

Educational Technology, Artificial Intelligence and Digital Social Inequality

Dr. Bikramjit Kaur Malhotra

Associate Professor
School of education, RIMT University, Punjab

Abstract

Educational technology is the process of integrating technology into education in a positive manner that promotes a more diverse learning environment and a way for students to learn how to use technology as well as their common assignments. Artificial Intelligence (AI) is the branch of computer science which deals with intelligence of machines where an intelligent agent is a system that takes actions which maximize its chances of success. It is the study of ideas which enable computers to do the things that make people seem intelligent. The central principles of AI include such as reasoning, knowledge, planning, learning, communication, perception and the ability to move and manipulate objects. It is the science and engineering of making intelligent machines, especially intelligent computer programs. Digital inequality refers to the disparities in knowledge and ability to use digital and information technology based on different demographics, socioeconomic backgrounds, and information technology experience and competencies.

Key words: Educational technology, Artificial intelligence and Digital social inequality

Introduction:

Educational technology is the efficient organization of any learning system adapting or adopting methods, process and products to serve, identifies educational goals. This involves systematic identification of the goals of education, recognition of the diversity of learner's needs, the contexts in which learning will take place and the range of provisions needed for each of these. The challenge is to design appropriate systems that will provide for and enable appropriate teaching-learning systems that could realize the identified goals. Educational technology act as an agent of change in the classroom, which includes not only the teacher and the teaching-learning process but also systematic issues like reach, equity and quality. Educational technology was never created, it has simply emerged. Though the origin of the term is unclear, the roots of this concept extend back through the centuries. The groundwork for the field of educational technology, then called educational engineering seems to have emerged with Franklin Bobbitt (1924) and WW Carters (1945). Finn in 1962 said educational technology is a process, and attitude, or a way of thinking about certain classes of problems. The National Policy on Education (1986) reported that Educational Technology offers the means to reach large numbers in remote and inaccessible areas, remove disparity in educational facilities available to the disadvantaged and provide individualized instruction to learners conveniently suited to their needs and pace of learning.

Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems. Specific applications of AI include expert systems, natural language processing, speech recognition and machine vision.

As the hype around AI has accelerated, vendors have been scrambling to promote how their products and services use it. Often, what they refer to as AI is simply a component of the technology, such as machine learning. AI requires a foundation of specialized hardware and software for writing and training machine learning algorithms. No single programming language is synonymous with AI, but Python, R, Java, C++ and Julia have features popular with AI developers.

In general, AI systems work by ingesting large amounts of labeled training data, analyzing the data for correlations and patterns, and using these patterns to make predictions about future states. In this way, a chat bot that is fed examples of text can learn to generate lifelike exchanges with people, or an image recognition tool can learn to identify and describe objects in images by reviewing millions of examples. New, rapidly improving generative AI techniques can create realistic text, images, music and other media. Easy way of including technology in education:

Running a Virtual Field Trip: Explore famous locations such as the Empire State Building or the Great Barrier Reef; or preview actual field trips by using technology to “visit” the locations beforehand.

Participating in a Web quest: These educational adventures encourage students to find and process information by adding an interesting spin to the research process. For example, they could be placed in the role of detective to solve a specific “case,” collecting clues about a curriculum topic by investigating specified sources and web pages.

Podcasting: Playing relevant podcasts — or assisting students in creating their own — can be a great way to supplement lessons, engage auditory learners and even empower students to develop new creative skills.

“AI is concerned with methods of achieving goals in situations in which the information available has a certain complex character. The methods that have to be used are related to the problem presented by the situation and are similar whether the problem solver is human, a Martian, or a computer program” (McCarthy, 1988).

Future of AI

Looking at the features and its wide application we may definitely stick to artificial intelligence. Seeing at the development of AI, is it that the future world is becoming artificial. Biological intelligence is fixed, because it is an old, mature paradigm, but the new paradigm of non-biological computation and intelligence is growing exponentially. The memory capacity of the human brain is probably of the order of ten thousand million binary digits. But most of this is probably used in remembering visual impressions, and other comparatively wasteful ways. Hence we can say that as natural intelligence is limited and volatile too world may now depend upon computers for smooth working. Artificial intelligence (AI) is truly a revolutionary feat of computer science, set to become a core component of all modern software over the coming years and

decades. This presents a threat but also an opportunity. AI will be deployed to augment both defensive and offensive cyber operations. Additionally, new means of cyber attack will be invented to take advantage of the particular weaknesses of AI technology. Finally, the importance of data will be amplified by AI's appetite for large amounts of training data, redefining how we must think about data protection.

Defining Inequality in the Context of AI

Defining inequality in the context of AI involves understanding how artificial intelligence technologies intersect with various social, economic, and ethical dimensions to produce or perpetuate disparities among individuals or groups (Kundi, B. et al.2023). In this context, inequality can manifest in several ways:

Economic Inequality

AI technologies can impact economic inequality by influencing access to employment, income distribution, and wealth accumulation. Automation driven by AI may lead to job displacement, disproportionately affecting workers in low-skilled or routine jobs and widening the gap between high-skilled and low-skilled workers. Additionally, AI-driven innovations may concentrate wealth and power in the hands of tech companies and affluent individuals, further exacerbating economic disparities.

Opportunity Inequality

AI can create disparities in opportunities for education, employment, and advancement. Access to AI education and training programs may be limited, leading to unequal skill development and job prospects. Furthermore, biased AI algorithms used in hiring, lending, and other decision-making processes can perpetuate systemic inequalities by disadvantaging certain groups, such as women, minorities, or individuals from low-income backgrounds.

Social Inequality

AI technologies can amplify existing social inequalities by reinforcing biases and discrimination present in historical data used to train AI algorithms. Biased AI systems may produce discriminatory outcomes in areas such as criminal justice, healthcare, and access to public services, disproportionately affecting marginalized communities and perpetuating social injustice.

Digital Inequality

AI adoption and access to AI technologies may vary across different regions, socioeconomic groups, and demographic categories, leading to digital inequality. Disparities in access to high-speed internet, digital literacy, and AI resources can create digital divides, limiting individuals' ability to benefit from AI-driven innovations and participate fully in the digital economy.

Ethical Inequality

The ethical implications of AI raise concerns about fairness, accountability, and transparency. Biased AI algorithms, Digital inequality is the digital manifestation of social inequality. The history of mankind has been observed by various forms of social inequality. Inequality cannot be eliminated, but it can be minimized. Culture, gender, race, language, religion, and historical conditions can all contribute to social stratification that is embodied by social stratification. Therefore, some of the qualities that create social inequality may change over time. This situation can be explained by the variability of social structure and values. Digital inequality has a similar pattern to social inequality. Social inequality is constantly reproduced within its socio-economic conditions. Digital inequality, on the other hand, is an element that prevents entry into the digital space and stops contributing to the regulation and development of digital society. Education, cultural capital, political participation, and bureaucratic management are all hindered by digital inequality. This study addresses digital inequality as a barrier to participation in the digital society.

Consequences of the digital divide

Technological discrimination is a form of poverty and social exclusion, depriving some citizens of essential resources for development and wealth generation. We have seen this a lot during the COVID-19 pandemic, as many students and workers found it difficult to work from home and follow classes online. We review the main effects of the digital divide below:

Lack of communication and isolation

People in remote areas who do not have access to the Internet are disconnected. Something similar happens to urban residents who are disconnected which causes social isolation.

Barrier to studies and knowledge

The corona virus crisis has shown the effects of the digital divide in education: teachers and students out of the loop because they lack sufficient technology and digital skills. It also increases lack of knowledge by limiting access to knowledge.

Accentuates social differences

Digital illiteracy reduces the chances of finding a job and accessing quality employment, which has a negative impact on the workers' economy.

Gender discrimination

As we saw at the beginning, the digital divide negatively affects women more than men, which violates the principles of gender equality.

Strategies on bridging the digital divide

The UN includes the reduction of the digital divide (SDG 9) in its Sustainable Development Goals. That is why, in many places initiatives have been launched to facilitate access to technology. Here we mention some of the most relevant ones:

- **Digital literacy programs.** They instruct people in less-favoured areas of Internet use to improve their personal well-being.
- **Alliance for Affordable Internet (A4AI).** This project, led by an international coalition of governments, businesses and civil society, aims to lower the cost of broadband in specific areas in Africa, Asia and Latin America.
- **Free Basics.** This initiative, promoted by Facebook and six other technology companies, aims to provide free access to a number of websites through a mobile application.
- **Star link.** This project, promoted by tycoon Elon Musk, is launching satellites into space to provide high-speed Internet and global coverage at affordable prices.

Conclusion:

Till now we have discussed in brief about Artificial Intelligence. We have discussed some of its principles, its applications, its achievements etc. The ultimate goal of institutions and scientists working on AI is to solve majority of the problems or to achieve the tasks which we humans directly can't accomplish. It is for sure that development in this field of computer science will change the complete scenario of the world Now it is the responsibility of creamy layer of engineers to develop this field. So it is concluded that AI , educational technology are blended perfectly together but due to social digital inequality it is lagging behind.

References:

1. *Fazelpour, S., & Danks, D. (2021).* Algorithmic bias: Senses, sources, solutions. *Philosophy Compass*, 16(8), e12760.
2. *Trucano, M. (2023, July 10).* AI and the next digital divide in education | Brookings. Brookings. <https://www.brookings.edu/articles/ai-and-the-next-digital-divide-in-education/>
3. *Francis Ettaabello(Dec2,2023).* Artificial Intelligence and the Digital Divide in Education,USF.
4. *Abulibdeh, A., Zaidan, E., & Abulibdeh, R. (2024).* Navigating the confluence of artificial intelligence and education for sustainable development in the era of industry 4.0: Challenges, opportunities, and ethical dimensions. *Journal of Cleaner Production*, 140527.
5. *Hui, X., Reshef, O., & Zhou, L. (2023).* The short-term effects of generative artificial intelligence on employment:
6. *Kundi, B., El Morr, C., Gorman, R., & Dua, E. (2023).* Artificial Intelligence and Bias: A scoping review. *AI and Society*,199-215.
7. *Min, A. (2023).* Artificial Intelligence and Bias: Challenges, Implications, and Remedies. *Journal of Social Research*,2(11).

8. **Mindell, D. A., & Reynolds, E. (2023).** The work of the future: building better jobs in an age of intelligent machines. MIT Press.
9. **Saini.N.(2023).**”Research paper on artificial intelligence and its application”IJRTI | Volume 8, Issue 4 | ISSN: 2456-3315.
10. **Mc.Carthy(1988)**Mathematical logic in artificial intelligence Daedalus, 117 (1) (1988), pp. 297-311 19.

