Book Review

New Technology and Education: Contemporary Issues in Education Studies

By - Anthony Edwards, Year of Publication of the book- 2012,
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As can be seen, digital devices are increasingly encapsulating every domain of our lives. If one looks at the institutions such as schools, hospitals etc, the role of technology has increased over the years. In the context of educational institutions, especially schools, the usage of modern digital devices such as smart boards, digital computers and so on are being increasingly installed for administrative as well as academic purposes in the schools. There is plenty of research that emphasizes upon facilitating the innovation and quality of education through the means of digital technologies. In fact, technology is posed as the new solution for upcoming issues in the domain of education. In this context, it is important to ask some pertinent questions such as- What is the meaning of technology? What is the role of technology in education? How has technology evolved in the realm of education? Why are modern technologies like computers more important in education? What are the future predictions for the role of technology in education? The book- "New Technology and Education" by Anthony Edwards elaborates upon these questions through discussions and examples. The further sections would discuss these questions by providing a summary of the chapters along with debates on these questions by various thinkers.

What is technology and its role in the education system? The initial parts of the book discusses about the definition of technology and its meaning. The author traces the etymology of the word 'technology' to a greek word *technologia*. If the word if broken down into parts, the first part *techno* "relates to the arts" and the second part *logia* means the "writings on accumulated knowledge of the arts." (Edwards 2012: 3) This definition persisted from 17th to 19th century when the meaning of the word arts changed to incorporate

"growing application of science to manufacturing" from only referring to "painting or sculpture" earlier. (Edwards 2012: 4) The debate on the meaning and purpose of technology has existed till date by not only different disciplinary traditions but also different institutions, organizations and thinkers belonging to different realms of the society. The United Nations Education, Social and Cultural Organization(UNESCO) defines technology as "the knowledge and skills and creative processes that may assist people to utilize tools, resources and systems to solve problems and to enhance control over the natural and made environment in an endeavor to improve the human condition." (Edwards 2012: 5) Finn (Finn 1960 quoted in Edwards 2012) refers to technology as "a particular way of thinking about a problem through which a broad range of issues, including economic values, should be taken into consideration." (Edwards 2012: 5) This means that technology should include "all human and non-human processes, systems, management and control mechanisms."(Edwards 2012: 5) Mullis (Mullis 2009 quoted in Edwards 2012) describes technology as the "sort of science based devices that began to emerge in the nineteenth century." (Edwards 2012: 5) Though there can be numerous definitions of the technology, one can simply state that technologies are the machines developed to aid humans by easing the work. Also, it can't be denied that the new economies are moving forward towards technological advancements in all spheres of life from industrial usage to markets to institutions among others. The education can't remain devoid of these technologies and so, the ushering of new era of technology in education has taken place. These technologies need to be seen in "an intellectual and social context" as the processes involved in pushing these technologies in education are not neutral phenomena's but, linked to the "cultural and environmental influences". (Luppicini 2005 quoted in Edwards 2012: 6). The author further elaborates upon the **aspects of the technology** as not "tangible products" but "a series of interconnected activities" that are involved in the making of the technological product. So, it is not the just the hardware, but software, the content of the device and the agencies involved in making and usage of the device that form important parts of the technology and its system. The author skillfully traces the evolution of these devices from machines which required human intervention such as mining machines to machines with a brain such as robots and other devices being developed in the present context. These technologies aid the imparting of education in various ways such as "enabling access to the learning material", catering to a

"range of individual habits", innovation in the pedagogy, easy assessment procedures among many other benefits. (Edwards 2012: 6) The **theoretical context** in which these technologies emerge too is important besides the socio-economic-political context in which these technologies emerge. On one side, there are thinkers who believe that technology is a "self regulating phenomenon shaping the future" and it is technology which drives social processes and happenings. There are thinkers like Marx who can be placed towards this end as he "conceived social processes in technological terms." (Edwards 2012: 8) As the agency of humans can't be discarded, this standpoint was critiqued and so, the soft version of technological determinism emerged. This version stated that technology has a vital role in social change but it is not the only agency for the change. This too has been critiqued as if there is no one definition of technology, how can one viewpoint be the leading ideology in understanding the relationship between the technology and the society. Then, there are those thinkers who believe that it is the society which drives the changes in technology. This is also referred to as the 'constructivist view of technology' and has various sub-branches to it.

How have technologies evolved in the realm of education and the importance of modern technologies like computers in the present context? The first three chapters of the book trace the evolution of technologies in education from language to books to pencils to the automation of education. Edwards (2012: 23) argues that the first major technologies used by humans was language as it helped in performing the day to day tasks such as "exchange and test knowledge", "facilitates the transmission of culture" and other interests of education. As the economies evolved from 'simple artefacts' to the complex artefacts, the language too became more extended and that's how the language of diplomacy evolved. Then, in order to give 'permanency' and 'transferability', books were required to be produced in mass numbers. This was further enabled by 'mechanized printing' and this lead to further spread of education among the masses. With the invention of new technologies, the variety of material which was printed for educational purposes and distributed too changed. All kinds of books were published such as drawing books, dictionaries etc to stimulate all the senses of the readers besides the written word. The evolution of these technologies also lead to changes in the surrounding environment-be it social, cultural or political. McLuhan (McLuhan 1962 quoted in Edwards 2012) refers to printing as the evolution of "technology of individualism"

as reading can now be done in solitary places and this redefines the relationship between the teachers and the students. This importance of printed word over the spoken word also lead to various other socio cultural changes as elaborated by various scholars such as the separation between adulthood and childhood-of acquiring literacy. (Postman 1986 quoted in Edwards 2012) The author has situated technological evolution in the social context and thereby, established the linkages between the technological and social changes. So, the argument by various scholars that technology is a neutral entity has been challenged through such an analysis of looking at the evolution of the technology. Also, the interplay between the self, society and the technology has been placed aptly. For instance, Edwards highlights that the evolution of printing as a technology made knowledge "less vulnerable to the frailties of human memory" and 'commodification' of knowledge took place. In the late 19th century, there were more machines being invented by thinkers like Thorndike, Skinner and so on to overcome the challenges posed by printing such as Thorndike invented a device to manage 'personal instruction' by print. This era also defined the usage of radio and television in the arena of education to make learning more interesting and engaging for the learners. Edwards highlights that the notion of "open Universities" became possible due to the advancement of these technologies in the arena of education. These technologies also made education more accessible for the deprived sections of the society. After that, in 1950's, the programmed learning movement, the use of computers in education in late 1960's further evolved the usage of technology in education. The use of computers in education was triggered by the challenges being faced by the devices earlier used such as 'distancing of teachers from the pupils', 'inefficacy' among many others. They were perceived to deliver many benefits such as "individualized instruction", "easy recording", easy use of "simulation and modeling" and so on. The computers brought in the information revolution and changed the manner in which information and knowledge could be accessed and used. This further changed the notions involving the capacities to interpret and understand complex systems. The challenges such as the role of teachers in the education system, the questions regarding the efficacy of knowledge systems emerged as the usage of computers in education increased.

What are the future predictions for the role of technology in education? Edwards highlights that it is important to locate and think about the future role of technology in

education to be able to analyze the direction in which we are going considering the present usage of the technology. The book, throughout the themes, has located technology along with the socio-economic-political factors. So, the author looks at the global trends of economic growth, working patterns, migration in the future to locate the place of technology in education in future. As the total fertility rate in the OECD countries has already decreased, this has repercussions for the education system as fewer children would mean less schools and less choice. Also, the future trends needs to take into account the increasing globalization which would require newer skills to be imparted through the school system. With such many more socio-economic changes, the role of technology in the lives of the people would also increase. The era of artificial intelligence would arrive with the 'invisible networks' located in our clothes and skins as well. In the domain of education, this proliferation of technology would mean the increase in range of educational courses, "well equipped centers for vocational and educational training", "invasive and non invasive interfaces between the brain and the machines" and thereby, the change from networked to ubiquitous computing. This would weaken the boundaries between the aspects of contemporary living and the definitions of work, leisure, employment and education would change considerably. Though different theorists predict these changes with variations, the role of technology would invariably increase in accepted through the disciplines as technology would become "smaller, cheaper and faster." The author engages with questions whether technological future is inevitable or desirable and then, pinpoints the importance of values underpinning the society which will decide the role technology would play in the society and the education system.