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Artificial Intelligence and the Future of Learning: Bridging Digital Competence with Educational Progress

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ABSTRACT

Technological developments have created new skills in the digital era, making people digitally competent. Artificial Intelligence (AI) is a rapidly evolving field focused on creating systems that can perform tasks that require human intervention, such as learning from experience, understanding natural language, recognizing patterns, problem-solving, and making decisions. AI has profound impacts on various sectors, including healthcare, education, entertainment, finance, automation, transportation, smart cities, and criminal justice. AI has the capacity to improve teaching and learning methods, solve some of the largest issues facing education today, and accelerate the achievement of Sustainable Development Goals (SDGs) SDG 4. Artificial intelligence (AI) seems promising for empowering teachers, strengthen student learning, and providing more opportunities to the students in the digital era. While AI has many benefits, it is significant to incorporate it considerably into the educational process. Human handling and involvement remains vital, as teachers can provide emotional validation, empathetic surrounding and more refined understanding that AI might deficit in the near future. Balancing AI's efficiency with personalized approaches is essential for creating a supportive learning environment. Education should be committed to progress, focusing on the proper use of technological advancements and preserving diversity and cultural norms. AI research should not be prioritized over human consciousness advancement, as it can reinforce innate stupidity and exploit human emotions. Regulatory oversight is needed to prevent foolishness in AI research and the role of AI in the human inner world.

1. Introduction

Since the dawn of human civilization, humanity has confronted many paradigm shifts-from Population explosion to Knowledge explosion to Advent of democracy to the Techno scientific advancements. This implies that 'more knowledge' is to be provided to 'more people' to 'all people' (Education is a fundamental right now in most of the countries including India). Techno- scientific developments have succeeded in creating a vast number of new and newer skills in the 'Digital Era'. In order to keep pace with these tremendous changes all the people need to be tech savvy. It is definitely true that at present people (residing in different geographical areas) are either 'Digital natives' or 'Digital Immigrants or 'Digital Illiterates' but as time passes 'all the people' will have to be 'Digitally Competent' to live harmoniously with their surroundings. Internet of things (IoT), Machine Learning, Robotics, Neuro-technology, Powerful algorithms and ultimately Artificial Intelligence are now aids, devices for the welfare of the humans (or who knows for their dooms).

2. What is Artificial Intelligence (AI)?

Artificial Intelligence (AI) has been studied for several decades. It is a rapidly evolving field with intense implications across various precincts. It is a branch of Computer Science that is focused on creating systems that can perform tasks which

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generally require human interference i.e. human intelligence. These tasks include learning from experience, understanding natural language, recognizing patterns, problem solving and making decisions. AI has a vast horizon; it has a gamut from simple algorithms performing specific functions to advanced systems capable of complex reasoning and learning. AI has profound impact over various sectors including healthcare, education, entertainment, finance, automation, transportation, smart cities and criminal justice. To put simply AI is the ability of machines to perform tasks or functions similar to that of a human mind.

In 1950 Alan Turing published "Computing Machinery and Intelligence," and proposed the question, "Can machines think?" and introduced the 'Turing Test' as a criterion for machine intelligence. Alan Turing's leading work remains the fundamental to our understanding of AI and continues to carry on the ongoing research and innovation in this field.

The term 'Artificial Intelligence' has been coined by John McCarthy (1927–2011) in 1956 in the Dartmouth Conference, which is considered the founding event of AI as a field of study. He was a well known American computer scientist and cognitive scientist, universally recognized as one of the founders of the field of artificial intelligence (AI).

"It's clearly possible for something to acquire higher intelligence than its ancestors: we evolved to be smarter than our ape-like ancestors, and Einstein was smarter than his parents. If computers continue to obey Moore's Law, doubling their speed and memory capacity every eighteen months, the result is that computers are likely to overtake humans in intelligence at some point in the next hundred years. When an artificial intelligence (AI) becomes better than humans at AI design, so that it can recursively improve itself without human help, we may face an intelligence explosion that ultimately results in machines whose intelligence exceeds ours by more than ours exceeds that of snails." (Hawking, 2020)

3. Artificial Intelligence and Education

Humankind is facing unprecedented revolutions. Humans need to prepare them and their children for such extraordinary transformations. Nothing is fixed or eternal now; with the rapid increase in technology nothing is certain. Humans are oversupplied with vast amount of information and misinformation too. Artificial intelligence has immense potential to reform and revolutionize education in various ways. The Sustainable Development Goals, or SDGs, are a group of 17 global objectives that declared established by the United Nation in 2015. By 2030, they hope to create a more just and sustainable society by aiming on a variety of global issues. One of the 17 objectives of the 2030 Agenda for Sustainable Development is the fourth Sustainable Development Goal is to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all." This objective emphasizes how important education is in promoting sustainable development.

Education as a process involves three major aspects i.e. teaching, learning and evaluation. With the advancements in artificial intelligence we need to ponder upon how AI can influence all these three aspects of education in order to make it more effective. The Sustainable Development Goal 4: Quality Education cannot be achieved only by relying on conventional teaching learning process within the boundaries of formal schooling. In order to attain relevant and effective learning outcomes, equal access to quality technical, vocational and tertiary education including higher education, eliminating gender disparities, including persons with disabilities, indigenous people and children in vulnerable situations, a system is to be developed to incorporate a hybrid mode in education where artificial intelligence and a teacher go hand in hand. This can be only done by making significant use of Artificial Intelligence (AI) in the field of education.

AI has the capacity to improve teaching and learning methods, solve some of the largest issues facing education today, and accelerate the achievement of SDG 4. Rapid technological advancements inescapably bring risks and difficulties. In order to achieve SDG-4 goal 2030 UNESCO is dedicated to helping Member States use AI, while making sure that fundamental idea of equity and inclusion remains intact in educational settings. During the last quarter of the 20th century and the first quarter of the 21st century, educational thinkers are engaged in tackling the dilemma of 'the elusive triangle' of education. The Elusive triangle refers the issues of Expansion, Inclusion and Excellence in education. Alternatively this points towards the problem of Quantity, Equity and Quality. AI appears to have the potential to effectively deal with this ticklish problem. AI related /oriented gadgets and software's may be of immense value here. These may complement the educational tasks and may also perform these tasks independently. It is reasonable to mention that for the educational endeavors unto elementary level AI may complement /supplement teachers' tasks whereas at territory stage of education, AI may even act independently. It has now become possible to move from 'Brick and Mortar Edifices' to virtual classrooms and massive online courses under the ODL systems. This innovation may successfully overcome specific issues related to the hither-to unsolvable problems associated with the 'Elusive Triangle of Education'. Individualized instructional strategies may be device for the different talents and specific objectives of the knowledge seekers. A number of possibilities exist for AI to transform education. *Artificial Intelligence (AI) could serve and is already serving in several teaching-and-learning roles. AI can help in individualized learning experiences. There are learning platforms that enable AI driven teaching, learning, evaluation and feedback system. There are many learning*

applications available online. Online learning tools offer immense opportunities to add knowledge and skills. By choosing the right tools and proceeding with a strategic mindset, one can upgrade their learning experiences. These learning applications assess students' strengths and limitations. Making appropriate use of AI can assist in achieving learning outcomes by tracking student progress and ensuring that each student receives instruction that matches their learning style and speed.

AI is able to conduct human-like conversations. It has possibilities to provide adaptive tutorials or instructional assistance that can help the learners in understanding difficult concepts. Learning experiences are being tailored as per the need of an individual learner. AI can play an important role in providing feedback to students and enhancing their learning experiences in different ways. It can analyze the performance of the learners and provide them with consistent feedback addressing their specific strengths and weaknesses which can help them in improving their weaker areas. It is also significant for reinforcing the learners. It can also provide an unbiased evaluation

AI is also being used to improve the creative learning skills of the students. It is being used to provide feedback and constructive review on students writing in order to help them improve their creative writing skills. AI models can customize learning for students with different needs and improve accessibility for students with diverse learning needs. It can help fostering more inclusive learning environment. AI systems have potential to increase accessibility, inclusivity and creating more welcoming teaching learning environment.

AI can also assist in reducing the work load of the teachers. AI systems have the ability to automatically grade assignments, tests, and quizzes and saving teacher's time and facilitating teachers with more time and space to concentrate on student support and individualized instruction rather than on administrative duties. It's a tedious task for a teacher to customise teaching learning according to every individual students need with a classroom of 35-40. To customise basic knowledge transfer or information providing task can be assigned to AI and the teacher's potential and time can be used to make interactions with the students. In country like India teachers are often engaged in activities other than teaching. AI can help in maintaining large amounts of educational data, like as attendance logs, demographic data, and student performance measures to find trends, patterns, and areas that need improvement. These AI driven insights can be used by educators or administration to improve the overall teaching learning process and environment and make data-driven decisions.

Artificial intelligence (AI) seems promising for empowering teachers, strengthen student learning, and providing more opportunities to the students in the digital era. However it is pivotal to assure that AI technology is applied sensibly, ethically, wisely and so that equity, privacy, and transparency is prioritized.

"The potential benefits of artificial intelligence are huge, so are the dangers." Dave Waters

4. Can AI replace Teachers?

While AI has many benefits, it is significant to incorporate it considerably into the educational process. Human handling and involvement remains vital, as teachers can provide emotional validation, empathetic surrounding and more refined understanding that AI might deficit in the near future. It is important to find an equilibrium by balancing AI's efficiency with the personalised approach of educators in order to create a more effective and supportive learning environment.

In his article in New York Times, David Brooks mentioned that "The best teachers teach themselves. When I think back on my own best teachers, I generally don't remember what was on the curriculum, but rather who they were. Whether the subject of the course was in the sciences or in the humanities, I remember how these teachers modeled a passion for knowledge, a funny and dynamic way of connecting with students. They also modeled a set of moral virtues - how to be rigorous with evidence, how to admit error, how to coach students as they make their own discoveries. I remember how I admired them and wanted to be like them. That's a kind of knowledge you'll never get from a bot."

It is imperative that we should not just focus on technical knowledge or technological advancements but also emphasise the importance of acquiring general purpose life skills. In order to understand what should be the basic skills we need to revisit one of the famous report published by UNESCO.

UNESCO published a document, in the form of a 'Treatise' in the year 1995, just before the beginning of the 21st century as well as the onset of the third millennium after 5 years. The document has been titled 'Learning: The Treasure Within' popularly known as 'Delors Report'. The specific purpose of this academic endeavor was to let the people of the world know the type and kind of education and educational institutions to be developed for the benefit of the entire humanity encompassing all the nation states of the planet earth. This specific purpose was extremely useful for the goals of the education, educational processes and the entire paraphernalia associated with various important aspects of the 'System of Education' in the next century (as well as the next millennium).

One of the extremely important recommendations of the 'Delors Report' unequivocally declared that the edifice of education should be built on the four pillars namely

- Learning to know
- Learning to do
- Learning to live together
- Learning to be

Keeping in view, the enormous socio-cultural diversities among the Nation States (on the planet earth), and the report vehemently stressed that 'Education should be rooted in your culture and it should be committed to progress'. Both are important and essential, the report maintained. The above mentioned narration has very useful implications for the contemporary times and for the immediate future of the humanity. The first and second pillars intrinsically pertain to 'acquisition of knowledge' and 'mastery over desired skills' respectively. Even SDG-4, 2030, aims to ensure that all learners acquire essential knowledge and skills to support and promote sustainable development. This involves a broad range of educational and developmental priorities.

The third pillar '*Learning to Live Together*' refers to '*peaceful coexistence*' - '*live happily and let others live happily*'. It also implies that now in this area of globalization mega developments need cooperation rather than competition. Drastic challenges before the humanity are to be faced, tackled and solved through 'co-operation' only. Global warming, ecological concerns, peaceful coexistence related threats all call for 'learning to live together'. This type of learning shall require all the technology related mega tools for the better future as well as the livable planet earth.

The fourth pillar '*Learning to be*' is concerned with self-realization- the state of reaching self- actualization. Sincere attempts of our ancestors as well as the modern era's intellectuals- scientist and technocrats had revealed the history of the formation of the universe / universes to some extent. Theories of evolution- natural evolution have paved the path of understanding this process to some extent. We now know that it took billion years (or even trillion years) for this evolution. Recent breakthroughs in the fields of Biology, Anthropology, Ancient History, Archaeology, Sociology and other related disciplines have revealed that social evolution occurred in relatively lesser times- a few centuries or even few decades or sometimes even in few years. However the evolution of the '*Self*'- *a prerequisite for self realization/ self actualization has to happen in a lifetime and this is the ultimate purpose of 'Living'- knowing one's own self- 'Know thyself is the dictum'*.

Education should have its roots in the 'Culture' of the society - culture denotes the mores, traditions, customs, ethos (including the philosophy values, principles, beliefs), arts, music and literature - arts, humanities, fine arts performing arts. Culture provides stability, consistency and predictability in the behavioral patterns of the individuals of the society. Social scientists have elaborated the merits of cultural aspects vis-a-vis the dynamics of changes. Changes should have benefits for the people- immediate ones as well as for the long term. De-rooting people in the name of progress depriving them from the traditional knowledge systems, dialects, arts, music etc. should not be done. Diversities, cultural norms- having meaning and importance for the people are to be respected.

Ultimately, education should be necessarily committed to progress. It is to be remembered that 'all progress is a change' but all changes may or may not be progress. Moreover progress now is definitely concerned with proper uses of techno scientific advancements and no one should be deprived of these new facilities and the benefits associated with them.

David Brook's in his article in the New York Times concluded that - "Creativity requires childlike intellect. Children use their creativity and imagination from birth to make sense of the world and tell stories. We need to unleash creativity and developing imaginative powers rather than teaching linear, impersonal, generalized ways of thinking. Our main concern should be on gravitating human skills."

Harari, (2019) stated in his book, 21 Lessons for the 21st Century "The risk is that our highly developed artificial intelligence (AI) can just reinforce people's innate stupidity if we devote too many resources to AI research and not enough to the advancement of human consciousness. In the ensuing decades, we might not have to deal with a robot takeover, but we might have to deal with legions of robots that are more adept at playing on our emotions than our mother and who will use this remarkable skill to try and sell us something, whether it be a vehicle, a politician, or a whole philosophy. Our innermost desires, hatreds, and fears may be recognized by the bots, and then uses them against us."

According to **Elon Musk** "I am increasingly inclined to think there should be some regulatory oversight, maybe at the national and international level just to make sure that we don't do something very foolish."

Finally, a brief narration is imperative here to describe the limitations of the role of AI in the inner world of humans which reflects feelings, emotions, empathy, eternal creativity and aspirations, longing and desires. Leading authors agree that humans will never create a robot that mix humans personal consciousness. Most probably it appears to be certain that human efforts to imitate intelligence and consciousness in machines are unlikely to succeed in the near future.

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