Artificial Intelligence Based Learning: NEP 2020 Enhancing Indian Initiatives for Multidisciplinary Education

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Abstract: The phrase "Artificial Intelligence" (AI) refers to a variety of methods employed by a computing approach that imitates human intelligence to solve a given problem. It is informatics in conjunction with philosophy and psychology. A wide range of technologies that differ in complexity, adaptability, and suitability for certain issues are included in the category of artificial intelligence (AI). In all fields of innovation and research, AI has been extensively applied. Moreover, the pandemic has fundamentally changed the landscape by forcing educators to use technology for digital instructions and digital learning. Currently, 86% of educators think technology ought to be a fundamental component of education. AI has the ability to advance teaching and learning, supporting the education sector as it develops for the good of both students and teachers. In July 2020, the National Education Policy 2020 was unveiled, and it contained promising elements for digital education. When formulating the tenets of the new education policy, it was kept in mind that the necessity for online education was the most important requirement following the COVID-19 issue. This study focuses on how NEP will augment and enhance AI based learning for the endorsement of multidisciplinary education. This paper also outlines the structure of policy that places a strong focus on the need to convey the necessary technological skills at all levels of education in order to modernize India's curriculum and prepare students for the AI economy. The need of artificial intelligence and the necessity to learn coding is also discussed.

Keywords: NEP 2020, Artificial Intelligence, Multidisciplinary Education, AI initiatives, AI Challenges.

I. Introduction

In the increasingly automated and AI-driven world of technological advancements, National Education Policy (NEP) emphasizes a future generation that is tech literate. Technology has become the centre of modern life, influencing professional decisions and career paths. Students are transitioning into industry and creating careers faster than ever before because to the early use of modern technologies to enhance the basic foundation of learning. The NEP places a lot of focus on technology-based learning, which, due to its advantages and range of applications, has the potential to

fundamentally alter the way learning is conducted in the country. Students now have other routes to becoming employable even while still in the educational process. According to the policy, technological advancements such as artificial intelligence will fundamentally change the classroom learning process. Nonetheless, for this upgradation, intensive research is a necessity in educational and technological foundations. A distinct goal of the New Education Policy, 2020 is to give Indian students a well-rounded education with a focus on developing their skills in disruptive technologies like artificial intelligence (AI)[1].

II. AI in NEP

The new curriculum focuses on fundamental concepts, abilities, and consequences in artificial intelligence, data science, and other fields that help people solve problems and make decisions more effectively. NEP has made an effort to match the current curriculum with the importance of AI and prepare students for the AI-driven economy. The new approach starts teaching important abilities like digital literacy, coding, and computational and critical thinking to schoolchildren at a very young age. A new "technology-oriented" education approach will undoubtedly help today's kids and open up job chances.

To give teachers the time and freedom to prepare themselves in accordance with the needs, AI is now anticipated to promote efficiency, personalization, and streamlining of administrative activities. The goal of AI is to collaborate with humans and robots for

the benefit of students by utilizing the finest qualities of both. To increase the human resource in these fields, it has been recommended that all AICTE-approved universities establish B.Tech. programs in AI and Data Science and include AI as an elective. Additionally, these courses are already offered by IITs because their Acts and Statutes permit them to develop their own curricula and collaborate with institutions and business on academic and research projects. The nation may be anticipated to embark on a transformational path through technical education and research in light of the NEP's current focus on generating disruptive technologies and skills for the 21st century. But it's also important to educate students about the moral and ethical concerns with AI [2].

All facets of education could be improved by artificial intelligence (AI): [2]

i. For students, AI may offer them a personalized learning experience catered to their particular tastes and requirements, fast feedback on their work and responses to their queries, and enhanced access to tutoring and other educational resources.

ii. For educationists, it can lessen fatigue, devise better intrusion, and automate some of their work pressure.

iii. For administrators, AI can supervise the student activities and offer proactive solutions using predictive data. However, despite the fact that using AI in schools has numerous advantages, it is constrained in the

education sector due to a variety of technological, operational, and social issues.

III. Multiple Perspectives:

The teaching of cutting-edge disciplines like Artificial Intelligence and Machine Learning will expose school children to critical abilities like digital awareness, coding, and computational analytics from a young age. Additionally, to prepare students for the workforce, subjects including Cloud Computing, big data analysis, 3-D printing, and artificial intelligence will be incorporated into the undergraduate curriculum. In critical fields like machine learning, all universities will offer doctorate and master's programs. Colleges may also provide focused instruction in low-expertise jobs that assist the AI value chain, such as speech transcription, image classification, and data annotation.

The National Research Foundation (NRF) would also support top-notch research in the fields of science and technology in an effort to make India a leading knowledge hub for disruptive technologies. Promoting research in this area has received particular attention given to the growing applicability and declining prices of AI-based forecasts. A three-pronged strategy has been established to direct AI research, including (a) expanding core AI research, (b) creating and implementing application-based research, and (c) setting up global research initiatives to use AI to address challenges in industries like healthcare industry, agricultural science, and climate change [2].

The policy foresees the deployment of AI-powered solutions to achieve its objectives of a multidisciplinary and holistic education. Along with efforts to improve Natural Language Processing for India's several languages, initiatives to encourage multilingualism among school kids will be intertwined. In order to provide a comprehensive report card, AI will also be utilized to monitor and record a child's training in life skills.

IV. Coding – The Essential Aspect

Teaching coding to pupils starting in sixth grade is one of the NEP 2020's standout features. According to the government, students need to be familiar with it from an early age and it is 21st-century ability. In order to prepare the next generation for the jobs of the future, it attempts to equip them with the abilities that will be most in demand in such positions. This decision will have a significant influence on closing the affordability and coding literacy gap. [3][10]

Building or manipulating code for computer programs or video games is only a small part of what a student learning coding must learn. Coding curriculum teaches students transferable abilities that may be used in a wide range of situations outside of the realm of technology. The ability to code is incredibly useful because it is the technology of the future. Future employment chances for students that learn computer programming at an early age will be abundant and progressive. [4]

Figure 1. Importance of Coding

V. Impact of AI

The survey found that of all emerging digital technologies, AI is anticipated to have the biggest influence on society and the economy during the next ten years. Artificial intelligence (AI) is advancing quickly and is being used in almost every imaginable industry and field. Virtually every aspect of society, including education, healthcare, cultivation, mobility, energy, engineering, businesses, production and the government, can benefit from AI. [5]

A multidisciplinary Outlook of Artificial Intelligence

Within a broad range of applications, artificial intelligence (AI) has the potential for augmentation as well as potential replacement of human functions and activities. The rate of advancement for AI innovation today is rapid, necessitating societal, institutional, and technological modifications as well as new chances for ongoing innovation in a variety of fields, encompassing business and administration politics, the public sector, and science and innovation. Humanities and social science must be included in the discussion of law, economics, ethics, and the effects of AI and digital technology in order to manage this potential, explore opportunities, and moderate obstacles. With our more algorithmic societal processes, we can only plan a course forward collectively that will be advantageous and reliable[6].
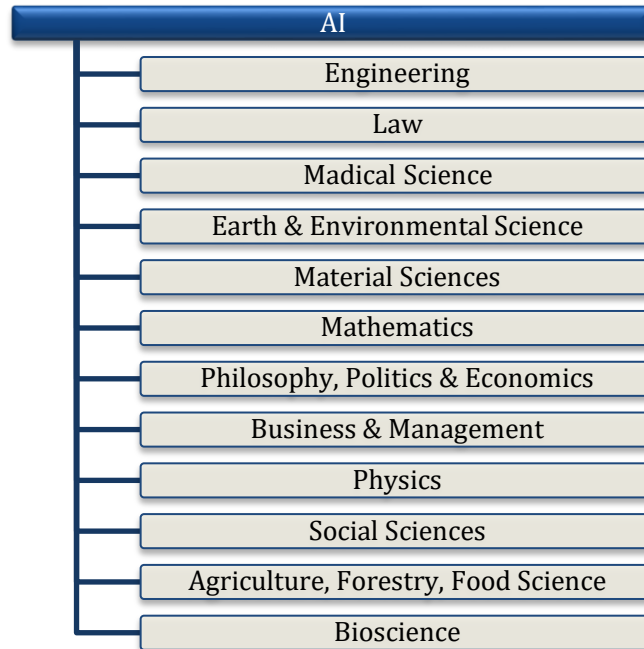
Figure 2. Application areas of AI

The influence, governance, ethics, and responsibility of these technologies around the world are hot topics because of the fast expanding capabilities and prevalence of AI-based systems in our daily live [7]. Computer science or engineering alone cannot provide an answer to these questions. In reality, we can claim that artificial intelligence is no longer a field of engineering and now involves a wide range of participants and disciplines.

At this juncture, Education plays a significant role. However, the majority of the world's existing AI and robotics curriculum produce engineers with an overly limited work perspective. Engineering education has to be expanded due to the widespread impact of AI on society [8].

Possibly another method to draw in a more diverse student body is to expand AI programs. Female students, who generally choose humanities and social sciences over engineering, may be inspired to study AI if AI programs are known to be transdisciplinary. Curriculums in the humanities and social sciences must also incorporate lessons on AI theory and application. For instance, legal specialists must be prepared to deal with legal and regulatory challenges relating to AI through legal a curriculum.

VI. Features of NEP 2020 That Are Centered on Artificial Intelligence:[9]

a) Alliance for Technology in National Education Policy

NEAT (National Education Alliance for Technology), an independent organization with the goal of providing a platform for

technology innovations to improve online learning, exams, administration, and planning, has been suggested for creation by National Education Policy 2020.

b) AI Education in School Curriculum

NEP 2020 suggests introducing machine learning and artificial intelligence education for all the students at various as soon as possible.

c) Teaching-Learning-related Software

According to the policy, teaching-learning softwares would be developed utilizing AI-based computing and would be made available to teachers and students in all local languages. These tools will be widely accessible and beneficial to all stakeholders, even those who receive the education in rural areas or have special needs.

d) Digital Classrooms

The National Education Policy 2020 states that AI technology will aid in the development of smart classrooms that will permit online communications and collaborations with students from various schools all over the world, online exams, applications with tests and quizzes, and information that can develop the pupils.

e) National Teachers' Portal

All of the electronic content created by all state boards, central boards, international boards and other organizations will be available on the National Teacher's Portal, a digital platform. This will also be helpful in providing content for instructors' professional development.

A digital India is going to be established thanks to the National Education Policy 2020. The majority of digital tools that can aid in the growth of a nation with a digital literacy will be developed with the aid of artificial intelligence-based technology. The students will have a basic understanding of coding and 3D technology. This will enable them to move boldly through the world of advanced technology. India will soon be a major centre for cutting-edge technological expertise.

VII. AI Challenges

As the extent and depth of potential applications expands and the usage of AI becomes more commonplace, the adoption of AI technology can pose substantial issues for governments and organizations [11]. Figure below classifies these difficulties, and the table below will explore them.
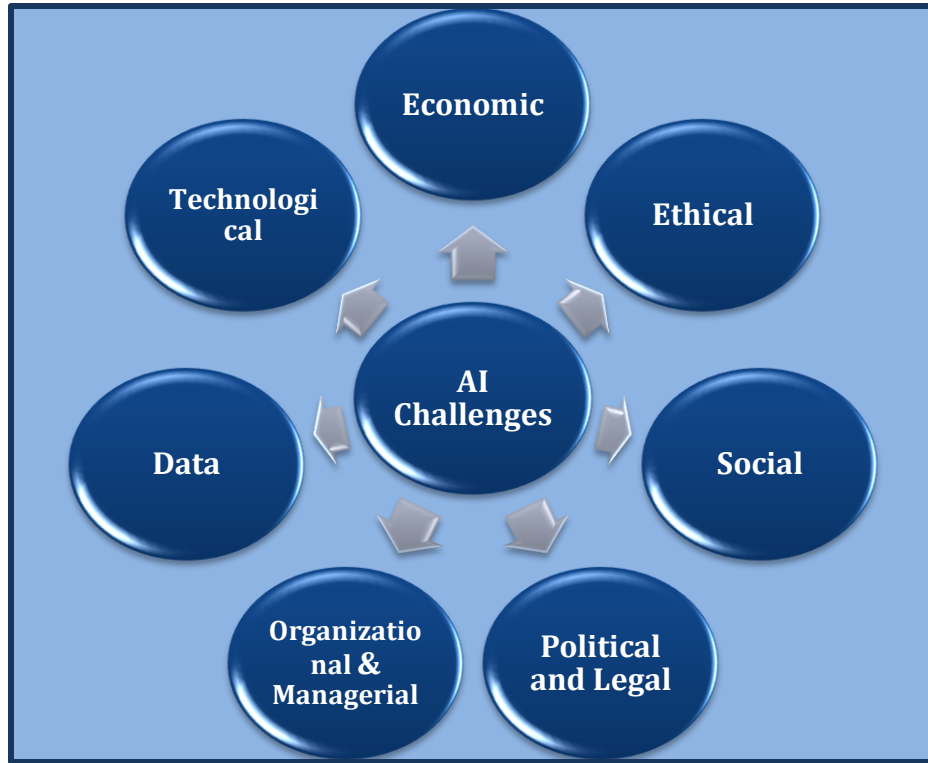
Figure 3. Challenges in AI

AI Challenges	Description
Economic challenges	Given the required investment and altered working methods, the widespread adoption of AI technology could have a substantial economic impact on organizations and institutions.
Ethical challenges	The ethical aspects of AI and their implications for a wider application of the technology have been considered by researchers. People and organizations may display a lack of trust and worry about the ethical implications of AI systems and how they use
	shared data.
Social challenges	Cultural norms are expected to be questioned by the growing usage of AI, which could function as a barrier for some sections of the society.
Political and Legal challenges	Obstacles of integrating AI in government argue that a more comprehensive understanding of the scope and impact of AI-based applications and related challenges is increasingly important.
Organizational and managerial challenges	A variety of organizational and managerial issues that have strategic

	ramifications for businesses are presented by the shift toward the adoption of AI technologies. More advanced technologies must be included into current AI systems so that human-computer interaction can be enhanced and coupled with information flow.
Data challenges	The difficulties of AI and big data integration have been covered in a number of researches. New and effective solutions are required to handle the big data's high volume, diversity, and rapidity.
Technological challenges	Studies have examined the difficulties of using AI technology for data and image interpretation as well as the non-boolean character of diagnostic jobs in healthcare.

VIII. Conclusion:

The Indian educational system is becoming more and more aware of the value of skill-based learning and the necessity of educating the next generation in cutting-edge technologies like artificial intelligence, machine learning, and analytics. In addition to schools, colleges and universities are developing courses that are especially focused on these new technologies.

The introduction of these skills along with academic flexibility will raise the quality of the workforce and enable the creation of a new nation. Not only will it produce a workforce that is competitive for the twenty-first century, but it will also make India a leader in innovative technology. In spite of such a vast workforce, something that was impossible to accomplish in IT up until now appears to be feasible in the field of AI in the next decades.

The National Education Policy 2020 seeks to significantly improve the educational system in order to get the next generation ready to lead original inventions and turn India into a knowledge superpower.

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