

**Digitalisation, Online Learning and Virtual World**Sudhakar Patra<sup>\*1</sup> and Kabita Kumari Sahu<sup>2</sup><sup>1</sup>Berhampur University, Ganjam, Odisha, India<sup>2</sup>North Orissa University, Baripada, Odisha, India**ARTICLE INFO***Article history***RECEIVED:** 26-Jun-20**REVISED:** 25-Sep-20**ACCEPTED:** 29-Sep-20**PUBLISHED:** 15-Oct-20**\*Corresponding Author**

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Author 2: [kabitasahu69@gmail.com](mailto:kabitasahu69@gmail.com)**ABSTRACT**

The objective of the paper is to analyse the process of digitization, progress and challenges of online teaching and learning. The paper is based on secondary sources of information and data. The digitalisation has influenced the social and economic activities of the world drastically. Educational practices and policies, particularly, online teaching and learning has emerged as consequence of digital turn. Online education has a pedagogical shift in teaching and learning methods. However, online learning is a new form of distance learning, which has following types:

1. Correspondence Courses, 2. Tele-courses 3. CD-ROM Courses 4. Online Learning through ZOOM, Skype, Google Meet 5. Mobile Learning through WhatsApp etc. Online learning is capable of satisfying the requirements of increasing student population who cannot join in traditional classrooms. The benefits of online teaching and learning are (i) Convenience (ii) Enhanced Learning (iii) Bridging regional gaps (iv) Interaction (v) Innovative Teaching (vi) Improved Administration (vii) Savings (viii) Maximisation of Resources (ix) Outreach. The education sector is adopting online education system and virtual classes are the best solution to protect the students from spread of corona virus.

**Keywords:** Internet, New Normal, Online Learning, Teaching, Users, Virtual World.**Introduction**

The corona virus pandemic has disrupted the traditional class room education system of learning in the entire world. In the age of digitization and internet, there is paradigm shift to online teaching and learning for physical distancing of students as a safety measure for corona virus infection. Digitalisation implies to the activities in social and economic life which are restructured around digital communication. The digitalisation has influenced the social and economic activities of the world drastically. A 'digital' or 'virtual' world is the reality due to the quick spread of Internet, computers, laptops, tablets and smart mobile phone within last 20 years. Educational practices and policies, particularly, online teaching and learning has emerged as consequence of digital turn. Digitalization reflects the characteristics of contemporary modern society. The digital revolution

has made this world a village. The planners and policy makers emphasize on robot technology, artificial intelligence, the protection of information and data, education, banking, democratic electoral process, etc in close relation with digitalisation. The digital movement significantly influences different teaching and learning methods, policies and practices. The online methods of teaching and learning have gained rapid momentum in recent years, particularly after outbreak of corona virus. The new, digital media are omnipresent everywhere. The digital media and communication have become the new normal. The political changes including election campaign are extensively using social online platforms and media such as Facebook and Twitter which influence the public strongly. In this context the objective of the paper is to focus on online teaching and learning with benefits and limitations. The study is based on purely secondary data and information.

## Online Learning

Online teaching and learning refers to education, which distributes knowledge between the students and teachers over the internet. This is also called as “e-learning” and sometimes called as ‘distance learning’. It is estimated, that the e-learning market size in India was 247.00 million USD in 2016 and the number of users are 1.6 million. The online learning market shall witness significant growth which may touch 1.96 billion USD and the current user may increase at 44 percent with number of users at 9.6 million by 2021. The e-learning market in India is after the USA is estimated to be the second largest. It is expected that the growth rate of India’s e-learning market will be 15.64 percent and exceed \$48 billion by 2020. Due to significant growth in internet and smart phone penetration both in rural and urban areas in India, the online education is gaining momentum. The number of internet users was 432 million in 2016, which is expected to be approximately 730 million by 2020 almost double in four years.

Online teaching and learning is the modified form of distance education system which is most popular in modern times for those who can not attain traditional classroom. After the outbreak of COVID-19, all universities, colleges and schools have started online classes as the only method of teaching which completely substituted traditional class room type of teaching. The trend of online teaching, training, seminars and conferences is increasing significantly during last few months. Knowledge and information are accessible almost at any time and any place. This online learning create opportunities but also risks for educational practices. Social media is new form of diverse educational activities. University Grants Commission (UGC) in India has started open online courses (MOOCS) which are regarded as the new methods to democratize higher education. Online or Distance learning has a long history, which was suitable for service holders and people residing at far-off places. There are several types distance learning available today which are as follows:

- *Correspondence Courses which are conducted through regular mail/post of study materials with little interaction between the teachers and students.*
- *Online learning which Internet-based courses are offered by educational institutions.*
- *Tele-courses in which lessons are delivered to the students with the help of television broadcast or radio.*
- *CD-ROM Courses in which the students regularly interact with contents of static computer.*

- *Mobile Learning which takes place with the help of digital audio players (I Pods,MP3 players) cellular phones and PDAs.*

After COVID-19, the most popular approach of education in schools and colleges today is online learning. Even if some online teaching classes are almost similar to self study independently by students but most online classes are not classes which are self-paced. The regular assignment, screen shared materials and interaction between teachers and students reflects “regular” class feeling. The online teaching and learning saves time in travelling by students and teachers to the class room. The syllabus and courses in online teaching and learning class is same to that of a traditional face to face class in a subject. Of course high speed uninterrupted internet is essential for online learning. Students in remote rural and hilly areas do not have access to internet and face problems in online learning. The following characteristics are observed in case of most successful online students/teachers.

1. Self starter and self motivation
2. Familiarity with computers and Internet
3. Time-management skills and Good organization
4. Answers and solutions to questions and problems resourceful and actively

It is observed that enrollments in online teaching and learning is rising at faster rate than for the growth of student population. The colleges and Universities are offering more and more online courses over time. For example, massive online courses of UGC are very popular in India and students are downloading lessons, e-texts and videos from e-pathshala. It is estimated that 53.6% of the schools stated that online education is adopted as their plan and strategy for long run for future. Many academic leaders believe that the quality of traditional class room with face to face interaction between students and teachers is less than online learning and they have argued that online teaching is superior. Many colleges and Universities have created “virtual classrooms” and smart class rooms with all digital instruments for online teaching. Course Management System (CMS) software is very popular in colleges. The teachers formulate and design their lessons and courses and teach within a flexible framework to enable learning and communication to occur frequently and systematically. Online learning is leading to a significant shift in teaching and learning process. Such online education for passive students has become more collaborative and interactive in which students and teachers co-create better learning process. The changing role of teacher from the “sage on the stage” to

“the guide on the side” is visible and remarkable in online learning system.

### Facts and Statistics of Global Online Learning Industry

Although it has been practiced for decades, online learning may be described as relatively the new form and mode of distance education (Stern, n.d.). Online education has paved the way for a significant dramatic shift in the methods of teaching and learning. In e-learning process teachers, trainers and instructors act as guides and the learners are collaborate properly than listening passively (Stern, n.d.). Some important facts and statistics are stated below to assess the popularity on online learning.

1. Online learning is considered and as very safe and secured for students and teachers that is the only viable option for continuity of education during the COVID-19 pandemic. The outbreak of corona virus reduced mobility and created physical distancing among people for which personal face to face interaction is not safe and e learning turned personal and professional worlds upside down. The global e-learning market was already seeing a massive annual global growth even before the pandemic. The compound annual growth rate (CAGR) of online learning shall be 9.1% from 2018 to 2026 (Syngene Research, 2019). It is expected to reach \$336.98 billion by 2026. The growth estimates are likely to increase due to the Corona Virus pandemic.
2. The USA, China, India, South Korea and United Kingdom are the front running countries to invest more in e-learning (Dos Santos, 2019).
3. Approximately 59 percent of the U.S. e-learning share of market is coming from content related online learning products (Technavio, 2018). The growth of online education in the USA is due increasing patronage among students. As per one estimate, more than 30% of American students are enrolled in at least one online course (Palvia, et al., 2018).
4. Nearly 99% of the students studying in undergraduate degree programs online are physically located in the country (Palvia, et al., 2018). A popular survey revealed that 52% of graduate students in the U.S.A. revealed that compared to their college-level classroom education, online college-level education to provide a better learning experience (Duffin, 2019).
5. In the European Union the e-learning market is led by Germany (Statistics Market Research Consulting, 2019) which is growing at a rate of 8.5% annually, while the country’s economy continues to grow at around 1.9% (Michel, 2018).
6. A report of the European University Association stated that the main objective of the Higher Education in Europe is to use online teaching and learning for improving the quality of higher education rather than replacement (Gaebel, 2015).
7. The percentage of students opting one or more online UG classes increased from 15.6% in 2004 to 43.1% in 2016 (Snyder et al, 2018). The percentage of graduate students who took entirely online graduate (postgraduate) degree programs has increased from 6.1% in 2008 to 27.3% in 2016 in USA.
8. The percentage of undergraduate students adopting full online degree educational programme increased from 3.8 percent in 2008 to 10.8 percent in 2016. The percentage of graduate students who take one or more online courses also increased from 16.5 percent in 2008 to 45.6 percent in 2016.
9. So far as gender is concerned, there are more female students online higher education classes than males in general. It is interesting to note that in USA 65 percent of undergraduate and 54 percent of graduate online students is female (Duffin, 2019).
10. Another interesting findings in USA is that 86% out of 1500 graduate students from online classes believed that the learning value obtained by them from their online degree equaled or exceeded their payment. For a master degree or doctorate degree, online learning and guidance is also preferred.

### Benefits of Online Teaching and Learning

Online teaching and learning in distance mode suits to the requirements of increasing student population who prefer learning sitting at home without participating in traditional class room. These students who are unable to participate traditional face to face class generally do not get admission in a particular class at their preferred institution or live in remote locations from where traveling to the institution is not feasible and work full-time or those students who generally prefer self study to learn independently. Easy computer access, the internet connectivity, and the motivation to succeed in a virtual non-traditional classroom are the minimum requirement for students to join and participate in an online course. The online courses facilitates excellent method of delivering lessons to students which is not restricted by any location or time and it allows both teachers and students for accessibility from anywhere at any time. Due to busy lives of many learners, the online learning is a convenient way and suitable. A tremendous incentive and motivation

for many of the students in digital world is the ability to access lessons and course from any computer with Internet access, 24 hours in a day and seven days a week which are the main benefits of online learning. Some key benefits of online teaching and learning are as follows.

1. **Convenience:** The student finds it convenient due to access throughout the day at any convenient time from any computer within their bust schedule.
2. **Enhanced Learning:** Online learning also increases depth of understanding, remembering and retention of course content. It leads to more meaningful and fruitful interactions and discussions, enhancement of technology skills, life skills like time management, independence, and self-discipline.
3. **Shy students:** The shy students with less communication ability tend to find convenient and feel better online. Students can take more time to think and reflect before communicating.
4. **Interaction:** Online learning increases interaction and discussion between the teacher and students. Learning environment becomes more student centric which reduces passive listening thereby promotes active learning and connectedness.
5. **Innovations in Teaching:** Online learning increases variety and creativity of activities and styles related to learning. On ground courses are also improved.
6. **Improvement in Administration:** The teachers and instructors get more space and time to evaluate student activities more rigorously and thoroughly. It becomes easy to document and record online activities and grading is easier online.
7. **Savings:** Online teaching does not require limited class infrastructure like desk and benches for which more students can be admitted to a programme. This also leads increased satisfaction of student, higher retention and less repeats.
8. **Physical Resource Maximisation:** It reduces demand for campus infrastructure, decrease congestion on campus and parking of transport vehicles.
9. **Outreach:** Online teaching gives more options to students, reaches new student markets which increases student enrollments in educational programs.

### Internet users and Online Learning

The Internet has made the world into a global village in which the interaction and socialization of people and assessment of information and entertainment are promoted. It is a major source of news and entertainment, trade and commerce. The search engine Google which is most popular empowers the company in a hugely

influential position. Online social networks are very popular in developed and developing countries. Social media like, Facebook, WhatsApp, LinkedIn, MySpace, Bebo, Pinterest and Twitter are very popular social media and phenomenon. The most popular social media, Facebook has 829 million active daily users. The World of Warcraft (WoW) has subscribers which is estimated as 77 million (Karmali,2013).The proportion of internet users worldwide is given in Table-1.

The percentage of internet user in increasing significantly over time. More than half of the world's population (53.6 %) are using internet in 2019. While internet user is 86.6 % in developed countries, it is only 47 % in developing countries. Within a period of 14 years from 2005 to 2019, the internet user worldwide has increased from 16 % to 53.4 % which reflects the popularity of internet among the people. The trend of internet users is shown in Figure-1.

The internet users in African countries are found to be less compared to other regions. The internet users by region is displayed below in table-2.

Europe has 82.5 % internet users followed by America with 77.2 %, Common wealth States with 72.2 %, Arab states with 51.6 % and Asia and Pacific with 48.4 % internet users in 2019.

The fig-2 indicates that European countries have highest percentage of internet users but trend of increase in internet user is more significant in America.

The region wise internet users with fixed and mobile subscriptions are shown in table-3.

The mobile internet users are significantly more than fixed land line internet users in all regions.

### Effectiveness of online Learning

It is evident that online learning can be more effective in many ways. Many research studies have proved that

**Table-1:** World Wide Internet Users

	2005	2010	2017	2019
World Population (in Billion)	6.5	6.9	7.4	7.75
User worldwide(%)	16	30	48	53.6
Users in the developing world(%)	8	21	41.3	47
Users in Developed world(%)	51	67	81	86.6

Source: International Telecommunications Union.

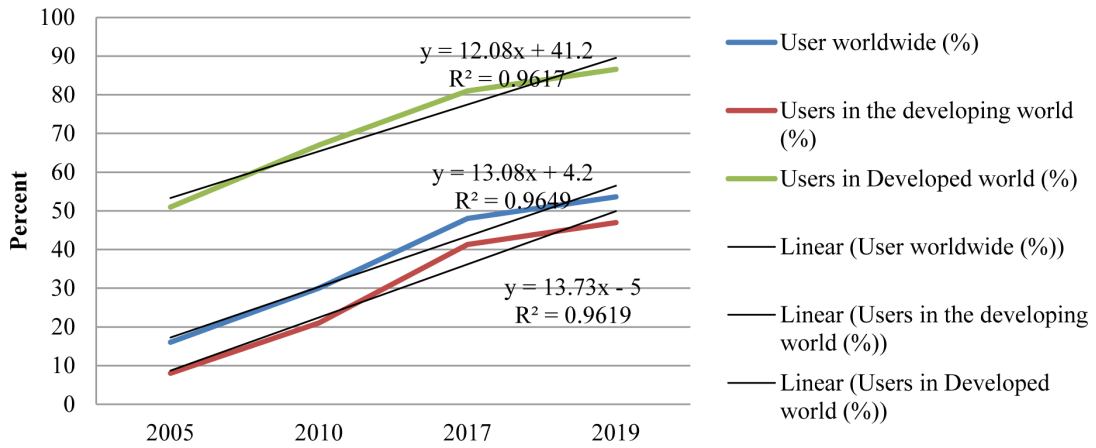


Figure 1: Trend of Percentage of Internet Users

Table-2: Internet Users by Region

	2005	2010	2017	2019
Africa	2	10	21.8	28.2
Americas (%)	36	49	65.9	77.2
Arab States (%)	8	26	43.7	51.6
Asia and Pacific (%)	9	23	43.9	48.4
Commonwealth of Independent State (%)	10	34	67.7	72.2
Europe (%)	46	67	79.6	82.5

Source: International Telecommunications Union

students understand and retain 25 percent to 60 percent more study materials on an average in online classes in comparison to only 8 percent to 10 percent in a classroom. The students are able to learn faster online than traditional class room. E-learning needs 40 percent to 60 percent less time than in a traditional classroom because students can learn at their own convenient location as they choose and in mutually agreed time. It is clear that

Table-3: Region-wise fixed and mobile Internet Users

	2007	2010	2014	2019
<b>Fixed subscriptions: (in %)</b>				
Africa	0.1	0.2	0.4	0.4
Americas	11	14	17	22
Arab States	1	2	3	8.1
Asia and Pacific	3	6	8	14.4
Commonwealth of Independent States	2	8	14	19.8
Europe	18	24	28	31.9
<b>Mobile subscriptions: (In %)</b>				
Africa	0.2	2	19	34
Americas	6	23	59	104.4
Arab States	0.8	5	25	67.3
Asia and Pacific	3	7	23	89
Commonwealth of Independent States	0.2	22	49	85.4
Europe	15	29	64	97.4

Source: International Telecommunication Union

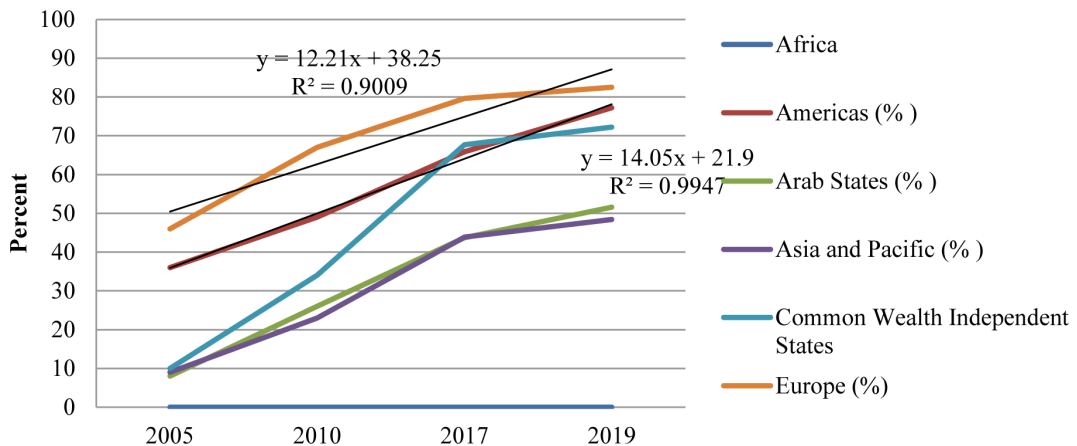


Figure 2: Trend of internet users in different Region

effectiveness of online class varies with age of students. Since kids and young school students are more easily distracted, online class appears less effective at early age but it is more effective for higher school and college education. Since studies have shown that children prefer computer and mobiles to learn, which makes learning fun and effective by using technology.

### COVID-19, New Normal and Online learning

The COVID-19 pandemic has given a big boost to the virtual world. The long-term implications shall go far beyond zoom-calls and virtual summits. It is observed that the connected world has become even more connected through virtual face-to-face interactions. The available data show a 32% increase in total broadband traffic, 38% and 40% increases in streaming video and VPN usage respectively, and a 212% increase in VOIP and video conferencing. This is not just a reaction to the crisis, we are virtual social creatures now and we will never completely go back to the way it was before. Corona Virus outbreak and restriction on movement by Government has forced the people to do official work from home instead of coming to office to stop the spread of the virus. During such pandemic period, virtual reality (VR) is a strong alternative to video calls and smart communications. The people have preferred virtual communication as a long-term strategy which can promote and facilitate business and trade.

It is a fact that education is the shortest bridge between the rich and poor which can bring more welfare and prosperity for individuals and countries. The current education system through internet has been adopted by more students in developed countries and slowly it is getting acceptance by students in developing countries. The important facts on education system are as follows.

1. Our current traditional class room system of education is structured on the basis on the industrial revolution model, memorization, retention and standardization.
2. There is need to regular updating of syllabus and education system with readiness of job. The employable students must have ability to compete against smart machines and to create economic value in long run.
3. The accessibility by all students, equity and quality of education need to be improved to solve the global education crisis.

After COVID-19, particularly the traditional class room education is in serious crisis. Before the coronavirus

pandemic outbreak, many children were out of schools due to extreme poverty and lack of resources. Quality education is most important along with skill-based training for employment. Two important issues of education are (i) Access (ii) Equity. Access refers to providing easy and equal opportunity to all deprived and privileged student learning population. Establishing schools and college within the reachable distance of students increases the access to education. It is low in many developing countries. Equity refers to ensuring every child has the required resources to go to school and to stay in any circumstance. It is important for us to see that in post-COVID-19 situation, the investment in online education increases significantly. This corona pandemic has made online teaching and learning compulsory for dissemination of knowledge across all regions and borders. If online learning technology can play a strong role in society, the educational circumstance will change significantly.

### Online Learning for Higher and Secondary Education

The Higher education sector is seriously affected by the COVID-19 pandemic. Even if many higher education institutions have shifted to online learning but conducting practical in laboratories by students are not possible in science subjects. Some important facts regarding higher education are as follows.

1. It is predicted that the corona virus pandemic may lead to a six months to five years disruption in higher education (Dennis, 2020). Another prediction states that there will be a 15 percent to 25 percent decline in enrollment in higher education (Dennis, 2020).
2. A report revealed that the student enrollment post-secondary education shall witness a yearly decline of 1 percent to 2 percent while the number of students taking online courses will grow 5 percent annually. (A joint report by the Boston Consulting Group and Arizona State University, 2018).

The growth of online teaching and learning will increase exponentially in the upcoming academic years in all countries of the world. If online learning is made compulsory, there is possibility that traditional online courses and massive online courses may have dramatic changes over time. Although they may look similar to each other, these online learning modules are actually different. The teachers and instructors facilitate these online courses. Traditional online courses are based on requirements and guidelines of traditional courses including lecture schedules and assignment deadlines (Sarmah, 2019). In Massive

online courses, lectures are pre-recorded and accessible at anytime by the students. There is no deadline for completion of a MOOC and the course teacher need not come from a college or university (Sarmah, 2019). The online courses in post-pandemic period has many advantages traditional courses. Therefore, all countries must plan and prepare themselves for online teaching and learning in schools and colleges.

## Conclusion

The Indian education system is criticized for outdated curriculum, cost of education, quality of teachers and lack of infrastructure. E-learning has a promising future which can solve many problems of Indian education system. It is a fact that online teaching and learning cannot completely replace traditional interaction and teaching for which blended learning which is a mix of online and off line education can suit well to developing countries including India. The course delivery and easy access by student to online education will act as a change-agent in shaping up future education. Students have to attend schools and colleges to complete their education under present education system in India. Although the conventional model is the commonly accepted mode of formal education across the world, the education fraternity is opening up to online education or e-learning. Everything is going online and, so is education. Access to the internet currently makes knowledge ubiquitously available. The intensity with which digital media have become entangled with our everyday lives is astonishing, although we do not seem to realize it any more. Digital media have become the new normal form any citizens throughout the world. Many of us are almost permanently online, for reasons of work, of leisure, of community building, friendship and family formation. Media is ever present, but at the same time also invisible. The only time we notice media is when it does not work. Virtual/ networked learning communities may transform practices of adult education. Open source communities, making use of open source software, create new opportunities of free knowledge sharing and joint knowledge production. The rapidly falling costs of the production and distribution of digital information, enables peer production to compete with market mechanisms of producing knowledge and culture.

## Competing Interest Statement

All authors have read and approved the manuscript and take full responsibility for its contents. No potential conflict of interest was reported by the author(s).

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