EDUCATION 4.0: A NEW FACE TO BLENDED LEARNING?

***Ferdousi Rafika**
Assistant Professor, Department of English, Vidya Vihar Institute of Technology, Purnea, Aryabhatta Knowledge University, Patna

Abstract

A virus which created a localized impact in a country and was thought to be a health crisis initially, has now taken the shape of a monstrous disaster; hardly a sector or area remains unaffected by the COVID-19 pandemic. It may sound unfortunate but the COVID-19 pandemic has brought to the fore Information & Communication Technology (ICT), the digital platforms and the blended learning approach on the same page. This has not only allowed the education industry to offer content for which they may or may not have enough infrastructure but simultaneously, it has allowed students to learn at their own pace that yields to higher learning capabilities. Therefore, to equip teachers with the latest 21st century knowledge for further innovations, rapid technological advancement has taken place through the Fourth Industrial Revolution (Industry 4.0) posing a great challenge as well as boon to the educational system. Education is an indispensable parameter for the growth and development of any nation or economy. Over the past few decades, the huge and rapid investments in ICT in educational institutes have contributed for promoting digitalization and fostered creative innovations in the educational system. This has brought to the fore the path-breaking idea of 'Education 4.0.' This paper tries to examine the nuances of Education 4.0 and whether it is the new face of the educational system in the near and distant future.

Keywords: *Information and Communication Technology (ICT), digital platforms, blended learning approach, Industry 4.0, Education 4.0*

Introduction

The 21st century has brought about a massive change in the world of education. Gone are those days when teaching was limited only within the boundaries of a classroom in a school, college or institution. The Internet has brought about an archetype shift in the elemental way in which teaching-learning process is carried out. It has taken learning beyond the sanctified walls of the institutions and into the hands and palms of everyone. But this radical transformation did not occur overnight.

There have been many predictions about the future of education post-COVID and the way we would be educating ourselves and the coming generations. There is a dilemma on how far would we be able to reach our destinations and accomplish our goals. But to empower today's youth amidst such an unfortunate spell, a new version of learning is perhaps the need of the hour; a form of learning that would transform uncertainties into certainties. With the 'Fourth Industrial Revolution' (Industry 4.0) having set in, the education system has become upgraded. This upgraded version as we call today is the 'Education 4.0'. With the rapid advancements in ICT, this new version of the education system targets to set free the latent potential of individuals in the teaching-learning process making them adaptive to unforeseen challenges like COVID-19 as well as other persistent barriers, that further yields to better teaching and learning capabilities.

Online Education: The Future of Education

With the development of technology, India has witnessed an enhanced acceptance of online education over a period of few years. Many students and working professionals have joined different e-learning platforms in the past few years in order to enhance their skills. And, looking at trends, the number of people adopting online education platforms is expected to increase significantly in the near future.

In this pandemic, the global educational landscape is undergoing a dramatic transformation. Many Educational Institutions and Training Centres have transitioned towards online mode of teaching, learning and training to mitigate the impact of COVID-19 on education. The Internet evolution, large scale increase in smart devices users and their applications have changed the outlook of Global Education.

Digital Pedagogy and the Traditional Classroom Environment

Digital Pedagogy is the usage of digital tools as potential means for the teaching-learning processes considering digital content and personal space as valuable additions to the traditional classroom environment of an educational system.

To learners of a segment of the society, education has long been seen as a tool of "oppression", where classrooms resemble "prisons". To some teachers 'teaching' has often been confused with mere 'talking' or 'instructing' and only tend to deposit information into the minds of their students within a specific time limit. The students who 'passively' received this information often felt oppressed as the narrative often felt 'hollow' and 'lifeless' to them. This view of 'Traditional Classrooms' where students are kept under constant observation, tracked with grades and scores, not allowed to talk or chat and make noise, felt as "prisoners" and lost their incentive to develop as 'independent beings'.

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In order to change this scenario, "Digital Pedagogy" has to come with a promise to change the layout of this traditional way of teaching and learning and impart students the skills of 'free thinking' and allowed them to work upon their assignments and weaknesses at their 'own pace'. By giving students this chance to explore, question and create as part of the curriculum, they are not only allowed to prepare themselves with the technical or operational skills to engage themselves in a digital, networked society, but also demonstrate that knowledge in the society to bring a change in the world.

Digital Pedagogy and the Blended Learning Environment

We are living in an age of technology and a tech-centric world. Technology is fast engulfing almost every sector be it real estate, retail, e-commerce, education or any other and these technological advancements are much needed in the development process of a nation.

The elementary premise of education and training is to empower an individual to lead a successful life and contribute best for himself, family, society, and nation and to humankind in a larger perspective. Education must release the true potential of a pupil by identifying and portraying it.

Digital Pedagogy is the usage of digital tools as potential means for the teaching-learning processes considering digital content and personal space as valuable additions to the traditional classroom environment of an educational system.

Blended Learning is an offshoot of Digital Pedagogy wherein the emphasis is on "personalized learning environment." It is a combination of face-to-face or in-person classroom teaching with the use of an asynchronous online classroom in a planned and pedagogically valuable manner.

Blended learning is a "personalized learning environment." It is a combination of face-to-face or in-person classroom teaching with the use of an asynchronous online classroom in a planned and pedagogically valuable manner. In it the learners use online resources available to them outside their class-time. The students undertake a range of learning activities based on their classroom learning and solve assignments at their home at their own pace. The ones familiar with the content can move faster and the ones unfamiliar can pause, re-watch or seek help from their classmates or mentors or other resources available to them. One thing which is to ponder upon here is that the students can choose to work upon the assigned work when they are most alert or vigil whether as an 'early bird' or a 'late night owl', while the students with certain learning difficulties or learning disabilities may choose to take breaks when needed and resume as per their convenience.

The term "activity" plays a key role in this teaching-learning approach where the students are engaged through 'actions' in contrast to some traditional forms of teaching where students 'only' absorb what they are told. Here, in a blended learning approach the teacher acts as a 'facilitator' assisting students through the learning process with care and guidance. The emphasis lies more on 'doing', 'practicing what learnt', 'practicing target skills', thereby making the teaching- learning process deep and meaningful.

"Blended learning allows the instructor to select from diverse online learning tools as well as traditional face-to-face pedagogical methods to create a learning environment that best meets the needs of each learner in the class. Because each instructor has different learning goals and learners have different learning needs, different blended learning environments will have a different balance between online and face-to-face components" (Osguthorpe & Graham, 2000).

The Platform Revolution & Industry 4.0

"Unprecedented and simultaneous advances in artificial intelligence (AI), robotics, the Internet of Things, autonomous vehicles, 3D printing, nanotechnology, biotechnology, materials science, energy storage, quantum computing and others are redefining industries, blurring traditional boundaries, and creating new opportunities. We have dubbed this the Fourth Industrial Revolution….",

- Prof. Klaus Schwab, Executive Chairman, World Economic Forum (2016)

The Fourth Industrial Revolution (or Industry 4.0), a term coined by Prof. Klaus Schwab is the ongoing automation of traditional manufacturing and industrial practices, using modern smart technology. Industry 4.0 is an umbrella of several digital tools such as cloud computing, big data, augmented reality, virtual reality, artificial intelligence, deep learning, robotics, additive manufacturing etc.

Education 4.0 is aimed at improving the productivity of an employee, and simultaneously improving the competitiveness of the industry. It aims to improve the productive and competitive capacity of the country and the world as a whole. Such a system wherein creativity and innovativeness of the human brain are improved significantly; it will make educated students more prepared for an uncertain and volatile future. Thus, with Education 4.0, the students, the Industry and the country will be able to reap the dividends better in terms of Fourth Industrial Revolution.

Education 4.0 will require gradual paradigm shifts and lead to:

- Demand-led instead of supply-led education
- Competency-based instead of knowledge-based

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- Incorporate disruptive technologies & skill-sets
- Lifelong learning instead of front-loaded learning
- Emphasis on emotional quotient (EQ) than Intelligence Quotient (IQ) alone
- Focus on purposefulness, mindfulness leading to overall happiness & well being

Is Education 4.0 the Future of Education?

We are living in an era of technology and a tech-centric world. Global connectivity, smart machines, new media are some of the key drivers which are rewriting the world. The Fourth Industrial Revolution is in the process of completely changing the scenario of the world through different innovations and developments in the society in general and the industry in particular; Artificial Intelligence, Robotics, Internet of Things (IoT) being some of the well-recognized emerging technologies in the world today.

Education 4.0 is an institutional thought that encourages non-traditional thinking. The concept essentially uses technology-based tools and resources to drive education in non-traditional ways. Education 4.0 is completely changing the "scenario of education" by easing the ways of learning and improving our technical skills at the same time.

- A more personalized learning experience

Education 4.0 appreciates the individuality of every single student and their own pace of learning. Having a personalized way of teaching will have a greater impact on students to achieve their outcomes easily. With Artificial Intelligence and Cloud Computing, there are numerous tools available that customize the whole teaching-learning process as per the individual learner's needs learning pace. Faculty, on the other hand, will be able to easily identify the strengths and weaknesses of the students and provide instant feedback.

- More remote learning opportunities

The foundation of Education 4.0 is making learning available anywhere, anytime with the set of e-learning tools that promotes remote and self-paced learning. The Active Blended Learning (ABL) concept is picking up, where students get to be actively involved in learning beyond classrooms. This way, they end up mastering both practical and experiential learning.

- The plethora of education tools

Education 4.0 offers a clear route to students by making tools and techniques handy in their learning environment. This means that the students will be able to choose the tools and techniques through which they want to acquire knowledge. Collaborative and engagement tools, flipped learning, and blended learning are a few such tools.

- Project-based learning

The project-driven approach that Education 4.0 supports helps students learn in a fun and interesting way. It avoids theoretical knowledge and prompts students to learn time management skills, organizational skills, collaborative skills, time management skills, much needed for their employment prospects in the future ahead.

- Easy and accurate assessment

A more practical way of assessment comes into place with Education 4.0. There are both online and offline assessments and students get assessed on projects, assignments, and fieldwork.

- Data at the fingertips

There are greater insights into the students learning journey with data analytics and reporting in Education 4.0. The statistical analysis allows teaching staff to learn where students exactly stand and guide them appropriately.

Fine-Tuning Teaching Practices with Education 4.0

- Personalized and Self-Paced Learning

Personalization is pervasive and comes down to the idea that everyone's needs are not the same. In education, personalization and self-paced learning allow students to work through content at their own pace and build toward mastery and true knowledge and skill acquisition. Outside of a teacher mapping individualized learning sequences for every student, technology is the obvious way to actualize this in the classroom through adaptive content, student-led inquiry, or video resources for mastery learning.

- Accessible and Inclusive Learning

Accessible and inclusive learning ensures that instruction is to the benefit of all students and allows for equal opportunity for everyone. This learning mechanism takes into account issues like learning styles and representation in content. Technology promotes this with accessibility features like translations, a more diverse array of content, and customization based on student preference.

- Problem-Based and Collaborative Learning

Problem-based learning fosters creativity and innovation through iterative and collaborative projects and inquiry. Students learn how to be amenable to open-ended problem solving, work through ambiguity, and focus on the process more than the answer. Effective problem-based learning depends upon collaborative opportunities that

introduce diverse perspective and social- emotional skills throughout the problem-solving process. With technology, students can personalize their projects both in their focus and how they choose to demonstrate their learning. Students collaborate with classroom peers and external people for information and feedback. And students gain access to an infinite number of resources that pushes them to use effective search strategies, vet information, and properly cite their resources.

- Lifelong and Student-Driven Learning

Going back to the exponential increase in knowledge and the related decay in the longevity of knowledge and skills, work today requires us to be lifelong learners, to continuously adapt our understanding of concepts, and to develop new skills alongside advances in technology. To be successful in this environment, students must learn to love learning, become self-starters, and adopt a growth mindset.

In the classroom, student-driven learning starts with students developing curiosity and having opportunities to drive their own learning. This lifelong learning aptitude relies on problem-based, accessible, and personalized learning experiences and, in an Education 4.0 classroom, hones global citizenship, innovation, technology, and interpersonal skills.

Discussion and Outcomes

Blended Learning & Education 4.0: The Road Ahead

Blended learning stratagems play a vital role in collaboration, communication skills, motivation, attitudes, and interaction of the students with their subject and in honing their practical skills.

ii. Blended learning leads to enhanced student learning outcomes. In other words, students seem to be more engaged in online content as compared to paper and pencil-based practice worksheets. Online exercises comprising video-lectures, audio-lectures, and evaluation methods have become immensely popular among tech-savvy teachers and students alike.

iii. Taking cue from the above point, it could be assumed and also observed that the analytical skills of a student follow an upward trend. Students can provide real time feedback, ask questions, and clarify doubts, thereby getting a clear idea of where they stand at any given point of time. This was virtually impossible in a traditional classroom environment, wherein the class size seems to be huge; but actually, in an online platform the classes are pretty 'small' as the experience is 'lively', 'enjoyable' and the interaction is on a 'one-to-one' basis.

iv. As in a traditional classroom environment, where the teacher sails through the chapters in a textbook, the online platform is an entirely different ballgame. Students can actually (in an online class) control how fast or slow they can move through a particular chapter in a textbook. This enhances the self-efficacy of a student and simultaneously provides great litheness for the students and teachers alike.

v. School dropout is one of the major problems in our educational system. This happens for various reasons, some of which are practical, arising out of necessities or disillusionment in an educational system. In our country, Jharkhand has the highest dropout rate for school children in India (only 30 out of 100 finish school). Dropout rates among the 'Adivasis' are the highest among all communities. There is no gender-disparity in dropouts; boys and girls quit school in equal measure. Tamil Nadu, Kerala, Himachal Pradesh and Maharashtra are some of the states that have the lowest dropout rates in the country. (The Hindu, January 4, 2019, 'What is the dropout rate among school children in India?) Blended learning strategies can be a major weapon to tackle this menace. Digital platforms, app-based learning and interactive games (mostly online) form some of the major tools through which teachers can bring back the children back to the classroom environment. This can help reduce student attrition.

vi. Last but not the least; blended learning strategies can be thought to bring about positive changes in the attitudes of both students and teachers alike towards web-based learning. Simultaneously, this results in potential cost-reduction and saving valuable resources and makes it easier for all the stakeholders to share the load. Seemingly, it is a win-win situation for all.

Blended Learning: Challenges & Limitations

Technology is an enabler for human beings; it can never be a solution to our problems. Like many other technological advancements and innovative practices, the Blended Learning Approach comes with various constraints in its smooth implementation and execution.

I. Students, in such an environment are away from their peer groups and friends physically. It results in a feeling of isolation and unrealistic expectations. This approach may not yield desired results for all age-groups. Interestingly, COVID-19, the havoc created by this pandemic has very clearly made us understand how much

face-to-face contact/communication holds importance. The teaching-learning process is also no exception to this.

In such a scenario, it is very much evident as to how much digital pedagogy would be successful in the years to come. India has one of the largest proportions of population in the lower age group (close to 45% of the population). This young age group comprising of school-goers and teenagers are highly vulnerable to the ill-effects of the internet revolution.

Conclusion

"I see technology as a means to empower and as a tool that bridges the gap between hope and opportunity".

- Prime Minister, Shri Narendra Modi

Education 4.0 and the digital pedagogy therefore aims to redefine the image of 'education' in the 21st century in order to adapt to the dynamic changes that our present era is going through, whether in 'socio-cultural' or 'socio-economic' spheres and perceiving the significance of a 'digital teacher'. Big IT companies such as Google, Microsoft, Dell, etc., are investing huge amounts of money in these platforms. This new generation has learners or users different from the previous ones. They are skeptical to traditional approaches and 'blended learning' gains a prominent position in this aspect. Teachers, students, and other stakeholders play a key role by changing their age-old perceptions and accepting "digital pedagogy" as the "new normal", thereby seeking new opportunities offered by technological advancements.

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