

# Artificial Intelligence: A Contemporary Strategy to Enhance Perspectives of Learning in Higher Education

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**Abstract** - As Technology invented to replicate human perception and decision-making, Artificial Intelligence (AI) is overwhelmingly tailoring different dimensions of mankind, financial, and industrial; and people are expected to embrace this transformation in the technological arena. It is likely to predict the prospect of higher education for humanity as artificial intelligence is ubiquitous due to the rapid adoption of new technological innovations. Education is performing a noteworthy position in crafting skills and knowledge in the current era by amalgamating Information and Computer Technology (ICT) in the learning environment. Information and Computer Technology drastically changed the perspective of learning which provides a unique way of imparting education to the learners to assist them to develop their various capacities. The objective of this paper is how the theory of Artificial Intelligence (AI) can be productive in education which accentuates its radical practice in escalating individual skills, empowering educators, and fostering teaching and learning. Artificial Intelligence provides an opportunity to access higher education services easily inside the educational setting as well as outside the academic environment at an unprecedented speed. This review demonstrates how AI may revamp the academic performance, the educational equity and the quality in the developing world. It will also proficiently pave the way for insightful information and knowledge to educators that provides ample opportunities for sustainable growth in the scholastic world.

**Keywords:** Artificial Intelligence, Higher Education, Teaching, Learning, Technological Development.

## I. INTRODUCTION

As an interdisciplinary of computing science, Artificial intelligence (AI) is designed to create a dramatic change in almost every business of the world that authorizes machines to cultivate the competences of the intelligence. While Artificial Intelligence is becoming an indispensable part in daily life from the advancement of the autonomous vehicle to the creation of productive AI tools, there is a universal rivalry to

decide which lands, civilizations, and cultures will rule the upcoming fields of commerce, education, entertainment, and others. AI is rapidly transforming the methods of imparting education in higher education for students to acquire comprehensive concepts of the skills and proficiency that to be learned for a profession in AI. Artificial Intelligence is not only impacting a socio-economical transition towards augmented automation, but the blending of AI systems is also impacting various arena of finance and life such as employment, medical care, bureaucracy, commerce, as well as education in the 21st century [1]. For instance, AI is able to utilize to design instruments of diagnosis, anticipate epidemics, and diagnose effective medicine in health sector; and it is also able to find out scam, increase business methods, and to upgrade precautionary measures in the finance sector, as well as it can be supportive to develop an independent automobile and optimize traffic flow in transportation.

As AI has numerous constructive aspects, there are also some potential threats regarding the ethical and societal consequences of its utilization such as AI algorithms, socio-psychological effects, unemployment, and malicious practices and so on. On account of this, it is vital to understand that strong ethical policies need to be formalized and implemented for the betterment of society and as a whole [1].

## II. ARTIFICIAL INTELLIGENCE AND HIGHER EDUCATION

Education is a tool to provide necessary growth in the evolution of human civilization to unlock the immense possibilities within individual. The quality of education is becoming more crucial than ever for the foundation of a prosperous life in a rapid changing world. Since prehistoric eras, the process of learning is persistently evolving and undergoing several changes due to innovations and research of contemporary technological development. A traditional method of learning, where education is spread in the classrooms, has experienced remarkable shift due to ICT, particularly through the intervention of the internet and digital technology. The prime objective of implementing ICT in academics is to establish new educational practices to enhance

critical thinking and learning abilities of the 21st century where students are encouraged to learn efficiently and educators are motivated to become more proficient through the proper execution of all these technologies. In addition to this, National Education Policy (NEP) 2020 has precisely endorsed the future role of obstreperous high-tech automation such as Artificial Intelligence, Machine Learning, and Data Science etc; that need to be familiar in education system [2].

In recent decades, AI has brought foremost developments and innovations that will transform every aspect of human beings, including education. It has potential to offers numerous exciting possibilities of learning outcomes to students and assists them in performing contemporary academic objectives or aims; along with an opportunity to access the right course, improving their inter-personal and soft skills while interacting with teachers and help them to concentrate on other aspects of life by optimizing time. Moreover, AI is redesigned itself to offer maximum benefits to the student for their intensity of understanding, their speed of acquiring skills and obtain their favorable goals. By analyzing the students' prior knowledge, AI can recognize their weaknesses and upgrading their ideal opportunity for the future learning through a personalized learning experience. As it is proven that AI plays a considerable role in restructuring the methods of teaching and learning, innovative evaluation and management systems in educational institutions with the help of a futuristic automotive teaching tool that furnishes collaborative opportunity for students and teachers to amplify learning experience proficiently.

It is also confirmed that implementation of Artificial Intelligence is comparatively exorbitant in teaching-learning practices; however, it is much more economical, if stable utilization. As developed countries have even now productively implemented the establishment of artificial intelligence; on the other hand, developing countries deal with various issues to ratify artificial intelligence in higher education due to pathetic infrastructure, deprived right to use intelligence, absence of the aid from institutions, inadequate assets and inferior technical skills.

### **III. INTEGRATION OF ARTIFICIAL INTELLIGENCE IN TEACHING & LEARNING**

AI provides generous thrilling opportunities for learning and teaching outcomes and makes promise to accomplish contemporary educational objectives not only to students but teachers also; such as Personalized Learning, Adaptive Evaluation, Intelligent Tutoring System, Chatbots, Evaluation in an interactive learning process. Virtual Reality and Augmented Reality can also encourage students to acquire collaborative and teamwork abilities, and tools can assist

students to visualize their multifaceted concepts and comprehend the subject matter. Besides, AI provides personalized recommendations, computerized feedback and monitor student progress by implementing learning management systems. Thus, artificial intelligence become an important part into online learning programs which permits students to access content and activities as per student's requirements and knowledge [3].

If AI becomes more accessible, personalized, and efficient; it has adequate potential to transform higher education and its objectives. Nevertheless, it is essential to assure that the implementation of AI is ethical and accountable that doesn't aggravate operational imbalance in higher education. The ramifications of AI are explicated into the following segments:

#### **3.1 Personalized Learning**

Personalized Learning is one of the most crucial contemporary educational strategies that regulate lessons to individual student's distinctive necessities, abilities, and wellbeing. Student can comprehend their distinctive desires at their own speed in diverse ways with learning experiences that are designed in this approach. Personalized learning has several advantages such as improving student engagement, providing them motivation and enhancing their learning outcomes. Nevertheless, Personalized Learning also has a number of concerns such as educator should has a comprehensive understanding of individual student's necessities and educational objectives that becomes a sluggish and rigorous process to obtain desire goals in oversized classes. In addition, it may also require expensive technology which sometimes may not be convenient to each one of the students [6].

#### **3.2 Adaptive Assessment**

Adaptive Assessment is one of productive and personalized novel methods to evaluate student's expertise, aptitude, and capabilities. This approach is developed on logical norms and mechanism to modify the queries and lessons offered to each student evolved from their instantaneous feedbacks. It uses algorithmic program to study student feedback and redesign the complexity of succeeding questions respectively. In addition to this, this approach is designed to furnish an authentic and customized assessment of the student's expertise and capabilities. Moreover, Adaptive Assessment not only provides a more precise view of a student's expertise and competences to the teachers, but also assists to amplify educational process [5].

However, adaptive assessments also face some challenges. It demands an ample investment of time, skills, and assets to design multiple questions and to develop the

adaptive system. Moreover, all students may not have equal access in institutions or zones where internet resources and technology are limited to be approachable [16]. Adaptive assessments might also demand a considerable amount of data investment to work properly, posing risks to student privacy and the safety of their data [3].

### 3.3 Intelligent Tutoring System

Intelligent tutoring system is an application consists of an artificial intelligent element which imitates to produce informative communications instantaneously on requirements of every specific student with all qualities of an expert educator. Jaime Carbonell created a computer application named SCHOLAR which is considered to be the first Intelligent Tutoring System (ITS) in 1970 [15]. This system can model cognitive elements of students along with their previous learning, abilities, and interests. Besides, ITS might also examine learner's improvement, offer reaction, suggestions, scaffolding, and also prefer suitable coursework for students to perform [4].

On the other hand, the challenge is its high cost for the development of the system components that puts the constraint on implementation of Intelligent Tutoring System in the real world. In addition to this, Evaluation process of an intelligent tutoring system is often arduous, extravagant, and time consuming [6]. Moreover, it becomes more complicated to acquire a deeper understanding and to work synergetic in groups, if the student doesn't conscious about the domain language.

### 3.4 Chatbots

The integration of Chatbots has the potential to transform support services, improve accessibility, and provide more efficient learning into academic setting [8] by responding query, suggesting suitable learning actions, evaluating student growth or emphasis on learning deficits in accordant with the results of assessment; that become a standard practice at the administrative level. The formation of Chatbots is much expeditious as numerous developers are deploying to make them to be accessible whenever it is required in the contemporaneous world [7]. These Chatbots evaluate students' expertise and abilities in particular subjects and then recommends learning approach to tailor their individual desires.

However, there are also some restrictions to Chatbots for the academic environment. Many Chatbots do not have critical human qualities like empathy, emotional intelligence, and making personal connections regardless of rapid technological advancement. Chatbots can handle sensitive information of

students that might be potentially security risks if not accurately safeguarded.

### 3.5 Learning Analytics

Learning analytics can be crucial in recognizing and authorizing certain noteworthy measures of learning experience and promoting factual process [9]. Learning analytics indicates to the collection and evaluate of information to trail students and their interactions within an educational institutions' learning ecosystem [10]. Learning analytics can be used in diverse areas such as, fetching student development, identifying at-risk students, and generating personalized learning strategies; to identify where students face difficulty and provide resolution to concern issues. For example, if a student is at risk, a teacher may get involved or provide feedback and give pedagogical content to foster them to improve.

Learning Analytics has several advantages such as an ability to provide information of student's active engagement in an effective learning process to teachers so that it can be identified in which area learner's require supplementary assistance and resources. Nonetheless, there might also be some concerns about student information privacy and confidentiality; furthermore educators necessitate having sufficient abilities to evaluate the statistics efficiently.

### 3.6 Virtual Reality

Virtual reality (VR) plays a significant role to provide a fascinating knowledge experience to grasp complex concepts efficiently in the field of academics to the students. Teachers design comprehensive teaching materials to make students captivated to acquire teaching and learning process with the integration VR technology [11]. The main objective is to provide exciting and mesmerizing educational practices to explore difficult-to-access locations, such as ancient memorials, celestial spaces, complex scientific models or internal organs of person through VR that provides a unique perspective to comprehend the subject to the learners. VR may boost synergetic tutoring [12] in which students can work together with their equivalents which makes the virtual environment experience even more enthusiastic. Additionally,

VR has potential to encourage learners to delve into the simulation as per their convenience. It is extremely possible that VR will become an indispensable module of the contemporary academic environment to offer one of the effective approaches to intensify the students' learning process [13].

On the whole, VR has the potential to renovate education with its captivating knowledge practices for students.

Nevertheless, VR implementation is ethical, equitable, and effective; and also requires well-drilled educationists to operate VR technology to intensify their learning experiences.

### 3.7 Evaluation

Evaluation, refers to analyze the work and performance of a student, is identified as one of the three pillars of academics along with curriculum and learning and teaching. The objective of contemporary evaluations is to examine abilities of students and provide constructive instruction to acquire learning outcomes. Nevertheless, each student is distinctive in their learning approaches with different potentials, passions and proficiency, which can be difficult for educational assessment. AI has potential to provide reasonable and accountable evaluation systems that examine students' performance for a distant future. While using the machine learning algorithms, these systems analyze performance and involvement of student in learning, and predict which students have shortfall of educational achievement and imparting assistance to as per their need [16]. Although, there may also be few concerns in the implementation of AI in this approach that raise issues regarding the trustworthiness and efficiency of AI systems, along with discrimination in self-operating scoring systems.

In general, AI plays a significant role to reform evaluation systems by providing well-organized, precise, and trustworthy processes. Furthermore, it can escalate student's performance in teaching and learning experience. Though, we need to understand that the application of AI is truthful, impartial, and accountable, and it requires well-drilled experts and evaluators to boost evaluation practices for all learners.

## IV. AI IMPLEMENTATION CHALLENGES IN HIGHER EDUCATION

### 4.1 Exorbitant Innovation and Skillful Professionals

AI requires ample assets, time and infrastructure as well as a person's abilities and leadership for growth and revolution. Professionals should have a superior knowledge of the AI tools and systems that need to be utilized in the classroom [14].

### 4.2 Socio-Psychological Aspects

Faculties of human intelligence such as critical thinking, meta-cognition and imagination are relatively a huge confront for AI. There will be lack of societal skills as students are habituated to spend more time with machine learning. Machines cannot sustain our values and traditions so that teacher plays a significant part in the Learning Process.

### 4.3 Ethical Aspects

AI raises ethical aspects like data storage security, confidentiality and its impact to student learning outcomes in education; for example, if the machine can't take an ethical decision which consequences any unbearable loss to anyone then who would be accountable for the unscrupulous action.

### 4.4 Unemployment

AI can reduce the workforce that required in any educational institutions. Educators have perceived an overwhelming fear regarding employment in workplace due to quick utilization of AI technologies. For instance, operation of Chatbot is to educate, administer, observe, assess and to provide rapid respond to numerous problems of the students in institutions [14].

### 4.5 Limited Access

Educational organizations have not enough access to AI tools for teachers and students that can make discrimination in learning and teaching process. Teachers are obliged to make sure that each student should have equal approach to all technologies in a reasonable way.

## V. CONCLUSION

In conclusion, this research reveals the perspective how AI will revolutionize academic environment in higher education. Artificial Intelligence (AI) has been invented and used in a variety of industries, especially in educational institutions. The impact of AI was scrutinized comprehensively in order to resolve how and what consequences it has had on educational administrative, informational, and learning aspects. It has a vast potential to assist pedagogical approaches such as Personalized Learning, Intelligent Tutoring Systems, Chatbot, Automated Evaluation as well as VR. Educators are supposed to embrace these innovative systems to improve educational strategies. At the end of the discussion and analysis of the document, it is proven that AI will significantly influence the management, teaching and learning at higher educational institutions as well as the education sector as a whole.

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