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Potential Of Artificial Intelligence For Education

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Abstract: Artificial intelligence (AI) has been a topic of growing interest, including higher education. This paper seeks to provide an overview of AI in different aspect of its potential opportunities and the presence involvement of in the education system. The researcher applied the analysis technique on the article and the documents. The findings of the study so that AI has the so much potential to revolutionize the education by providing so many opportunities like personalizing teaching, prompt feedback, automated learning automated admission tasks etc. It provides also better assessment system facilitating the knowledge and the skill in education. This investigation provide insight into potential of AI to transform education system to the best position. AI has important implication for policy makers, stakeholders, and educators in the education sector. By application of AI that education system can get more acceleration in its path.

Key words - Artificial Intelligence, Education, Learning and Teaching.

I. INTRODUCTION

Artificial intelligence (AI) was introduced as a pioneer technique that can create a revolution in several domains of human life, including the domain of education (AI-Tkhayneh et al.2023). AI has established itself as a transformative force in the digital era, influencing the academic field. AI has the potential to revolutionize education by addressing significant challenges, enhancing teaching, and learning practices, and accelerating progress toward all round development goals. AI gains rapid response in all aspects of human life. Day-to-day life has changed since the wide-spreading adaptability of AI. Using AI tools and techniques, researchers and AI scientists are making their unstinting efforts to make human life more comfortable and technologically advanced. Using technology, students attain a blended experience of in-class and outside classroom learning. With intelligent tutoring systems, technological architecture, and AI capabilities, new teaching and learning solutions are being developed and tested globally [11].

II. LITERATURE REVIEW

Currently, AI has become a vital part of the virtual world. AI plays an important role in general education and higher education. Educational institutions should evaluate the costs and benefits of using artificial intelligence and provide the necessary training and support to teachers and students about using the educational instruments that are based on artificial intelligence [1]. AI can automate grading so that the tutor can have more time to teach. AI chatbot can communicate with students as a teaching assistant. AI in the future can be work as a personal virtual tutor for students, which will be accessible easily at any time and any place [10].

AI is truly a revolutionary feat of education, set to become a vital component of different aspects of education over the coming years and decades. This presents an opportunity. AI will be deployed to augment both primary and secondary education. The future of AI applications in education is likely to be that AI technology will help to make teaching processes more efficient, while preserving the personal relationships between teachers and students [2]. AI would also aid in the connection between classrooms across the world and the development of a global network of pupils [13]. Which would enable students to learn from other backgrounds and perspectives by bringing the world into their classrooms. In the classroom, AI can aid in the development

of a holistic climate. AI opens up a slew of new possibilities. What we need to do now is work a little harder to get the most out of this amazing piece of technology. AI has the potential to transform systems and processes to complement and augment teaching capabilities. Teachers will find more time to engage in resolving ambiguities among students, emphasizing deep learning, exercising judgment in difficult cases, and dealing with different types of students, towards delivering better teaching outcomes. As data-driven interfaces will perform analysis of student data and recommend knowledge bytes, teachers will gravitate towards developing humane aspects in students such as life skills, interpersonal skills, creativity, and empathy [11].

It supports decision-making, helps teachers and students perform various tasks, and automates many processes [9]. AI can significantly affect the education sector. Though it benefits education and assists in many academic and administrative tasks. AI has also taken centre stage in debates about how school governance, pedagogy, and learning can be rebooted to fit students with the Organization for Economic Cooperation and Development (OECD) 21st Century Skills essential for participation in larger society [6]. Despite the enormous opportunities that AI might afford to support teaching and learning, new ethical implications and risks come in with the development of AI applications in higher education [4].

III. OBJECTIVE OF THE STUDY

The influence of artificial intelligence on education and the opportunity for education are the main two vital domains in the 21st century. There is so much potential in artificial intelligence for education which improve the education in this modern time. There after the question for this research article are - How is AI in education conceptualized? What is the nature and scope of AI applications in the context of higher education?

Aim of the current study

- Identify the opportunity for education in this century.
- Explore the potential for educational purposes.
- Explain the pageants and involvement of artificial intelligence in the education sector.

IV. METHOD

This research article uses the qualitative method to investigate this topic for artificial intelligence in education. This paper has studied the influences of artificial intelligence on education for the aspect of opportunity and the potential for education by documents and research article analysis.

V. Artificial Intelligence in Education

The study [of artificial intelligence] is to proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it. An attempt will be made to find how to make machines use language, form abstractions and concepts, solve kinds of problems now reserved for humans, and improve themselves [4]. There is tremendous increase in the usage intensity of various e-resources like e-books, e-libraries, e- journals, bulletin boards, OPAC (online public access catalogue), databases etc. due to increase in digital literacy ratio [12]. The most important feature of AI in education is that it provides machines with human-like intelligence and the ability to perform various learning, teaching, and guidance tasks, which can greatly facilitate the task of students and teachers [2]. In application of artificial intelligence in education, particular attention should be made for the unique potential of AI in the process of knowledge talks for an acquisition in teaching learning process. Quality improvement in educational establishments necessitates a lengthy method of reviewing and evaluating their results, which entails a great deal of paperwork and, in certain cases, incompetence due to a lack of checks and balances in the process, but with the help of artificial intelligence it will be very easy and required less time.

AI has brought about significant changes to academia, revolutionizing the way of education. The integration of AI technologies in academia has the potential to streamline processes, enhance educational outcomes, and foster innovation. AI-powered technologies are being used to develop intelligent tutoring systems, adaptive learning platforms, and personalized educational experiences. These technologies can analyze students' learning patterns and provide tailored feedback, support, and resources. Moreover, AI has the potential to augment human capabilities in academia. However, unlike humans' AI performs fixed and domain-specific tasks with unmatched learning speed, extensive data, excellent efficiency, and unlimited computing capacity [5].

VI. Opportunities of AI for education

The Horizon Report (2020) is an annual publication that examines the major trends in educational technology that are shaping global higher education. Because of the pandemic, education systems around the world have scrambled to enter a lucrative educational technology opportunity, spurring calls and demand for AI in education as a solution to accessible remote learning. Teachers are no longer expected to possess all relevant knowledge and to transmit it to learners. Instead, they are tasked with supporting their learners in seeking, finding, and integrating information, and becoming independent collaborative thinkers [8]. As colleges and universities respond to the demand for greater accountability in higher education, the emerging practice of academic analytics is likely to become a new, highly useful tool for a new, highly demanding era [12]. AI can automate grading so that the tutor can have more time to teach. AI chatbot can communicate with students as a teaching assistant., AI in the future can be work as a personal virtual tutor for students, which will be accessible easily at any time and any place [10]. How educational technology firms use AI to help students, how educational technology firms use AI to support teachers, the expert's view of AI in education, and the untapped potential of AI for Edtech firms [11].

AI models in the platforms of education

- **Microsoft teams:** it is a platform for communication and cooperation via the Internet. It is a part of (Office 365) for commercial work, provided by Microsoft company [1]. This platform allows users to communicate and cooperate remotely, either via text chatting, phone calls or video calls [1]. Through this platform the teachers and the students can share files and documents and cooperate simultaneously. They can also establish communication channels inside the platform to organize ideas and improve communication among the team members.
- **Moodle:** it is a system for managing education via the free Internet, that is used in schools, universities, and educational institutions around the world. This platform allows teachers to establish virtual classrooms, upload educational content and give homework to evaluate students [1]. It includes several advantages that can contribute to improving the experience of teaching via the internet, including the technology of artificial intelligence. The students can access it in their classrooms, can receive the subject content, and can track their progress. The techniques of artificial intelligence are used to analyse educational data and the specialized recommendations are distributed among the students and teachers. The techniques of automated learning of AI are used to analyse the student's performance and provide notes concerning the common errors and the students will be advised to improve performance. This platform allows teachers to use the techniques of artificial intelligence to analyse and evaluate students' performance and interact with them. Also, the techniques of automated learning can be used to analyse the students' previous learning and provide recommendations to improve future performance.
- **Alef education:** it is a digital educational platform that provides educational experiences to the students in the world. Artificial intelligence is used to analyse the students' data and provide specialized learning courses based on their individual needs and interests [1]. A number of interactive learning activities, such as games, tests and video clips to engage students and promote their understanding to the subjects. Alef education also provides notices and reports that are presented in the actual time to teachers and parents which, in turn, allows them to monitor the students' progress and provide regulations based on that [1].
- **EduGorilla** is another company that uses AI to analyse Big Data in the education industry in India. It analyses data from 600,000 schools and 70,000 teaching institutions to deliver high quality results for Indian students. This makes them one-stop shop for all the educational activities in India. Students can rely on one place for their questions to be answered [17].
- **Embibe:** Robust AI stacks focused on content and automation intelligence, behavioural recommendations, and student intelligence, re-imagining how Embibe has affected the lives of 15 million students across the country. It has also worked with more than 60 educational institutions to expand the curriculum and learning programs using the PAAS model. This forum uses a process called the relative quartile jump, which constantly checks the student's knowledge [14].

VII. Potential of AI for Education

In the sector of education, artificial intelligence provides the potential of changing the way of teaching and learning, where artificial intelligence customizes learning by adapting the content to satisfy the individual needs of students [1]. Artificial intelligence in education has tremendous amount of potential that help to make the educational process more efficient and personalized. AI offers so many benefits for education. With heavy investments by private companies such as Google, which acquired European AI start-up Deep Mind for \$400 million, and also non-profit public-private partnerships such as the German Research Centre for Artificial Intelligence (DFKI), it is very likely that this wave of interest will soon have a significant impact on higher education institutions [4]. Thinking cognitively, AI has made it a present-day reality that imitates humans in many functions such as language translation, medical diagnostics, and decision making. If humans interact, analyze, deduce, think logically, and reason contextually, AI performs these actions artificially based on powerful computers, high-speed internet connections, algorithms, and extensive real-time data [5]. Here are some potential aspects of Artificial Intelligence-

Personalized learning: Intelligent education systems provide timely and personalized instruction and feedback for both instructors and learners. If such content is in the field of e-learning platforms, personalized feedback and recommendations on a large scale can be possible. At this moment, it is not possible to give each student individual attention. However, if content is created and graded by AI, will ensure personalized learning styles by identifying students' pain points and providing appropriate recommendations. In fact, AI-enabled educational infrastructure would bless each Indian student with a personalized tutor [2].

Chatbots:

There are both concerns and optimism about the use of Chatbots in education, yet the most pressing need is to ensure student learning and academic integrity are not sacrificed. In a developing country like India, the integration of digital infrastructure or the availability through education domain can be transform into educational potential.

Effective feedback:

AI systems will provide feedback in the form of alerts to both teachers and students during the successful completion of the course [12]. This feedback will help the teacher in designing lectures customized as per the need of the students. Similarly, such feedback will help in monitoring the student performance and progress during the course [12]. AI-based education allows instructors to engage with a larger number of students, as AI can automate the teaching process [2].

Supervised classification models to reduce drop-out rates:

If AI programs provide a personalized response, we can reduce India's total dropout rates which stands at 4% at the primary level but increases to 20% in higher education [2]. While these personalized trainers continue to collect data points from each juncture in the child's educational journey, ML classification models can be used to predict children at risk of withdrawal of studies and dropping out and appropriate remedial measures can be developed [2]. The inclusion of these activities will help increase the number of higher education enrollment ratio and ensure that the majority of adults achieve literacy, in line with the objectives under this SDG [Niti Aayog, 200].

Automated and fast administrative tasks:

Many of the administrative tasks in educational institutions are manual and time-consuming processes, such as managing student registers, creating timetables and issuing certificates [2]. The various Learning Management System (LMS) systems themselves can accelerate this process, but an AI-powered system can be an even more dynamic solution [2]. AI can act as a decision-making tool for the school principal in organizing processes to improve student learning [2].

Protection of data of teachers and students:

The use of AI technologies in education may involve the collection and processing of personal data of students and teachers [2]. This can raise privacy issues and ethical concerns, especially if data is not properly handled and protected. One of the most popular chatbots, ChatGPT, has been restricted in Italy partly for this reason [2].

VIII. The presence and involvement of AI in education

The mention of AI recalls a supercomputer, a computer with immense processing capabilities, including adaptive behavior, such as inclusion of sensors, and other capabilities, that enable it to have human-like cognition and functional abilities, and indeed, which improve the supercomputers interaction with human beings. Indeed, different motion pictures have been made to showcase the abilities of AI, such as in smart buildings, such as the ability to manage air quality in a building, temperatures, and or playing music depending on the sensed mood of the occupants of the space. Within the education sector, there has been increased application of artificial intelligence, going over and above the conventional understanding of AI. From a theoretical point of view, today, there are a vast number of digital platforms that use useful AI techniques to discover publications, books, proceedings, and editorial comments in any area of research [7].

Virtual mentors: Digital coaches are available via AI-based platforms to monitor students' success. Of course, only human instructors are best at understanding the desires of students, so it's helpful to get immediate input from the virtual instructor [13].

Education at all times: Young people are always on the move. They want to use their smartphones or laptops for daily activities. AI-based apps enable you to research in your spare time for ten or fifteen minutes. Additionally, students may get real-time input from tutors [13].

Various needs of students: According to the students' level of experience, interesting subjects, and so on, AI-based solutions will adjust. The method is prone to assisting students with their vulnerable points [13]. It provides instructional resources that are tailored to their vulnerabilities. For example, before using the software, the student takes a test; the app analyses the results and suggests appropriate activities and courses [13].

Adaptive assessment: When the assessment is initiated, the system will consider all students as average performers and display a question of the average level of difficulty, known as "cold start" [11]. Based on the response to the first question, the next question appears for the student [11]. If the first answer is wrong, the system provides the next question at a lower level of difficulty, whereas, if the first answer is correct, the system provides the next question at a higher level of difficulty [11]. The questions are retrieved randomly by the system from the larger pool of questions in the database based on the level of difficulty [11]. This process goes on until the stipulated number of questions (determined by the teacher) is reached [11].

IX. Conclusions:

X. AI can significantly affect the education sector. Though it benefits education and assists in many academic and administrative tasks. When we make a plan for the application of artificial intelligence in education, particular attention should be paid to our requirement for education which will help us to take full advantage of AI. Indeed, this could entail establishing balance between using artificial intelligence and the traditional teaching methods, in addition to providing suitable training and support to teachers and students as well. It helps teachers and students to perform various tasks and automates many processes. Slowly and gradually, AI adoption and dependency in the education sector are increasing, which invites more challenges. Therefore, it is important to encourage teachers and policy makers to take these opinions into consideration while thinking about implementing artificial intelligence in education. Educational institutions should evaluate the costs and benefits of using artificial intelligence and provide the necessary training and support to teachers and students about using the educational instruments that are based on artificial intelligence. Educational institutions and teachers must be prepared to use AI and adapt to technological changes. The future of AI applications in education is likely to be that AI technology will help to make teaching processes more efficient, while preserving the personal relationships between teachers and students. It is also necessary to address the legal and ethical issues related to using artificial intelligence in education, such as privacy and data security. AI helps us in different ways in our education sector, but it concerns about the loss of decision-making, laziness, and security may not be ignored.

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