Artificial Intelligence as Modern Technological approach: Thematical Approach in the line of NPE-2020

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Abstract

Technology has geometrically progressed during the last few decades and subsequently artificial intelligence (AI) research reached new peak. India National strategy for artificial intelligence prepared by NITI Aayog has formulated the forwarded to harness the power of AI. Artificial intelligence (AI) practices and efforts benefit India in addressing societal needs in various areas including smart mobility and transportation using dynamic data. This AI can now be deployed in a variety of tasks and decision making to make better connectivity. Technology integration is emphasized in the National Education Policy-2020 (NEP-2020) of India as a means of transforming the educational system. One crucial area of focus is the application of AI to the NEP-2020. Within the NEP-2020 framework, this research study seeks to assess the advantages and drawbacks of adopting AI in education. Under the NEP-2020 framework, there are a lot of opportunities for using AI in education, but there are a lot of challenges as well. Issues with ethics, data security, and privacy, equity, teacher preparation and readiness, and infrastructural limitations are a few of these challenges. In this study popular articles published in recent years that related to artificial intelligence are selected and explored. The present paper aims to provide an overview of background of artificial intelligence, impact of AI in Education, One crucial area of focus is the application of AI to the NEP-2020. Within the NEP-2020 framework, this research study seeks to assess the advantages and drawbacks of adopting AI in education.

Key Words: Artificial intelligence, Artificial intelligence in Education, National Education Policy-2020, Pros and Cons.

Introduction

Education play very key role in the development of human civilization. Since ancient times the method of learning is constantly evolving and undergoing numerous ways due to new technologies. One of the innovation currently attracting public attention is the use of artificial intelligence. Traditional educational approaches taught with subjective human judgment and limited form of assessment like oral or written test, often fail to capture individual abilities comprehensively, where as other hand the application of AI in the field of education such as learning assessment able to minimize the errors and can also increase the accuracy in the evaluation process with the help of AI the teacher able to identify the individual needs of every students and also helpful for the teachers to provide accurate and measurable feedback for qualitative improvement of students performance.

Several studies are show that the use of AI in education can provide opportunities to improve the quality of students in particular as well as the system of education as whole. According to thoughts of Yuskovyea & others, 2022 the main advantages of using artificial intelligence in education in the individualization and personalization of the educational process.

Another influence according to Rahayu,2023 AI presents aplethora of advantages, its integration into education demands meticulous consideration of associated challenges and Basuri,2023 AI in education has the potential to be game changer for every students as well as teachers, but cannot say that AI is a replacement of a teacher.

AI help the teacher in evaluating the learning outcomes of students and academics in modern era, Siswa, 2020. And Alexander and other,2021.sugeest both positive and negative aspect of use of AI almost all students are familiar with use of artificial intelligence technology and other hand availability and condition of the internet network create obstacles in the online learning process.

Research from Ebrasy and Khalil,2023 shows that AI can measure the level of understanding of each student in addition to that expanding the use of AI application is the path towards achieving economic development and raise the educational level.

AI exhibits better result as compared with conventional approach according to Ka,et.all,2023. AI brings 24 hour access to teacher and lesson anytime, anywhere and act as tool that guides the students towards accomplishment of their goals by providing personalized, feedback, Sawant and Vaghels,2023.

AI has had a major impact on education particularly an administration, instruction and learning areas of education sector within the context of individual learning institution, Upadhya,2022.

Era and Gupta,2023 highlights most participants appear to have positive attitudes about AI there are certain concerns about the future of education that have been raised by teachers and academia.AI system are technically feasible for instructor learner interaction, Shrivartavn,2023.

The utilization and use of AI technology in the world of education is able to provide potential benefits especially in improving the quality of learning. However AI technology itself is only a tool in the learning process where the final decision in human hands.
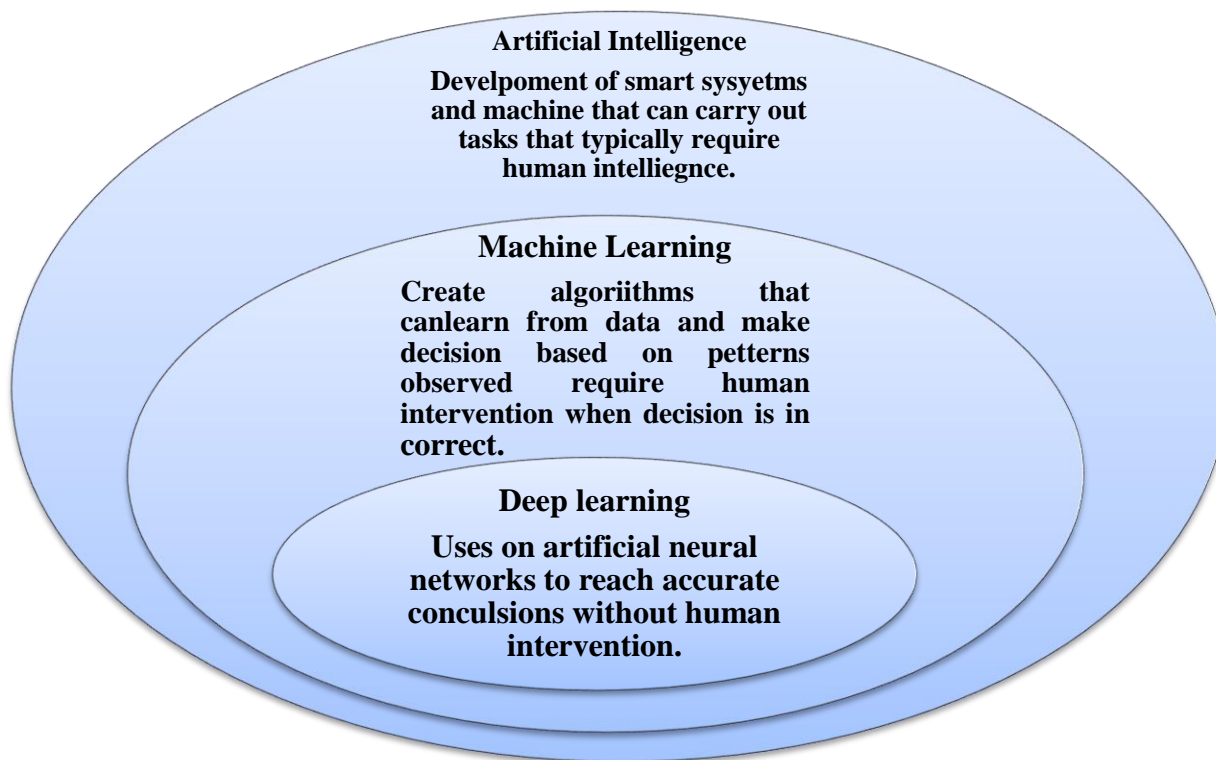
Therefore, the use of AI technology in the world of education must be done wisely in order to develop the world of education for the better.

Conceptual Background of Artificial Intelligence

Artificial intelligence has become omnipresent and made in roads in all walks of life including education. Artificial Intelligence is a simulation of human intelligence into a computer machine so that it can think and act like a human.AI system are designed to simulate or replicate human cognitive abilities, such as perception, reasoning, learning and problem solving.

AI rely on algorithms and computational models to process and analyze large amount of data, extracting patterns and making predictions or decisions based on that information. Researchers in AI are always instrumental in framing methods to solve highly complex problems beyond human ability and skill. Even though humans made various innovations towards industrial and technological revolutions, human resources for such material production at different manufacturing units always poses a bigger challenge due to various factors such as financial constraints, inadequate manpower, human rights, etc.

At the core of AI is the ambition to create systems that can understand, learn, and apply knowledge there by extending human capabilities and automating routine tasks. The realm of AI is vast and varied, with several sub fields that focus on different aspects of intelligence emulation.

Artificial Intelligence
Develpoment of smart sysyetms and machine that can carry out tasks that typically require human intelliegnce.

Machine Learning
Create algoriithms that canlearn from data and make decision based on petterns observed require human intervention when decision is in correct.

Deep learning
Uses on artificial neural networks to reach accurate conculsions without human intervention.

Birth Of AI: In Brief

➤ The genesis of AI as a discernible field of study occurred in the early 1950s. This period was amred by the pioneering work of Alan Turing, a British mathmatician and logician. Alan Tung and Turing Test: Alan Turing introduced the concept of machine intelligence in 1950 with his seminar paper "computing Machinary and Intelliegence",where he proposed a criterion of intelliegence that came to be known as the Turing Test. The test was designed to evaluate a machine's ability to exhibit intelligent behaviour. Turing ideas about machine intelliegence were revlutionary and paved the way for the develpoment of AI as a distinct level.

➢ Post the Dartmouth Conference, the field of AI began to mature as reserachers delved deeper into developing intelliegent machines. A significant develpoment was the creation of expert systems, which mimicked the decision making ability of human experts. These systems used logical rules and a vast knowldege base to solve problems i.e NLP, mchine learning algorithms.

➢ The 1980s saw a resurgence of interest and investment in AI,fueled by several factors i.e technological advancements and govt funding and industry interest.

➢ The late 1980s and eraly 1990s marked a period of disillusionment,often refered as the AI winter.

➢ The mid 1990smarked the resurgence of AI,driven by several Fcators i.e increased computational power,break thorughs in machine learning.

Table:1.0

Before 1950's	1950's	1970's	2000's
• Alan Turing • John von Neumann • Norbert Wiener • Claude Shannon 1950'	• John McCarthy • Marvin Minsky • Allen Newell • Herbert A. Simon	• Edward Feigenbaum • Raj Reddy • Seymour Papert • Ray Solomonoff	• Nick Bostrom • David Ferrucci • Andrew Ng

(Development of AI: A brief history)

AI in Education

Technology has always played an important role in education, but its current use is more prevalent than ever, thanks to the increased availability of smart devices and web based curriculum. A new dimension has been added with shift advances in the field of artificial intelligence.

• In June 2018,NITI Aayog released a discussion paper on the 'National strategy for AI' which incorporates education among sectors of focus such as agriculture and health. It underline the incremental value of AI in reforming India's education sectors in terms of quality and access.

Examples of potential use included personalized learning through adaptive tools, efficiently performing administrative tasks, customizing professional development courses and predicting the need for student intervention to reduce dropouts or recommended vocational training.

• Further it idartnified preparing a new generation to harness the global AI revolution as focus area for NITI Aayog. India's National Educational Policy-2020 released in July 2020, provides that all universities after doctorate and masters programmes in core area such as machine learning and in multidisciplinary fields. The NEP also includes provisions for setting up a National Educational

Alliance for technology to enhance learning, assessment, planning and administration at schools and higher education institution.

- Education 4.0 India initiative: The initiative was jointly launched in May 2020 by the world Economic Forum(WEF), the United Nations Children's fund(UNICEF) and Yuwaah. It focuses on how digital technologies can enhance learning and reduce inequalities in access to education among children in India, with the overreaching aim of making Indian students ready for 21st century jobs.

- National Programme on Responsible Use of AI for youth: With the objective to empower the youth to become AI ready and help reduce the skill gap, government along with industry partner has started thus initiative to promote AI awareness among Govt. school going children.

- National Digital Education Architecture (NDEAR): Union budget 2021-22 has announced setting up NDEAR within the context of a Digital First Mindset. It is meant to enable a common set of principles and approaches to be followed in building using and reusing technology.

AI has the potential to transform education by making it more efficient, effective and accessible to students worldwide. However expert say it is crucial to ensure that the use of AI in education is ethical and responsible and that it complements the work of teachers rather than replacing them.

So that goal of introducing AI in education is to enhance the learning experience of these students so that outcomes are enhanced and the student becomes more creative and a good learner.

How AI is affecting Education

With the raise of Artificial intelligence in education, there are many different ways it is being used to help students learn. Here there are a few technologies with AI that are already affecting and will affect education in every day:-

- Chatbots:

   It is one example of the AI Educational apps students might use soon. These are then future of all technical roots. Its possible chatbots tutor could do more than just help students learn few new concepts.

- Virtual Reality:-

   One recent innovation in education is virtual reality which is being used for everything. Through virtual reality students are finding new ways to integrate experiential learning in their classrooms.

- Automated Grading and Feedback:-

   AI can automate the grading process for objective assessments such as multiple choice question. It can also provide instant feedback to students allowing them to identify areas for improvement and adjust their learning strategies accordingly.

- Intelligent Learning management system(LMS):

   These systems can automate administrative tasks such as scheduling and grading allowing teachers to focus more on instruction.

- Personalized Learning System:-

These systems analyze learner data, adopt the curriculum to individual needs and offer interactive and engaging learning experiences.

Artificial Intelligence and NPE-2020

1. New Education policy 2020 highlights the importance of artificial intelligence and integrates AI education at all levels.

2. To align India's curriculum to the 21st century and to prepare the students for the AI economy the policy lays profound emphasis on the need to impart the necessary technologies knowledge at all levels of Education.

3. School children will be exposed to crucial skills such as digital literacy, coding and computational thinking from a young age, through the teaching of contemporary subjects such as artificial intelligence and design thinking.

4. Further topics such as AI 3-D machining big data analysis and machine learning will be integrated with the undergraduate education to train industry ready professional.

5. All universities will offer doctoral and masters programmes in core area such as machine learning.

6. In addition colleges may also offer targeted training in low expertise task for supporting the AI value chain such as data annotation, image classification and speech transcription.

7. Further to make India a leading knowledge hub of disruptive technologies the National research foundation(NRF) will provide high quality research in the realm of science and technology.

8. The policy also envisions the use of AI powered solutions for the attainment of its goal of multilingual as well as holistic education.

9. Sethurman T.A conference of AI based E-Tech organization told that AI can also play a crucial role here. We should use smart technologies such as AI helping the stakeholders of the system by reducing their workload and making life easier by enabling them to focus on their core skills.

10. The policy also aims to use education as a means to sensitize students to the issues and ethics surrounding AI.

11. The recognizes that holistic education of AI based technologies cannot be complete without raising awareness of issues such as data protections and privacy and ethical concerns such as data bias.

Pros and Cons of AI in Education

However the pros and cons of AI in education are not so black and white. there are advantages to each side as well. AI is replacing humans in an increasing number of fields including education. The question is: should it be?

Pros:-

Artificial intelligence in education is very controversial topic right now. People are taken on whether or not AI should be used to educate students. Many people argue that AI will replace teachers and take away the humans elements of education. However there are many advantages of education.

➢ AI can grade papers and essays much faster than human can. This will give teachers more time to work with students in critical thinking skills and critical analysis skills.

➢ This would also allow teachers to focus on individual students who would benefit from their guidance.

➢ AI can also augment human teachers by providing insight about student learning styles and giving hands on feedback for students who need more practice with specific topics or skills.

➢ AI does not get tiring does not have mood swings and does not a have a life outside education.

Cons

However there are some negative aspects to AI in education as well. A robot might not be as good a teachers as human can be. This disadvantages of AI in education is that technologies may not always be successful in teaching.

AI does not experiences emotions. Student do not feel that they are being acred for by the AI when they are being lectured or when they have a question and when they do not get a response from AI.

Conclusion

The integration of Artificial Intelligence (AI) in education presents both challenges and opportunities within the framework of the National Education Policy-2020 (NEP-2020). While AI offers tremendous potential to enhance teaching and learning practices, student engagement, and administrative efficiency, several challenges must be addressed to maximize its benefits.

Ethical concerns surrounding AI use in education, such as algorithmic bias and privacy issues, call for the development and implementation of ethical frameworks and guidelines specific to AI integration. Ensuring data privacy and security measures is paramount to protect student data and maintain trust in AI systems. Additionally, equity considerations demand efforts to bridge the digital divide and provide equitable access to AI-powered technologies for all students, regardless of their background or location. AI brings the ability to have 24 hrs access to teachers and learners anytime and anywhere.

But still the use of AI in education is not adapted by all the colleges completely and it will take a long journey to do this

However studies show that in the near future, AI will have good impact on the education sector.

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