RAWATSAR P.G. COLLEGE
'Sanskriti Ka Badlta Swaroop Aur AI Ki Bhumika' (SBSAIB-2025)
DATE: 25 January 2025
International Advance Journal of Engineering, Science and Management (IAJESM)
Multidisciplinary, Multilingual, Indexed, Double-Blind, Open Access, Peer-Reviewed, Refereed-International Journal, Impact factor (SJIF) = 8.152

Role of Artificial Intelligence (AI) in Education and Social Changes

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Abstract

Artificial Intelligence (AI) is the technical field in which machines are given the ability to think and understand like humans. Over time, AI has strengthened its role in various aspects of life. AI has an important contribution in the rapid changes taking place in society, as it not only increases efficiency and productivity, but also helps in improving the quality of life. The purpose of this research paper is to analyze how AI affects social changes and understand it 's potential contribution to the development of society. This technology is constantly making it 's presence felt in our everyday lives and is affecting various aspects of society and education. Especially in the field of education, AI has started a new revolution , which has brought qualitative changes in the learning process. This paper is a general overview and analysis , highlighting the impacts and possibilities of AI.

Key words: Artificial Intelligence, Social Changes, Education, Online Education, Data Security, Technological Development.

Introduction

Artificial Intelligence (AI) has emerged as a transformational force , revolutionizing various industries and shaping the way we live and work. With advances in machine learning , deep learning, and natural language processing , AI is becoming more intelligent and capable , raising both excitement and concerns about its implications and applications. Artificial Intelligence (AI) has the potential to address some of the greatest challenges in education today , reshaping teaching and learning methods and accelerating progress towards SDG 4. However, rapid technological development inevitably brings a number of risks and challenges, which have so far been overtaken by policy debates and regulatory frameworks. UNESCO is committed to supporting Member States to harness the potential of AI technologies to achieve the Education 2030 Agenda , while ensuring that its application in educational contexts is guided by fundamental principles of inclusion and equity. UNESCO's mandate inherently calls for a human-centred approach to AI . It aims to change the conversation to include AI 's role in addressing existing inequalities regarding access to knowledge , research and the diversity of cultural expressions , and to ensure that AI does not widen the technological divide within and between countries. The promise of " AI for all " should be that everyone can take advantage of the ongoing technological revolution and have access to its fruits , especially in terms of innovation and knowledge. Within the framework of the Beijing Consensus , UNESCO developed Artificial Intelligence and Education: Guidance for Policy-makers to promote the readiness of education policy-makers in artificial intelligence. It aims to create a shared understanding of the opportunities and challenges that AI presents for education , as well as its implications for the core competencies needed in the AI era. UNESCO also published an AI Competency Framework for Students and Teachers to guide countries in helping students and teachers understand the potential and risks of AI.

In this article , we will discuss the rise of artificial intelligence , explore its profound implications across various sectors, and discuss the ethical considerations it raises –

Increasing efficiency and productivity:

The most important implication of AI is its ability to increase efficiency and productivity across industries. AI-powered automation streamlines repetitive tasks , allowing humans to focus on more complex and creative efforts. From manufacturing to healthcare , AI has demonstrated

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machine learning algorithms , AI systems can analyze large amounts of data , identify patterns, its ability to improve processes , reduce errors, and boost overall productivity. With the help of and make data-driven decisions faster than humans.

Changes in health care and medicine:

Artificial intelligence is revolutionizing the healthcare sector by enabling better patient care , diagnosis, and treatment. AI algorithms can analyze medical data such as patient records, lab results, and medical images to assist doctors in making accurate diagnoses and treatment plans. AI-powered chatbots and virtual assistants are also being used to provide personalized healthcare advice and support. Furthermore, AI is playing a vital role in drug discovery and genomics research, helping scientists identify potential drug candidates and uncover insights into complex diseases.

Empowering smart cities and infrastructure:

Artificial intelligence has the potential to revolutionize education by providing personalized and adaptive learning experiences. AI algorithms can analyze students' learning patterns and preferences to tailor educational content and recommendations accordingly. Intelligent tutoring systems can provide personalized feedback and guidance to students, promoting better learning outcomes. Additionally , AI-powered virtual reality and augmented reality applications can create immersive educational experiences , making complex concepts more tangible and engaging.

To promote progressive education and individual learning:

Artificial intelligence has the potential to revolutionize education by providing personalized and adaptive learning experiences. AI algorithms can analyze students' learning patterns and preferences to tailor educational content and recommendations accordingly. Intelligent tutoring systems can provide personalized feedback and guidance to students, promoting better learning outcomes. Additionally , AI-powered virtual reality and augmented reality applications can create immersive educational experiences , making complex concepts more tangible and engaging.

Healthcare: Application of AI in healthcare can help address issues of high barriers to access to healthcare facilities, particularly in rural areas that suffer from poor connectivity and limited supply of healthcare professionals. This can be achieved through implementation of use cases such as AI driven diagnostics, personalized treatment, early identification of potential pandemics, and imaging diagnostics, among others.

Agriculture: AI holds the promise of driving a food revolution and meeting the increased demand for food (global need to produce 50% more food and cater to an additional 2 billion people by 2050 as compared to today). It also has the potential to address challenges such as inadequate demand prediction, lack of assured irrigation, and overuse/misuse of pesticides and fertilisers . Some use cases include improvement in crop yield through real time advisory, advanced detection of pest attacks, and prediction of crop prices to inform sowing practices.

Smart Mobility, including Transports and Logistics: Potential use cases in this domain include autonomous fleets for ride sharing, semi-autonomous features such as driver assist, and predictive engine monitoring and maintenance. Other areas that AI can impact include autonomous trucking and delivery, and improved traffic management.

Retail: The retail sector has been one of the early adopters of AI solutions, with applications such as improving user experience by providing personalized suggestions, preference-based browsing and image-based product search. Other use cases include customer demand anticipation, improved inventory management, and efficient delivery management.

Manufacturing: Manufacturing industry is expected to be one of the biggest beneficiaries of AI based solutions, thus enabling 'Factory of the Future' through flexible and adaptable

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technical systems to automate processes and machinery to respond to unfamiliar or unexpected situations by making smart decisions. Impact areas include engineering (AI for R&D efforts), supply chain management (demand forecasting), production (AI can achieve cost reduction and increase efficiency), maintenance (predictive maintenance and increased asset utilization), quality assurance (eg vision systems with machine learning algorithms to identify defects and deviations in product features), and in-plant logistics and warehousing.

Energy: Potential use cases in the energy sector include energy system modeling and forecasting to decrease unpredictability and increase efficiency in power balancing and usage. In renewable energy systems, AI can enable storage of energy through intelligent grids enabled by smart meters, and also improve the reliability and affordability of photovoltaic energy. Similar to the manufacturing sector, AI may also be deployed for predictive maintenance of grid infrastructure.

Smart Cities: Integration of AI in newly developed smart cities and infrastructure could also help meet the demands of a rapidly urbanizing population and providing them with enhanced quality of life. Potential use cases include traffic control to reduce congestion and enhanced security through improved crowd management.

Education and Skilling: AI can potentially solve for quality and access issues observed in the Indian education sector. Potential use cases include augmenting and enhancing the learning experience through personalized learning, automating and expediting administrative tasks, and predicting the need for student intervention to reduce dropouts or recommend vocational training.

Challenges and Future Directions:

Data security and privacy: The use of AI in education collects personal data of students , which may raise privacy and security issues. Appropriate measures are required to protect the data.

Impact of AI on the role of the teacher: AI can simplify the work of teachers , but it can replace the role of the teacher. The element of emotion , understanding , and support of the teacher cannot be completely replaced by AI .

Risks of misuse of AI : Misuse or misuse of AI can increase inequality and discrimination in education. There is a need for reforms towards the ethical use of AI in the education system.

Job Decline: AI and automation may reduce employment opportunities in traditional industries.

Data privacy and security: Data collected by AI about students and social services may be subject to privacy violations.

Social and mental impacts: Excessive use of AI-based technology on children and young people can have mental health impacts , such as loneliness or a lack of social interaction.

Lack of equity: The voices of underprivileged communities are often left unheard in the development of AI , which can further widen the digital divide.

Suggestion :

Social inclusion: Promote diversity in the development of AI and ensure the participation of all communities in policy making.

Ethical Perspective: It is necessary to follow ethical standards while developing AI so that it does not cause any social discrimination.

Training for teachers and students: Regular training of teachers and students for effective use of AI.

Conclusion: Artificial Intelligence has opened up new possibilities in the field of education and social change. It is not only improving the methods of education but also promoting inclusion and economic opportunities in society. However , some challenges are also emerging

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policies and regulations will need to be made to deal with these challenges. Overall , the use of along with it , such as data security , digital divide , and ethical issues. In the future , strong AI in the right direction can bring positive changes to education and society.

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