

Application of Artificial Intelligence in Educational Contexts for Teaching and Learning

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ABSTRACT- Innovative educational technology have transformed teaching and learning techniques. Higher education has recently begun to incorporate new technology as artificial intelligence advances. The purpose of this conceptual review article is to look into the rise of artificial intelligence in education teaching and learning. It investigates the educational implications of emerging technology on how schools educate and how students learn. The goal of this research is to forecast the role of artificial intelligence in the future of education in the globe. Artificial intelligence approaches that are used effectively are seen as a way to improve the quality of teaching and learning The difficulties of incorporating artificial intelligence in educational institutions, on the other hand, are addressed. Furthermore, the difficulties encountered artificial intelligence adoption by students in terms of student assistance, teaching, and learning The topics of governance and administration are explored. This article provides a short review of the most current research findings. research to illustrate how artificial intelligence may be used in educational settings The There are some suggestions for further study and consequences.

KEYWORDS- Artificial Intelligence, Educational, Learning, Teaching, Technologies.

I. INTRODUCTION

Higher learning is inextricably related to advances in new technology intelligent machines with large computing capacities(1). As a result, advancements in Artificial knowledge presents new possibilities and challenges for learning and studying in further educational settings; moreover, artificial intelligence has the capacity to successfully modify the core design of higher educational organizations. Since Aristotle, philosophers have been unable to agree on a single definition of artificial intelligence(2).

In the 1950s, scientists began to look into solutions that use artificial technology Turing provided the first answer to the question of when a system is considered "intelligent." He offered a simulation play to see whether a person ear can tell the difference among a chat with a machine and a talk with other person; if the system can't tell the difference, we'll admit to possessing artificial intellect (AI)(3). Andrew McCarthy presented one of the more extensive descriptions

of mechanical intellect earlier same month, in 1956. John McCarthy presented one of the more thorough descriptions of artificial intellect earlier that month, in 1956: "AI is the belief that every facet of education or many other trait of intellect can be accurately characterised as a machines or programme characteristic; the intellect shown by the system(4).

Artificial intelligence is now growing at a breakneck rate, and it has already had a significant influence on the nature of higher education offerings(5). For illustration, University in Australia has previously employed IBM's computers Jupiter as an evolving type of artificially intellect and a method to provide learners with advice(6). This invention has a significant influence on the college's services excellence, personnel, and flexible time. As a consequence, it's crucial to mention that'machine teaching' is a rapidly expanding study topic in artificial intellect. Many synthetic intelligent programs need a lot of programming, while others can foresee and understand trends on their alone(7). In this study,'machine learning' is described as a sort of artificial intelligence. Machines training is a kind of computer that makes forecasts, recognizes principles, and applies newly learnt patterns to circumstances not covered by the program's original design. The purpose of this review is to look at the usage of synthetic technology in education and learning. The articles in this theoretical review paper are organized into ideas and topics relevant to integrating AI into education(8). It assesses the current state of 'knowledge' about AI's potential in current academic establishments, highlights not just the benefits of AI applications but also the disadvantages The difficulties of incorporating AI into teaching. It gives an overview of AI's potential involvement in the future. system of education(9).

A. Artificial Intelligence Development in Education

Artificial intelligent (AI) is a term that refers to technologies or technology that are commonly used in cities and universities throughout the globe(10). They includes intelligent cellphones, the internet, and other such technology. Internet engine, applications, and house devices are all examples of this. Artificial technology has the potential to help everybody. The complicated collection of algorithms in the iPhone's Siri recognizes faces seen in everyday life. It has been acknowledged as an artificially intelligent program in the Unite Kingdom since 2001, despite

being deemed low-complexity AI. This application was first used on the iPhone operating system by Apple in 2007(11). Google can now deploy AI in its search engine. engines. Furthermore, AI is incorporated in all new cars' engines, brakes, and navigation systems. Some well-known corporations, like as Google, have made The advancement of self technologies is a top concern. Mercedes-Benz, Volvo, and Google In 2015, this technology was tested for the first time in Australia(12).

Notably, In the mining business, identity technology are being deployed. In addition, personal-driving vehicles are employed in Australian for a number of key reasons. This type of human-machine interaction is a game changer in terms of assisting humans in learning and memorizing knowledge(13). However, one major question remains unanswered: How much do it taking for that kind of artificial intelligence (AI) to boost individual recollection and cognition? the human race According to MIT researchers, there will be certain technological modifications. used in education, particularly after 2007, when the first phone devices were released(14). The smartphone is not merely a new innovation that enables us to acquire and utilize knowledge that was previously unavailable. previously unavailable to us. conceivable a few years ago, but it also creates a significant cultural shift that has an impact on the people's social life. Furthermore, if the emphasis of "cyborgs" shifts from scientific fiction to computing solutions for either teachers and learners, 'cross-breeds' or human-machine cyborgs might arise in the area of schooling in the near ahead(15).

Artificial Intelligence (AI) methods have the capacity to create and replicate human decision-making processes. In adaptive educational systems, several AI methods have been used. These methods include Fuzz Reasoning, Brain Network, Decisions Trees, Probabilistic Networks, Latent Stochastic Models, and Genetic Algorithms. However, there has been no agreement on the development of a standard way to determining Which approach employs the best relevant AI theory for a particular learning situation. Furthermore, scientists have not yet created a software tool to assist in detecting a student's learning style based on their learning behaviour. In learning and teaching, a tool that is easily adaptable and available It is essential in a variety of educational situations, like traditional or online (16).

Artificial intelligence can help accomplish and manage educational goals in the educational system (AI). Using AI, teachers may assess pupils in a session and classify who is a unhurried apprentice when it comes to understanding the material. If a pupil has inadequacies in definite regions or is unable to grasp a few subjects, AI research would alert the professor or family, and the professor would take the required steps to scaffolding education. Moreover, Artificial Intelligence offers the power to draw attention to whatever program topics need to be improved, since instructors are not always conscious of holes in their teaching resources that may lead to student confusion. Individuals' characteristics may be used to tailor classes, and students' hobbies can be used to tailor classes sparked by exposing them to a variety of information and courses. Furthermore, AI can help professors with assignments. For example, Coursera, a

massive open online course provider, evaluates students' solutions to an issue. When Coursera notices that a large amount of learners have contributed the incorrect response to a weekly project, the teacher is alerted throughtout the program, and the scheme delivers a notice to potential learners with advice on how to solve the problem. This artificial intelligence technology aids in the explanation of courses and ensures that all learners have the identical intellectual base (17).

As a result, lecturers who are able to use technology in their teaching approach can benefit from the automated data generated by student participation. Because modern digital information systems are capable of storing and processing massive volumes a large amount of information in a brief amount of time Apart from these particular methods, such computers may detect the level of pupil engagement and decipher behaviours in an instructor 's class, then inform the instructor of the findings. The use of this technology helps lecturers organise their lectures more effectively, enabling them to spending less effort on documentation and more time getting crucial information from AI technology and tools to provide higher-quality research-based teaching We've just covered a few innovations that will shape AI's future deployment in education settings in this post (18).

B. Application Of AI In Education

- **Personalized Learning:** Artificial intelligence (AI) is becoming utilized to personalize education for each learner. The AI technique is integrated into the hyper-personalization notion, which is facilitated by device learning, to create a customised learning resume for evey independent learner and tailor-make their online instruction, taking into account the student's preferred learning mode, ability, and encounter on an independent grounds. Teachers may break their lectures into small studying aides, 'intelligent cards, or flashcards to help pupils grasp. Learning is suggested to become increasingly digital, with AI aiding in the creation of digital content, and less reliant on paperbacks and physical copies(19).
- **Voice assistants are in:** Voice assistants are another another AI component that schools are using to improve learning. Amazon's Alexa, Apple Siri, Microsoft Cortana, and others are examples. These voice assistants enable pupils to communicate with instructional resources without the teacher's participation. They can be used in both educational and non-educational settings to facilitate engagement with instructional materials or to get access to any additional learning help. The goal of these voice assistants is to provide answers to all frequent queries about campus needs while also being tailored for each student's specific schedule and courses. This reduces the need for internal assistance while also lowering the cost of producing college handbooks that are only utilised momentarily(20).
- **Artificial Intelligence Teachers Might Help Students:** Students will be taught by synthetic intelligence computers, despite the fact that humans instructors can learn certain topics that machines can't. Several artificial intellect tutoring technologies are now accessible to

support learners with language, basic arithmetic, and various subjects.. These AI systems can only teach pupils the fundamentals; unfortunately, these computers are not capable of teaching kids higher-order thinking and creativity. With the fast progress of technology, advanced teaching systems may no longer be a pipe dream.

- Artificial Learning Can Help Automation Grading in the Classroom: In most cases, grading assignments and exams requires a significant quantity of energy. Academic growth, engagement with learners, and class preparations could all be done during this period. While AI might not be able to totally supplant humans judgment, it is on its way there. Robotics helped by AI Almost all fill-in-the-blank and multiple-choice examinations may be graded using Grading. On the various hand, essay-grading technology is currently in its initial stages and would be improved in the future. in the years to come(20).
- Smart Content of Education: One method AI is transforming schooling is by providing new opportunities for pupils to achieve. Since it improves education, the term "smart content" is commonly utilized amongst teachers, organizations, pupils, and instructors. Whenever we speak about intelligent material, we're talking approximately electronic textbooks, online conferences, and video courses, among other things. Robots can now help kids of all ages study better by delivering individualized teaching surfaces and electronic material for primary and intermediate school pupils. By breaking the information down into manageable parts, highlighting key lesson ideas, and summarising the essential themes, the text became easier to comprehend. It is also possible to produce audio and video material. Students will be able to conveniently access all necessary information, absorb concepts more quickly, and meet their academic goals as a result of this.
- Teachers' Roles Could Be Affected by Artificial Intelligence : As previously stated, AI is capable of doing a variety of activities like as grading and providing constructive comments on students' performance. Furthermore, they may even serve as a substitute for classroom instruction(21). They may be designed to offer information, ask inquiries, and discover answers to simple course questions. However, in a number of situations where AI has been used in education, the instructor's function has been altered from that of a teacher to that of a facilitator. Instructors might employ AI lessons as extra tools to assist challenging pupils and provide them with palms activities such as personal touch (22).
- Finally, AI systems may alter the way students learn and aid in the development of fundamental abilities. Indeed, artificial intelligence is on the verge of profoundly altering the learning process in educational settings. Artificial intelligence (AI) systems are displacing certain forms of classroom education by allowing students to study from anywhere in the globe at any time. Furthermore, in the future, AI systems may be used to replace instructors in specific areas. Currently, AI is used in certain educational programmes to help pupils learn

fundamental abilities. However, as AI programmers improve, AI will be increasingly likely to serve students with a broad range of services. This level of comprehension may be provided by AI platforms not just to saving time, but also to provide instructors with extra data that might not be obvious or feasible to recognize.

- Classroom AI systems have a great capacity for analysing various data sources and comparing them to established patterns(23). They are able to identify the root of issues and provide recommendations to lecturers in order to obtain more consistent results across classes(20).

II. LITERATURE REVIEW

M. Jones (24) Propose that For many years, computers have been used in the field of education, sometimes with unsatisfactory results. Recent and ongoing Artificial intelligence (AI) technology, on the other hand, is having a positive impact on instructional application. ICAI systems, for example, are currently accessible to teach or train a broad variety of subjects; several of these systems are discussed here. In addition to CAI solutions, we address the construction of training settings that encourage pupil education. A final key use is the utilization of experts algorithms to assist in instructional assessment and assessment. Throughout our examination of these three key application areas, we highlight where AI has already played a significant role in the creation of such systems and where further research is needed to overcome present constraints.

I. Roll (25) Propose that Over the last twenty-five years, the area Artificial Intelligent in Instruction has made significant progress. As we think on the history and make plans for the tomorrow, we ask two fundamental questions: What are the major benefits of working with us? What new opportunities do you see looming in the horizon? To establish the emphases and typical scenarios that occur in the field of AIED, we looked at 47 papers from the Magazine of AIED's histories We use these data to suggest two concurrent areas of research that must be performed in the coming 25 decades in order to make an impact on education: The first is an iterative approach that focuses on current classroom practices, cooperation with teachers, and technology and domain diversity. The other is a ground-breaking method in which we promote the integration of technologies into pupils' everyday life in order to support their cultures, practises, objectives, and communities.

III. DISCUSSION

Education and education may encounter a range of issues as a result of synthetic technology solution' ability to change university administration activities. AI solutions, based to Perez (2016), can perform automatic tasks. Moreover, it is unlikely that individuals would be competent to complete the additional demanding tasks associated with higher education. The present research shows how artificial intelligence (AI) may be used to improve education and studying in instructional settings. Furthermore, there are fundamental restrictions to the use of technology; AI will never be able to take the role of teachers. Algorithmic in computers may now

have an influence on each aspect of folks 's lives, including credit scores to jobs. To yet, higher education has remained at the center of this massive transformation, with enormous possibilities and risks. This crucial problem demands focus and analysis from an intellectual approach. As a result, we must seek remedies in the sphere of schooling, and technology progress would be an universal response.

Technologies in higher training is suitable when it enhances study, instruction, and training possibilities and capabilities. Previous study in this subject, like as the "National Artificial Work and Technology Strategic Plan," has supported up the aims of this investigation. Based to the paper, AI improved human abilities and bridged the gap among people and synthetic cognition. Indeed, advances in machine learning and artificial intelligence in postsecondary learning have brought both possibilities and challenges. Nevertheless, it is crucial to recognize that learning is a sentient endeavor, not a technology solution. Despite AI's tremendous developments, depending only on technology is a mistake. As a consequence, it's vital to focus on the idea that people must recognize problems and dangers. They should also raise severe concerns regarding confidentiality and the promotion of control. It is necessary to be inventive. They could also offer space in the upcoming studying and instruction process for unexpected paths.

IV. CONCLUSION

The rising use of AI in education is not a justification to overlook the complicated dispute concerning the function of instruction and studying in schooling. Despite the fact that technological advancements and employment dislocation are generally recognized, it seems that the function of educators could be extended. The use of artificial intelligence (AI) or information technology to identify copying may raise the issue of who is responsible for education and learning. Moreover, owing to advanced techniques that may convey their own prejudices in operational networks, AI technology has the capacity to replace a range of tasks that are crucial to teaching practice in higher education. Colleges are reconsidering their teaching approaches and how they engage with AI.

Moreover, higher educational organizations may be able to anticipate the possibilities and challenges that might come as a consequence of artificial intelligence's application in teaching and learning. These methods help to preserve basic principles and the objective of higher learning while also providing opportunities for learning and studying. Finally, study into the applications and progress of synthetic cognition, as much as the possibility of increasing human knowledge, is required. Finally, it's vital to concentrate on the new function that professors play in students' new education, emphasising elements such as creativity, imagination, invention, and abilities that cannot be performed by machines.

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