global front in businesses of all formats due to various reasons ranging from political to economic, social to technological, creating the corporate world increasingly VUCA (Sarkar A., 2016).

The acronym "VUCA (Volatile, Uncertain, Complex, Ambiguous)" perfectly goes with the sudden outbreak of Novel Corona Virus, COVID 19 which has resulted in devastations across business, economies, in one word to the entire human race. Organizations at global and domestic levels are experiencing the highest levels of ambiguity due to the COVID-19 pandemic, the influence of which is unprecedented (Nangia & Mohsin, 2020). The sudden outburst of The Covid-19 pandemic has resulted in an unavoidable push in the implementation and execution of computer-based application/ digital world to meet out the mandatory guidelines of social distancing and adopting the working from the home environment as the new normal (Savic, 2020).

The role of information technology in higher learning is to enhance human thinking and to strengthen the educational process, not to reduce it to a set of procedures for content delivery, control, and assessment (Popenici & Kerr, 2017). Since the emergence of COVID 19 was sudden, no one across the globe was knowing the fate of this pandemic. Businesses have resulted

P-ISSN: 2204-1990; E-ISSN: 1323-6903
**DOI: 10.47750/cibg.2021.27.02.463**

in huge losses, nations witnessed major unemployment, fall of economies, stress, and loss of mental peace. Service Sectors to Products, commerce education, every format of business experienced loss. With a robust desire to move on and minimize the damages caused by COVID 19, businesses across got completely transitioned from physical to virtual, wherever possible. Many IT Giants, Development organizations announce a minimum of 6 months to 24 months of work from home for their employees, which does not allow or ask them to come office and perform their duties. Schools, institutes of higher education, legal proceedings, virtual courts, e-commerce every possible service started their functioning in the virtual environment (Muller, 2016).

This sudden evolution would not have been feasible without basic literacy on which an exclusive emphasis is laid by the government and school of elementary education. The system could manage to survive because of the abundant availability of Computer Applications. Some of the services &/ or products that are still helping us to stay safe during pandemic include: 1) Internet Connectivity, 2) Open-Source Software, 3) Social Networking Applications, 4) OTT Applications for entertainment, 5) Digital payment Applications, 6) E-Commerce, 7) Interactive Learning platforms & 8) Digital Classrooms (Aithal & Shubhrajyotsna, 2019, Rana, et al 2019).

It seems to be a little impractical to see a world without AI in our routine lives. One can relate it with some of the AI-driven environment which users experience in their everyday life (Fig. 3):

| S.NO. | Activity | Significance due to Integration of AI |
|---|---|---|
| 1 | Unlocking the hand-held device with facial recognition | With the support of AI and ML algorithms, millions of people use this application to unlock their cell phones numerous times throughout the day |
| 2 | Social Media | The content that users experience while browsing social media platforms is major because of personalization done by AI working at the backend |
| 3 | Writing email or message | The AI algorithms working at the backends autocorrect or spell check the text written. This minimizes the chances of typos. |
| 4 | Anti Virus | The ML used by antivirus acts spontaneously to detect the malicious software of email entered the machine and keep your data safe |
| 5 | Spam filters | The integrated AI / ML algorithms keep its user well informed about the promotions, advertisements, spams by autodetecting and keeping them separated from primary or important emails. |
| 6 | Google Search | Basis the activity of the operator and the items searched in the past, new suggestions, and advertisements roam around which is only because of the assistance of AI |
| 7 | Secure Banking (Digital) | Right from updating the user about the low balance alert to managing the transactions in a secured manner, AIR performs its duties silently at the backend. |
| 8 | OTT Apps (Netflix, Prime etc) | These companies have AI-powered recommendation engine working at the back which basis the viewer's search/ watch history suggests new content |

Fig. 3. Use of AI in everyday lives

Simultaneously, the implementation & use of Artificial Intelligence cannot be neglected especially at times of outbreak of a pandemic. Major applications like MS Teams, Zoom Meetings, CISCO WebEx, Google Meet, etc. have kept all the people connected and engaged.

P-ISSN: 2204-1990; E-ISSN: 1323-6903
**DOI: 10.47750/cibg.2021.27.02.463**

This has turned out to be an ultimate tool to interact, learn and exchange knowledge (Poola, 2017). With the exhaustive integration and use of AI through NEP in India's education system, all the processes at educational institutions will be more effective, Fig. 4.

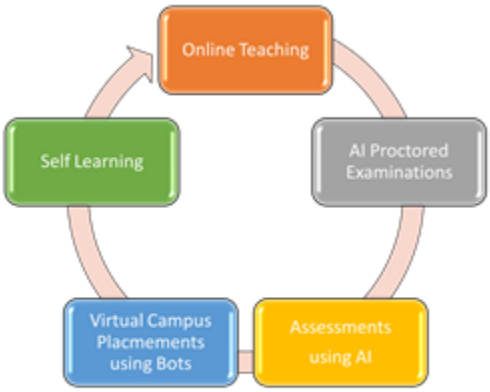


Fig. 4. Areas of Integration of AI at Educational Institutions [akbhatnagar, et al]

## 3 APDL in Indian Education System

APDL (AI- Powered Digital Learning), is the solution for entire education fraternity. With the outbreak of Pandemic, COVID 19 the only solution to keep the education continuing was the availability of Online Resources, required infrastructure, and hardware along with a literate team of experts on either side i.e., students as well as teachers (OECD, 2020). But the decision to transition from physical to online does not determine the limitations related to the availability of resources at the remote level, the quality of virtual content, the hands-on training, or skills of resource persons over AI- enabled platforms, the convenience of parents, and the investments required at the household level (Joshi 2021).

The occurrence of virtual education at a remote level has brought in disparities amongst the learners originating from the different economical and geographical backgrounds (Rapanta, Botturi & Goodyear, et al., 2020). This even accounts for electricity to internet connection and even availability of digital devices like computers and smartphones. It is estimated that only about 25% of Indian households have an internet facility. For rural households, that number drops to 15% (UNICEF, Remote Learning Reachability report, 2020).

While speaking about online education, that not only roams around the provision of video tutorials or lectures delivered through the internet. It is way beyond and encompasses digital platforms, a range of digital content, digital ethics, and decorum, interfaces etc. this brings in the fact that only a limited portion of India is having access to digital content (education) (Desai, 2020). In rural parts of India, due to the unavailability of resources, routine lectures are getting shared by teachers over social media platforms for the convenience of students. Furthermore, the government also realized the restricted accessibility of resources and hence broadcasted the pre-videoed periods through television. Channels like Swayam Prabha on DTH platforms were made available and radio for audio lessons were aired through All India Radio, to accommodate

P-ISSN: 2204-1990; E-ISSN: 1323-6903
**DOI: 10.47750/cibg.2021.27.02.463**

broader student population that cannot appear in live online classes (Swayamprabha, DTH Channel, 2020).

Additionally, as per the report by Quacquarelli Symonds centered on usage of the internet in India indicates that both the state and the private players have not yet accomplished assured connectivity to all subscribers (QS I Guage, 2020).

## 4 Available Modes of Online Learning

The digital transformation of the education system in India and around the globe has become popular and each day becoming accessible to the masses. Youth is becoming cognizant and concerned about the future of education and expanding their knowledge horizons and identifying the best- suited learning options for them.

In a broader context, the profoundly recognized and promulgated formats of online education are categorized or grouped under synchronous and asynchronous, Fig. 5 (Jiménez, et al, 2016).

| *Format of online Education* | *Features* | *Advantages* |
|---|---|---|
| Synchronous | Online or Distance education that takes place in real- time, at specific time, and as per the schedule. | Happens Real- Time, Classmates & Instructors can connect and interact real -time |
| Asynchronous | Here the content is available all the time and as per the convenience students can access the lectures, as per their availability | As per own schedule, the material is available for reading, lectures for anytime review |

Fig. 5. Online Education Learning Format

## 5 Results and Discussion

The Application of AI powered digital learning tools indicates that they are the real game-changer for the entire human race (Rose, 2017; Rana et al 2019). The current study indicates that though the AI application and digital learning system in India is emerging, but its optimum utilization demands though investments, strategy and focus. India is comparatively underprepared in terms of Digital Infrastructure to support the transition of Physical to Virtual Learning System. Right from the hand-held devices i.e., mobiles to the classroom ecosystem every format of learning is being greatly influenced by the usage of Artificial Intelligence (OECD, 2019). Learning remains continued even in times of pandemic even when the entire world was under the influence of mandatory lockdown (Mishra, Gupta & Shree 2020). Due to semi-skilled/ skilled manpower nations across the globe, including India, could easily get transitioned from Physical to Digital World. This has helped educational institutions to extend their services constantly to their students. The parents/guardians of these students also welcomed this approach upon finding the continued learning of their children that too without compromising the safety guidelines laid down by the governments such as social distancing or work from home (Fisher, et al 2020).

P-ISSN: 2204-1990; E-ISSN: 1323-6903
**DOI: 10.47750/cibg.2021.27.02.463**

A high level of appreciation is also attributed to the elementary schools that have started offering computer-based education at the school level itself. Today's generation studying in institutions of higher education is pretty much familiar with the basics of computer application and the system software which could be of immense utility in continuing their education in unprecedented times. Secondly, a huge investment is done not only attainments of basic skills and training based on AI Tools in India many organizations independently or in collaboration with the government are investing in building AI Infrastructure (Nielsen, Round 2 Report, 2019). Availability of free software, cheap hardware with multiple options, high-speed internet, online platforms are all adding value to the vision of NEP 2020 of availability of quality education for all.

The NEP-2020 is not only emphasizing getting the youth trained on AI Tools & Applications but at the same time, it also envisages to have only trained manpower at the core, who have fair understanding and experience of using AI-based tools to meet out adversities as well as to engage students in the virtual environment. The government is targeting students from the Age of 6 years to start learning coding and other Artificial Intelligence- based applications under the NEP 2020. This is also raising the bar of learning and user experience. In this strategy, a huge amount of focus is also being laid on Virtual Reality & Augmented Reality. Students while sitting at their homes can have a hands-on, in-depth analysis of tools, techniques, and processes under discussion. Applications of Artificial Intelligence are also aiming to provide quality education to one and all under NEP 2020 who are having limitations due to geographical, financial, health issues or are affected due to the VUCA world challenges like CORONA (Soni et al, 2019).

It is regardless to mention that such advancements in the field of Artificial Intelligence and its products are also giving birth to newer business opportunities, entrepreneurial ventures, and related jobs. This is again in turn increasing the need of using AI in routine life as well as equipping our students with the latest trends in the field of AI (Rose, Holmes, Griffiths & Forcier, 2016). AI in addition to its wide range of services being available to the common man is playing a significant role for Educators. The lectures, presentations, talks are not only delivered online but at the same time also getting saved in the virtual worlds for their anytime view. This facility is also proving to be helpful for the students who are having a limitation in accessing physical learning setups beyond unprecedented times as well (Singh, Javaid, Haleem & Suman, 2020).

Ministry of Education needs to adopt a heterogeneous model to ensure learning in times of pandemic or any other unprecedented times or VUCA situations such as outbreak of pandemic COVID 19 (Srivastava, S. 2017). The scheme includes (UGC, NEP 2020):

i. Economical electronic devices which are satellite enabled runs on radio frequency such a Television or Radio to have continuous telecast of learning modules or lectures.

ii. Electronic Content to be made available in a polyglot format for the convenience of students and parents who have difficulties in understanding English

P-ISSN: 2204-1990; E-ISSN: 1323-6903
**DOI: 10.47750/cibg.2021.27.02.463**

iii. Dedicated Channels of Learning on Radio & Television with subject and class- specific lecture timings and an option to have re-telecast / choice- based review by the students
iv. Toll- Free Numbers to give small solutions or guidance to the students over cell phones or landline phones in case of poor internet connectivity
v. Integration of AI- Based Learning Modules from elementary schooling to make students aware of the basics of AI and its optimum utilization
vi. Regular Training Workshops for Faculty & Instructors to provide them hands-on exposure of AI- Enabled Digital Learning Tools
vii. Significant Online Learning software to be provided at no cost to students studying/ staying in rural areas
viii. Monthly sessions at the school level as well to be conducted for students who have difficulty in accessing the online content or unable to understand the concepts can directly learn from teachers at the institution
ix. Apart from enabling masses (teacher and students), the government also need to invest in development of strong AI Infrastructure which consists of Strong Internet Connectivity, Cheaply available devices, and most importantly electricity

Ministry of Higher Education should commence awareness of Artificial Intelligence as a part of the core academic offering at the Senior Secondary School Level. The major component of the curriculum is to make students aware of the applications of Artificial Intelligence in our daily life, the basics of AI, and the threats associated with Artificial Intelligence (Saha, 2020).

## 6 Conclusion

As we are moving on and getting ourselves adjusted following the pandemic situations by wearing compulsory masks, maintaining social distancing, basic hygiene, and sanitizations, etc. Governments have taken robust initiatives in developing vaccines to eradicate CORONA Virus from our lives but yes, the perfect execution will be a time-consuming process. AI was at one end has enabled masses to continue to have learned while sitting at home, it has adversely affected the teacher-student association. Learning live from teachers in the educational set-up which is equipped with all related resources and infrastructure as well as other students who also share their thoughts and learnings carries higher significance. Particularly in the perspective of India, where huge transitions have taken place from the physical to the digital world, students are still having a bent of mind to have live physical classrooms instead of a virtual environment. AI Application which at one end is growing the user understanding and proving vital for remote learning, physical classrooms are still desired at the core by parents as well as by students to also hone the personality and behavioral aspects of the students apart from core fundamental or subject knowledge.

Huge potential is being observed in the field of Hybrid Studies. There is a need for a perfectly managed virtual as well as physical environment for the students. Digital Textbook, Journals, Resource Material, VR experiences can be utilized but at the same time, live interaction with the

P-ISSN: 2204-1990; E-ISSN: 1323-6903
**DOI: 10.47750/cibg.2021.27.02.463**

colleagues and concerned faculty members is also desired. In addition to this, although we are advancing each day in the field of AI, investments are being done but it is equally important to make the curriculum of AI Applications and Tools more effective and elaborative at the school level as well. Apart from this government need to take robust initiatives to ensure the availability of required infrastructure even at the farthest or most remote area of the country.

Digitalization, Artificial Intelligence, Remote Learning, continuous learning, are all the synonyms to get used during the times of Pandemic. AI indeed carries huge potential and scope of learning. Artificial Intelligence is also carrying a special mention in the NEP 2020 Policy Document because the administration sees the need and potential in this emerging field of technology where India, being the youngest country across the globe could deliver quality education and expert manpower in the field of AI. Further Ministry of Education can also look forward to conducting nationwide mandatory pieces of training for educators for using various AI Applications. This paper has investigated the role of AI in the lives of the common man in times of pandemic and how effective the application of AI can be utilized in meeting the objectives of NEP 2020 and at what level the Ministry of Education should start the awareness or educate students of India under the vision of NEP 2020.

**References**

1. Zheng, Nn., Liu, Zy., Ren, Pj. et al. Hybrid-augmented intelligence: collaboration and cognition. Frontiers Inf Technol Electronic Eng 18, 153–179 (2017). https://doi.org/10.1631/FITEE.1700053
2. Soni, N., Sharma, E. K., Singh, N., Kapoor, A. Artificial Intelligence in Business: From Research and Innovation to Market Deployment, Procedia Computer Science, Volume 167, 2020, Pages 2200-2210, ISSN 1877-0509, https://doi.org/10.1016/j.procs.2020.03.272.
3. Pokhrel, S., & Chhetri, R. (2021). A Literature Review on Impact of COVID-19 Pandemic on Teaching and Learning. Higher Education for the Future, 8(1), 133–141. https://doi.org/10.1177/2347631120983481
4. Furman, J., Seamans, R. AI and the Economy. Innovation Policy and the Economy, 19 (1) (2019), pp. 161-191
5. Waller, R., Lemoine, P., Mense, E., Garretson, C., Richardson, M. (2019). Global Higher Education in a VUCA World: Concerns and Projections. doi:10.20849/jed.v3i2.613 URL: https://doi.org/10.20849/jed.v3i2.613
6. Kapur, R (2018) Travel and Tourism in India: A Developmental Perspective. Retrieved from https://www.researchgate.net/publication/323771220_Travel_and_Tourism_in_India_A_Developmental_Perspective
7. Bhavani, A (2020) Guru Sishya Parampara: The Reservoir Of Authentic Rishiculture Yoga. Retrieved from https://www.researchgate.net/publication/339310948_GURU_SISHYA_PARAMPARA_THE_RESERVOIR_OF_AUTHENTIC_RISHICULTURE_YOGA

P-ISSN: 2204-1990; E-ISSN: 1323-6903
**DOI: 10.47750/cibg.2021.27.02.463**

8. Kaplan, L. & Owings, W. (2001) Teacher Quality and Student Achievement: Recommendations for Principals. Retrieved from https://www.researchgate.net/publication/249794839_Teacher_Quality_and_Student_Achievement_Recommendations_for_Principals
9. Jaegar, B. & Freeman, S. (2010) Successful students: Smart or tough? Retrieved from https://www.researchgate.net/publication/289703786_Successful_students_Smart_or_tough
10. Raja, R. & Nagasubramani, P. C. (2018) Impact of modern technology in education. Retrieved from https://www.researchgate.net/publication/325086709_Impact_of_modern_technology_in_education
11. Andoh, C. & Totimeh, F. (2012). Teachers' innovative use of computer technologies in classroom: A case of selected Ghanaian schools. Retrieved from file:///C:/Users/ajbha/Downloads/EDICT-2012-1492.pdf
12. Tosun, N. & Baris, M. (2011) The Place and Importance of Computer and Internet's In Secondary School Students' Life. Retrieved from https://www.sciencedirect.com/science/article/pii/S1877042811025419
13. NITI AAYOG (2018) Discussion Paper. National Strategy for Artificial Intelligence, AI for All. Retrieved from https://niti.gov.in/writereaddata/files/document_publication/NationalStrategy-for-AI-Discussion-Paper.pdf
14. Ministry of Education. National Education Policy 2020 Document. Retrieved from https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf
15. Panditrao, M.M. & Panditrao, M.M (2020). National Education Policy 2020: What is in it for a student, a parent, a teacher, or us, as a Higher Education Institution/University? Adesh Univ J Med Sci Res 2020;2(2):70-9.
16. Aithal, P. & Aithal, S. (2020). Analysis of the Indian National Education Policy 2020 towards Achieving its Objectives, International Journal of Management, Technology, and Social Sciences. Vol. 5, No. 2. Retrieved from https://www.researchgate.net/publication/343769198
17. Habib, H. (2017) Role of ICT in Higher Education. IJCRT, Volume 5, Issue 4, ISSN: 2320-2882. Retrieved from https://ijcrt.org/papers/IJCRT1704371.pdf
18. Iskrenovic, O. (2018). Using Computers in Teaching in Higher Education. Retrieved from https://www.researchgate.net/publication/326546147_Using_Computers_in_Teaching_in_Higher_Education
19. Peng, G. (2017). Do computer skills affect worker employment? An empirical study from CPS surveys. Retrieved from https://doi.org/10.1016/j.chb.2017.04.013
20. Bruun, E. (2018). Artificial Intelligence, Jobs and the Future of Work: Racing with the Machines. Retrieved from https://www.researchgate.net/publication/329025467_Artificial_Intelligence_Jobs_and_the_Future_of_Work_Racing_with_the_Machines

P-ISSN: 2204-1990; E-ISSN: 1323-6903
**DOI: 10.47750/cibg.2021.27.02.463**

21. Jain, R. (2020) Crossroads of Artificial Intelligence: Higher Education and Research in India and China. Retrieved from https://www.researchgate.net/publication/345751651
22. M. Jaiswal, N. Gupta and A. Rana, "Real-time Traffic Management in Emergency using Artificial Intelligence," in IEEE 8th International Conference on Reliability, Infocom Technologies and Optimization (ICRITO' 2020), Noida, India, 2020, pp. 699-702, doi: 10.1109/ICRITO48877.2020.9197856.
23. Chua, C. & Valencia, L. (2020). The Role of Artificial Intelligence in Education Amidst of the COVID-19 Pandemic. Retrieved from https://www.researchgate.net/publication/343691393
24. Anisha (2017). Awareness and strategy to prevent Cybercrimes: An Indian perspective. Retrieved from https://www.worldwidejournals.com/indian-journal-of-applied-research-(IJAR)/recent_issues_pdf/2017/April/April_2017_1491813996__147.pdf
25. West, D. & Allen, J. (2018). How Artificial Intelligence is Transforming the World. Retrieved from https://www.brookings.edu/research/how-artificial-intelligence-is-transforming-the-world/
26. Davenport, T. H., & Ronanki, R. (2018). Artificial intelligence for the real world. Harvard Business Review, 96(1), 108–116.
27. Shankar, V. (2018). How artificial intelligence (AI) is reshaping retailing. Journal of Retailing, 94(4), vi–xi.
28. Huang, M. H., & Rust, R. T. (2018). Artificial intelligence in service. Journal of Service Research, 21(2), 155–172.
29. Syam, N., & Sharma, A. (2018). Waiting for a sales renaissance in the fourth industrial revolution: Machine learning and artificial intelligence in sales research and practice. Industrial Marketing Management, 69, 135–146.
30. Davenport, T. H. (2018). The AI advantage: How to put the artificial intelligence revolution to work. MIT Press.
31. Ramesh, S. & Natarajan, K. (2019). Artificial Intelligence for Educational Applications in the Context of Prime Minister's New Education Policy (NEP). Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3429541
32. OECD (2016), Innovating Education and Educating for Innovation: The Power of Digital Technologies and Skills, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264265097-en
33. Zawacki-Richter, O., Marín, V.I., Bond, M. et al. Systematic review of research on artificial intelligence applications in higher education – where are the educators?. Int J Educ Technol High Educ 16, 39 (2019). https://doi.org/10.1186/s41239-019-0171-0
34. M. Nagaraju, P. Chawla, A. Rana, " A Practitioner's Approach to Assess the WCAG 2.0 Website Accessibility Challenges" in Proceedings - 2019 Amity International Conference on Artificial Intelligence, AICAI 2019, pp 958-966 (2019).
35. Bennis, W. and Nanus, B. (1985). Leaders: The strategies for taking charge. New York: Harper & Row. https://doi.org/10.1002/ hrm.3930240409

P-ISSN: 2204-1990; E-ISSN: 1323-6903
**DOI: 10.47750/cibg.2021.27.02.463**

36. Sarkar, A. (2016). We live in a VUCA World: the importance of responsible leadership. Retrieved from https://www.researchgate.net/publication/303317070

37. Nangia, M. & Mohsin, F. (2020). IDENTIFYING VUCA FACTORS IN A PANDEMIC ERA - A FRAMEWORK FOCUSED ON INDIAN IT INDUSTRY, Journal of Critical Reviews. Vol 7, Issue 7. Retrieved from http://www.jcreview.com/fulltext/197-1590054929.pdf

38. Savić, D. (2020). COVID-19 and Work from Home: Digital Transformation of the Workforce. Retrieved from https://www.researchgate.net/publication/341493908_COVID-19_and_Work_from_Home_Digital_Transformation_of_the_Workforce

39. Popenici, S. & Kerr, S. (2017). Exploring the impact of artificial intelligence on teaching and learning in higher education. Retrieved from https://telrp.springeropen.com/articles/10.1186/s41039-017-0062-8

40. Muller, V. (2016). Editorial: Risks of Artificial Intelligence. Retrieved from https://www.researchgate.net/publication/283546074

41. Aithal, S. [Sreeraman]. (2019). Analysis of Higher Education in Indian National Education Policy Proposal 2019 and its Implementation Challenges, Sreeramana Aithal Shubhrajyotsna, Srinivas University. Retrieved from https://www.researchgate.net/publication/334326756

42. H. Walia, A. Rana, V. Kansal, "Case Based Construal using Minimal Features to Decipher Ambiguity in Punjabi Language" in Proceedings - 2019 Amity International Conference on Artificial Intelligence, AICAI 2019, pp 977-980 (2019).

43. Poola, I. (2017). How Artificial Intelligence in Impacting Real Life Every day. Retrieved from https://www.researchgate.net/publication/321348028_How_Artificial_Intelligence_in_Impacting_Real_Life_Every_day

44. OECD (2020). Supporting the continuation of teaching and learning during the COVID-19 Pandemic. Annotated resources for online learning

45. Joshi, S. (2021), "Rising importance of remote learning in India in the wake of COVID-19: issues, challenges and way forward", World Journal of Science, Technology and Sustainable Development, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/WJSTSD-10-2020-0079

46. Rapanta, C., Botturi, L., Goodyear, P. et al. Online University Teaching During and After the Covid-19 Crisis: Refocusing Teacher Presence and Learning Activity. Postdigit Sci Educ 2, 923–945 (2020). https://doi.org/10.1007/s42438-020-00155-y

47. United Nations Children's Fund, "Covid-19: Are children able to continue learning during school closures? A global analysis of the potential reach of remote learning policies using data from 100 countries." UNICEF, New York, 2020.

48. Desai, R. (2020). Digital Learning (Digital Education). Retrieved from https://drrajivdesaimd.com/2020/08/03/digital-learning-digital-education/

49. SWAYAMPRABHA, DTH Education Channel. https://www.swayamprabha.gov.in/index.php/program/archive/2

P-ISSN: 2204-1990; E-ISSN: 1323-6903
**DOI: 10.47750/cibg.2021.27.02.463**

50. QS I Guage (2020). COVID-19: A wake up call for telecom service providers.
51. M. Jiménez, S. Bartolomei-Suárez, Y. Ochoa and W. Santiago, "A synchronous distance education hybrid model of college-level credits for high-school students," 2016 IEEE Frontiers in Education Conference (FIE), Erie, PA, USA, 2016, pp. 1-5, doi: 10.1109/FIE.2016.7757723.
52. Charlie, R. (2017). Artificial intelligence positioned to be a game-changer. Retrieved from https://www.cbsnews.com/news/artificial-intelligence-positioned-to-be-a-game-changer/
53. OECD (2019), Artificial Intelligence in Society, OECD Publishing, Paris, https://doi.org/10.1787/eedfee77-en.
54. M. S. Meena, P. Singh, A. Rana, D. Mery, M. Prasad, "A Robust Face Recognition System for One Sample Problem", in Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), pp 13-26 (2019).
55. Mishra, L., Gupta, T., Shree, A. (2020). Online teaching-learning in higher education during lockdown period of COVID-19 pandemic, International Journal of Educational Research Open, Volume 1, 2020, 100012, ISSN 2666-3740, https://doi.org/10.1016/j.ijedro.2020.100012.
56. Jenny Fisher, Jean-Charles Languilaire, Rebecca Lawthom, Rense Nieuwenhuis, Richard J. Petts, Katherine Runswick-Cole & Mara A. Yerkes (2020) Community, work, and family in times of COVID-19, Community, Work & Family, 23:3, 247-252, DOI: 10.1080/13668803.2020.1756568
57. Soni, N., Sharma, E., Singh, N. & Kapoor, A. (2019) Impact of Artificial Intelligence on Businesses: from Research, Innovation, Market Deployment to Future Shifts in Business Models. Retrieved from https://www.researchgate.net/publication/332898261
58. Nielsen, Internet and Mobile Association of India, Digital in India: 2019 – Round 2 Report.
59. Rose, R.; Holmes, W.; Griffiths, M.; Forcier, L.B. Intelligence Unleashed. An Argument for AI in Education; Pearson: London, UK, 2016.
60. Singh, R. P., Javaid, M., Haleem, A., & Suman, R (2020). Internet of things (IoT) applications to fight against COVID-19 pandemic. Retrieved from https://www.researchgate.net/publication/341159377_Internet_of_things_IoT_applications_to_fight_against_COVID-19_pandemic
61. Christie, M.; de Graaff, E. The philosophical and pedagogical underpinnings of Active Learning in Engineering Education. Eur. J. Eng. Educ. 2017, 42, 5–16.
62. Srivastava, S. (2017). DIGITAL INDIA-MAJOR INITIATIVES AND THEIR IMPACT: A CRITICAL ANALYSIS. ELK ASIA PACIFIC JOURNAL OF MARKETING AND RETAIL MANAGEMENT ISSN 2349-2317 (Online); DOI: 10.16962/EAPJMRM/issn. 2349-2317/2015; Volume 8 Issue 3 (2017) UGC. NEP 2020 Document. Retrieved from https://www.ugc.ac.in/pdfnews/5294663_Salient-Featuresofnep-Eng-merged.pdf
63. Saha, M. (2020). EDUCATION LAW AND ORDER NEWS RESEARCH PAPER, National Education Policy 2020. International Journal of Research (IJR), Retrieved from https://internationaljournalofresearch.com/2020/07/30/national-education-policy-after-2020/