

# **WEB 4.0 AND NEW REFORMATION IN EDUCATION**

Subhasree Pal1 Dr. Parimal Sarkar2

<sup>1</sup> Research Scholar, School of Education, NSOU, West Bengal, India.
<sup>2</sup>Assistant Professor, School of Education, NSOU, West Bengal, India.
Email: <u>subhoriddhipal2010@gmail.com</u>, <u>srkprml@gmail.com</u>
Corresponding author email id:subhoriddhipal2010@gmail.com

conceptionally during during in an					
	Article history:	Abstract:			
Received: Accepted: Published:	July 1 <sup>st</sup> 2021 August 7 <sup>th</sup> 2021 September 11 <sup>th</sup> 2021	This article provides a vivid description of education and its evolution up to the Web 3.0 era, and then specifics the likely changes that will occur in the era of Web 4.0 in education. Education is critical to the functioning of society. Throughout the last four Industrial Revolutions, society has undergone numerous changes, all of which have had an effect on education. Education has evolved over time to keep up with the changing society and its changes. The one of the prime aim of the society is to make students capable for the society that he can contribute for the same. The paper makes a compelling case for a complete overhaul of the educational system in order to embrace the changes brought about by Web 4.0 and IR 4.			
Konworder Education 1.0 to 1.0. Web based learning Industrial Devolution Chills for Euture Higher Education					

**Keywords:** Education 1.0 to 4.0, Web based learning, Industrial Revolution, Skills for Future, Higher Education Transformation.

### **INTRODUCTION:**

Our education system had begun with the rote learning: recitation of slokas. The main of education is to inculcate life skill and employability skill. No books and no printed words had formed the base of modern education. With the beginning of Industrial Revolution, the importance of Education had been to realize and the doors to Education had been opened for all because the importance of skilled labour force had been begun perceived by all. Teacher and his transaction of lessons began to make the foundation of National progress. Students were begun to evaluate to test their acquisition of knowledge which ultimately gave a water tight shape to education system: disciplines, curriculum and evaluations.

When technology has launched into the lives common people, it has begun to affect the Education system also. Education is perceived as a tool for transforming humans into human capital which constantly boost up the country's economy. Education throughout the ages reshapes itself to keep pace with the demands and needs of the society. Therefore, new education programmes have to be evolved to face the challenge and to endure in the long run of the competitive world. The advent of the fourth industrial revolution (Industry 4.0) needs reforms in education administration to accommodate and its new employment opportunities [1].

India is a youth country and by the end of 2025, it is perceived that about two third of young Indians will dominate the Indian economy [2]. As youths are the backbone of the country, it is education

which can make them competent and eligible for the societal requirements. When a society is stepping into the new era therefore it is also the necessity to transform the framework of education. The study of Price Waterhouse Coopers (PWC 2018) [3] pinpointed that there is a necessity to enlarge the proportions of training in the area of science, technology, engineering mathematics. Again, Microsoft also and has strengthened that within next 20 years more than 90% jobs require digital skills competency [4]. The pitiable picture of India in this scenario is that within 5years India is in badly need of having 9 times more digital proficiency workforces what she has now [5]. The present paper provides glimpses the journey of education throughout those years along with the probable future trends which reshapes the education.

### WEB BASED LEARNING:

Norton ascribed "Any purposeful application of web technologies to task of educating a human being" [6]. It is a learning which uses web browser, web server and internet to get access of learning materials. Along with that, it also can translate the inner meaning of languages depicted by using signs. It brings out the meaning by scanning sign languages associated with speaking difficulties [7]. Berners enumerated that, " the dream behind Web is of a common information space in which we communicate by sharing information....a second part of the dream ....the ways in which we work, play and socialize....make sense of what we are doing, where we individually fit in, and how we can better work together"[8]. Lynch pointed



out that web based learning indicates the learning that streams based on videos and more improved internet technologies software where there is a very limited or hardly any scope of face to face interactions between recipient and receptors [9].



Source: Wikimedia.

With the development of Web, the scenario of Higher education has begun to change and develops as per needs. The Web transformed itself from mere transmission (1.0) to social (2.0) and now semantic ( 3.0) and now starts off towards Web 4.0. The transformations of Web in not limited in technology but it reshapes the procedure how it is utilised now and brings a great change in the periphery of society as well as education. Now we are in the threshold of Web 4.0 which is supposed to bring revolutionary changes in every aspect of our lives.

Web 4.0				Web of goals: Goal oriented intelligent connection of semantic resources.
	Web 3.0			Semantic web: descriptive layer that semantically connect resources.
		Wel	/eb 2.0	People-centric web: participative, collaborative, and non-semantic web.
			Web 1.0	Static web sites and content.

Source: Wikimedia

### WEB 1.0 AND EDUCATION

This time frames belonged to Web 1.0 which was limited to read only web where contains were created by few, participants were very limited who were tagged as luxury users. This was the era of static HTML. Therefore in the era of Education 1.0, students were the only recipents of knowledge, users of informations that was served at their end.

With the advancement of Industry, increasing demand of a large number of workforce, appreciable numbers of students began to entered arena of higher

education. Lectures became prime necessity to reach huge numbers of students at low cost along with the evalution system. There was the hour need to invest in education systems and its concerning infastructures to satisfy the growing population of students. To combat the demand, UK Open University was established using the tool of TV broadcasting to reach the target group truly celebrating the essence of 'open entry'. Rest of the world began to imitate and launch the concept in the name of Distance Education System. Ever first in consisting education system, the view of student centred approach was implied. The open learning as well as distance education system use the existing university campus to satisfy the needs and necessities of the remote learners by providing a wide range of curriculum from humanities to science at anytime at anywhere.

## WEB 2.0 AND EDUCATION

From onwards 2004 onwards, Web 2.0 provided the facilities to interact, celebrate the flavour of collaboration, create the platforms to share ideas alongwith photos. It is recognised as 'read-write 'Web enhancing the essence of Blogs, musics, Wikis, Sharing sites, videos , images. It is an asynchronous communication which provides the facilities of creation of own contents, and circulate in the web flatform, can see others opinion and judgements regarding that. E-Journals, E- Portfolios are added more flavour in the approach. Resources of open education system and crowd source contents allowed divergent techniques to more reachable and more accessible to provide free information and knowledge. The inspiration and discourse regarding the openess of knowledge started to gather the desirable strenghths [10].

'Blended Education' is appeared on the platform. 'Flipped Classroom'has emergd in the scenario of education. This encourages the transfer of knowledge crossing the thresold of traditional classroom which is easily accessible to students and provides the facilities to work on them by assimilation, application and engage in teaching learning activities when they are collocating. This sets up the basic ground to build MOOCs and the spreading and reaching education to all is truly celebrated in true sense. This also opens the gateway to give justice to the terms such as academic intregity, plagarism etc. Digital era in its original flavour begins to bloom from this period in the scenario of education.

### WEB 3.0 AND EDUCATION

With the introduction of Web 3.0, new era begins whose main feature is Semantic Web. Semantic



is a branch of science in machine can comprehend the text. The inventor of WWW Sir Tim Berners describes the coinage Semantic Web, to define composite mechanism of information and data that is operated by machines. He visualised that " I have a dream for Web ( in which computers) become capable of analysing all the data on the Web - the content, links and transactions between people and computers. A 'Semantic Web', which makes this possible, has yet to emerge, but when it does, the day to day mechanisms of trade, bureaucracy and our daily lives will be handled by machines. The 'intelligent agents'people have touted for ages will finally materialize"[11]. It is evolved as a process of evalution and intregation which is capable to talk and share information within a blink of eye. Smart phones and loTs are the living example of Web 3.0. It inspires the 3D shape instead of 2D which gives more clear vision of anything. Web 3.0 flags of the quality being ubiquitous indicating the quality to be present everywhere at anytime when the users want. It is just like a personal secretary who has knowledge about everything of its user and is always ready to assist its user by giving answer any question [12]. Now internet no longer can be obtainable like Web1.0, nor it is only confined to the users of smartphone Web 2.0.

Web3.0 boosts up an interest to remodify the design of education system and transaction of curriculum keeping space with this change. It also asks for collaborative approach from different institutions than by solitary one which also encourages sharing of knowledge and experences. Students now become compos mentis about their teaching learning scenarios, methods of transactions of their lessons and about their futures which are the gifts of Web 3.0. the new emerge of characteristics of educational instituions are rich in diverse knowledge and their approaches, cross institutional sharing and adoptation of new genre, cross cultural by beaking traditional boundaries.

#### WEB 4.0 AND EDUCATION :

Web4.0 is the symbol of 'symbiotic web' which refers to process of the amalgamation and interaction between artificial inteligence with the human ones. This cyber-physical interface appreciates each other by learning from each other and gain from the same. Eric Schmidt, CEO of Alphabet clearly enumerated that the term internet will disappear from our society because it is so closely related with our lives and enviroment, we hardly have recognised it as a foreign element. Like 3.0, it also provides us information according to our needs but it does it in a more systematic and organised way. Therefore, it erase the boundary between human intelligence and machine intelligence. "Economies, businesses, societies and politics are being transformed by technological advances in such areas as Artificial Intelligence and machine learning, and the Internet of things, autonomous vehicles, drones, precision medicine and genomics, advanced materials, smart grids, robotics and big data"[13].

Industry 4.0's emergence necessitates the development of Web 4.0. Automation of production processes will accelerate the transformation of Education and its three major components: The educator. the student, and the educational institution. It augments the necessity of euipping the Teachers, students and peer groups by computable machines, with unparalled processing capability, ample storage capacity and retrive to knowledge. The key termology of Education4.0 is to provide gigantic ubiquitous connectivity and uninterrupted interface between machine and human intelligence.





#### INDUSTRIAL REVOLUTION AND EDUCATIONAL REVOLUTION :CHANGE IN EMPLOYABILITY @ WEB4.0

Around 1760, first Industrial Knowledge Revolution begins with invention of steam engines. Its impression was massive in society. Change in the production mode, encouraged mobility of mass, mass transportations, planted the seeds of urbanization and proved a boon for economy. First Industrial Knowledge had proved that machine could do the same work in large scale with more proficiency and precisionthan humans. For providing skillfull work force for operating the machine, the necessity of compulsory schooling begun to be felt and higher education began to take as process of making skilled man power.



Second Industrial Revolution happened due to invention of electric and realization about its power. Electrical invention stimulated to generate huge mass manufacturing of fertilizers, planes, engines along with enormous rise of consumerism. These changes created growth in education with emphasising a lot of schools, universities with a new level of aspirations. It began to shape up the education by introducing standardization, mass education system was also got emphasis by opening Open University.

Third Revolution started based on electronic and IT to automate production. Emphasis on digital techonology was placed.

From 2010, students are seen as output products and education is seen as a process which creates manpower to carry on industrial jobs. Industrial 4.0 needs the man power who are specialist in information. They need need the workers who can able to see beyond technology and can visualize the technology which is beneficial for society. If we quickly google about the future trends of jobs by 2030 [14] clearly indicates that maximum iobs related to ' thinking like a data scientists' and interdisciplnary. To get these jobs, one badly needs digital skills to survive in the work fields. The Nesta Research Reports [15] indicates that there will be a rise in the field of health care, sports and fitness along with therapy which now occupy 1/10 of current job profiles. 1/5 present jobs are likely to lose their importance. There will be a great hike in production occupation which will be set up in amalgamation of mechanical, electrical, pneumatic, hydraulic and computer proficiency. So there will be a great possibility to wipe away the thin line of barriers among different disciplines. Service sector blooms more prominently. Students therefore need to develop interpersonal skills, need to synthesis all learning must have high level of cognitive development and posses a high order of ideas which can easily break the boundary of traditional knowledge shiftts in the model of Education4.0 is listed below [16]:

- Importance given on Request Drove, not on Supply drove instruction
- Development of competency based curriculum
- Emphasis on deep rooted learning rather than front stacked learning
- Modular degree inspite of disciplinary one
- Emphasize on EQ rather than IQ



Source: wikimedia

# **Gateways to Attain Higher Education 4.0**

- More emphasis should be given on MOOC, Open Learning systems with international exposure. The fine barrier among different disciplines will be broken . curriculum has to be planned based on multiple and sustainable goal of careers. It has to be desinged as every student should must has knoeledge about STEM and must evolve as a computational thinker as well as a achiever.
- Web 4.0 comprises of complex ecosystem consisting of knowledge, data, intelligence, computer brain interface etc. the big question is how collected data from different sector will be coordinated because there is difference in type of data and its quality. So the government must make necessary arrangement on collection and amalgamation of data. The government should formulate an automation readiness index.
- Universitity should shack off the internal silos and functions jointly the best departments of different universities to bring out best learning outcomes. Instead of focussing on learning by doing or simulation learning, students must be provided the facility of experimental learning more and more. Use of AR/VR, simulation should be used to give students the exposure of real life. AI based Learning analytics brings out learners habit, learners response and also provides feedback. It helps in realistic assessment and supervises personal progress of the learners. The curriculum will go beyond border by amulgating in global knowledge sink.







- Students' roles will become more innovative and participatory. They should gradually become accustomed to automated classrooms. Compiling and sharing knowledge will be a cutting-edge role for both students and teachers. They should become acquainted with collaborative learning mechanisms. They should be incubator of innovation.
- The role of teachers in an automated classroom will be complex in the Industry4.0 age. In the classroom, he will not be alone. Rather than that, he will receive assistance

from Teacherbot or a virtual assistant. The Computer Human Interface will assist him in more accurately analysing progress, detecting learning patterns, and identifying students' weaknesses. Knowledge mining and dissemination will be more pragmatic. The ecology of interaction with students and other teachers will be informatively collaborative. They should be capable of working beyond the confines of the classroom, but rather relying on global virtuality.



Figure 2: Probable Teacher-Student Interaction. Source: Author.

#### LAST FEW WORDS:

Throughout all those paragraphs, we have talked only brain, not the heart. We are more keen on , not humane. making humanoids In next consequective years more advanced forms of Web will be certainly emerged. New renovations and creations have glorified the path of progress of human civilization. Then what is next? In the ' Frankenstein', machine kills his master. Machine can only learns the programmes. But human is ran by his moods. If a machine can not learn the code of mood, then what happens? We do better when we are appreciated, boosting up. What happens if there is no trace of appreciation? Every university always tries to rise up their standards but when there is a hybrid system, is any aspiration there? Autonomy of the university will be lost because then only a brand will be acknowledged and appreciated. We should embrace the change, we should acknowledge the change but if the change makes us heartless, treats us as only an outcome products, then what is ?

In ' Hard Times', Mr. Grangrind badly felt at his dead bed that he lost something in the path of life, to make more progress . That was heart. Is the aim of education to make human machines who can make more machine to reach different Web, to touch more development in Industry.

The aim of education makes human beings more human. If machines begin to dominate over human, then civilization, progress are termed for what to indicate. We should really accept the new, the better one but our motto is to make human more humane- that we should not forget. Online has provided us the opportunity to transact lessons 24\*7. Collaborted universities certainy provide us best transaction of lesson but we lose the fragnance of face to face interaction, we can't ever build up inter personal connections with the students [17]. Technology compels a people to cut off himself from the real world and makes him confined into cybernetic world- a world devoid of colour, flavour and lifely touches. Education should be designed keeping in mind all strategic plans to create an ambience which denotes quality and brings out the most positive outcomes- a humane with all postive congnitive and skill effiecency [18].

#### **CONCLUSIONS:**

Every phase of Web based learning either it was Web 1.0 or web 2.0, we should organise the curriculum, transaction of lessons and associated components in such a way that it should be always benefical for our steudents. When we makes some changes and transformation from the previous one, we always keep in mind to embeb the value and learning that we has learnt and rebuild the new one using the superstructure. Higher education is the system which always provides an answer to the interaction between student and society. when we already reach into the era of Industrial Knowledge society, therefore without

71



wasting a single moments we should reshape the higher education system to meet up all necessities as knowing does not ensure and assure about implementation the same. Universities has make confirm motivation about its aims and moral values and those should be negotiated in respect of any fundamental changes. To improvish the quality of

#### REFERENCES

- 1. Tapsir, S. & Puteh, M. (2018). Framing Malaysian Higher Education: Future Proofs Talent, *Ministry of Higher Education.*
- 2. https://www.mygov.in
- 3. Pricewaterhouse Coopers (PwC) 2018a : AI will create as many jobs as it displaces by boosting economic growth, https://www.pwc.co.uk/press-room/press-releases/AI-will-create-as-many-job-as-it-displaces-by-boosting-economic-growth.html retrieved on 30.08.21 on 18:42
- 4. Microsoft(2020) https://www.microsoft.com/engb/athome/digitalskills/improve/
- 5. https://hr.economictimes.indiatimes.com
- 6. Lin,Q.(2014).First Year English Major's Identity Transformations and English Learning .*Open Journal of Modern Linguistics*, 4(2).
- 7. Bhattacharya, S. & Pal, S. (2021). Scheduled Tribe Girl Students with Special Need and Artificial Intelligence. *European Scholar Journal*, 2(6), 195-201.
- 8. Berners, L., T.,Hendler,J.,& Lassila,O.(2001).The Semantic Web. *Scientific American*,284(5),34-43
- 9. Thomas D.L. & Cynthia E. L. Web-Based Education *The Innovation Journal:The Public Sector Journal*,8(4).
- 10. Boulton. G. (2017). The Digital Revolution and the future of science.
- 11. <u>https://www.timeshighereducation.com/hub/p</u> /jisc-futures-digital-revolution-and-futurescience

education in India, it the hour need to close all loop holes to get the best outcomes of education that all Indian students badly seek for.<sup>21</sup> Again any technology has its some strong points along with some weak ones, before implementation we should have close views on those aspects. Better execusion and better visions are necessary to limit the hazards to minimum.

- 12. Berners, L.T., Hendler, J., & Lassila, O. (2011). The Semantic Web. *Scientific American*, 284(5), 34-43.
- 13. Bhattacharya, S.& Pal, S. Artificial Intelligence , The Future Pacemaker of Indian Higher Education, *Purakala*, 31 (41), 51-59
- 14. Globalization 4.0 Shaping a New Global Architecture in the Age of the Fourth Industrial Revolution <u>http://www3.weforum.org/docs/WEF Globaliz</u> ation 4.0 Call for Engagement.pdf
- 15. <u>https://media.nesta.org.uk/documents/the\_fut</u> <u>ure\_of\_skills\_employment\_in2030\_0.pdf</u>
- 16. Napoleon. D., Ramanujam, V., Lingaraja,K. (2020). The Role of Education4.0 for better Learning Outcome towards Industry 4.0. *Journal of Xi'an University of Architecture & Technology.*
- 17. Rasika. L., Lim, F.C. & Haslinda, A. (2019). Strengths and Weaknesses of Education 4.0 in the Higher Education Institution. *International Journal of Innovative Technology and Exploring Engineering (IJITEE),* 9(2S3).
- 18. Bhattacharya, S. and Pal, S. (2020). Leaveraging Indian Higher Education to Global Standard through Total Quality Management, *Tathapi*, 19(48), 152-164.
- 19. Pal, S. & Bhattacharya, S.(2020). Improving the Standard of Higer Education by Improving Its Quality *Purakala*, 31(55), 58-67.