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ROLE OF ARTIFICIAL INTELLIGENCE IN TEACHING AND LEARNING PROCESS

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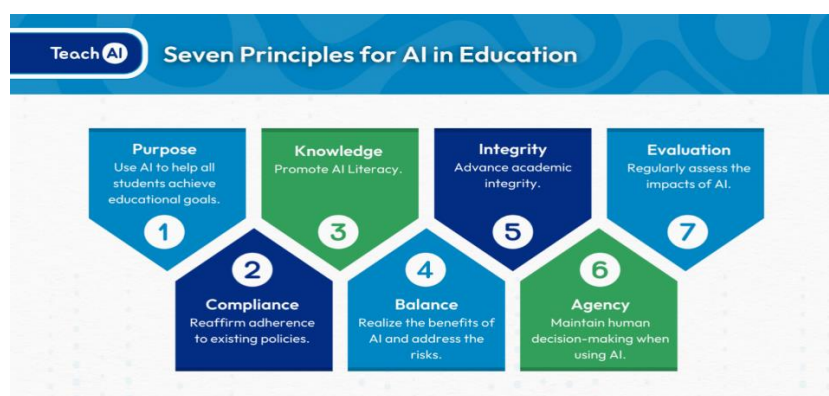
Abstract:

Education is an ever-evolving domain that continually adapts to new technologies and research advancements. The global transition to virtual learning, prompted by in-person restrictions, along with the rise of Artificial Intelligence (AI), is transforming teaching and learning methodologies, making them more personalized and efficient. AI supports educators by automating administrative tasks, providing immediate feedback, and tailoring learning experiences to suit individual student needs. AI-driven tools, such as virtual tutors and intelligent assessments, enhance engagement and interactivity in the learning process. While AI has been integrated into educational technology for some time, its adoption is now becoming increasingly prevalent across various industries.AI has the potential to revolutionize the way we teach and learn, making education more efficient, effective, and accessible. From personalized learning to automating administrative tasks, AI is being used in a wide range of ways in education. AI is transforming education by providing innovative solutions that cater to the diverse needs of students, educators, and institutions.

Introduction: Education is a fundamental aspect of life for all individuals, and a quality education is essential for achieving success. To enhance the educational system for students, numerous changes are continually being implemented globally, affecting teaching methods and curriculum design. Artificial Intelligence is an emerging technology that is being integrated into various sectors and is transforming the landscape. One area where artificial intelligence is set to bring about significant changes is in the field of education. AI in education is about leveraging computer intelligence to assist instructors and students and improve and streamline the educational system, not about replacing human teachers with humanoid robots. The educational experience of the future will be shaped by the numerous AI technologies that the education system will have in the future.

Seven Principles for AI Used in Education:

How AI is used In Education?

Artificial Intelligence (AI) is already being utilized in teaching and learning. It benefits both teachers and students by automating administrative duties, giving pupils individualized feedback, and even detecting areas where students might need further assistance. Since AI is always changing and adjusting to new problems, there are countless opportunities to use it in education. AI is now being applied in education in a few particular ways.

How teachers start to implement AI into the classroom.

- Using **Educational Apps**: Teachers can assist students with individualized learning by utilizing AI-powered tools and applications. These resources may adjust to the individual learning style of each learner and offer additional support when required.

- Teachers can leverage AI to automate the **grading process** for assignments and quizzes, which not only saves time but also enables them to concentrate more on their teaching responsibilities.

- **Classroom Tools**: Certain educational institutions utilize smart boards or AI-driven virtual assistants to enhance lesson delivery, facilitating lesson organization and increasing student engagement.

- **AI chatbots**: can provide immediate assistance to students by addressing frequently asked questions, offering support beyond regular class hours.

- **Analytics**: AI can track student progress and provide insights into areas where students might need extra attention.

THE GROWING ROLE OF AI IN TEACHING AND LEARINING:

The expanding influence of artificial intelligence in education is significant and extensive. AI technology has the capacity to transform conventional educational frameworks, fostering more personalized, inclusive, and adaptable learning experiences for learners. A key benefit of AI in this sector is its capability to offer tailored learning pathways that cater to the distinct needs, learning preferences, and competencies of each student. This approach ensures that all students receive the necessary support and resources to thrive, irrespective of their backgrounds or skill levels.

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Artificial intelligence in education enables teachers to pinpoint areas where students may lack understanding and deliver specific feedback to enhance learning results. Utilizing AI-driven chatbots and virtual assistants allows educators to offer prompt support and guidance to students beyond the classroom, fostering engagement and motivation. Furthermore, AI facilitates the early identification of students who are facing challenges, allowing for tailored interventions to promote their success. The advent of AI in education presents a thrilling opportunity to transform learning methodologies, shifting from conventional classroom settings to more dynamic and interactive experiences. Utilizing AI-driven virtual and augmented reality technologies, students can delve into intricate concepts through innovative and immersive means, enhancing engagement and making the learning process more vibrant and stimulating.

How AI Beneficial for Students?

24*7 access to Learning: With AI-driven digital Learning, students can learn anywhere, anytime. Every learner is free to plan their schedule, rather than being linked to a specific place only. Everyone can make their learning easier and effective as per their most productive hours.

Better Engagement: With personalized learning, custom tasks, and digital visualization, the study becomes more interactive and engaging. Personalized learning and great experience with AI-driven programs make students feel much confident and smarter as they can explore many things apart from their syllabus

without any hesitation or fear of asking. All these things and new AI technologies are increasing the interest of students in studies.

Less Pressure: With AI-driven programs and personalized learning, students feel less pressure of studies. AI-enabled virtual assistants help the students whenever they ask a question, with a complete explanation. In the traditional learning methods, a student needs to ask queries in class in front of everyone, which might hesitate some students, and these issues can be resolved with the help of virtual assistants. However, all the questions can't be correctly answered by these virtual assistants. But for basic queries, they can be much helpful that can boost the confidence of each learner and reduce the pressure.
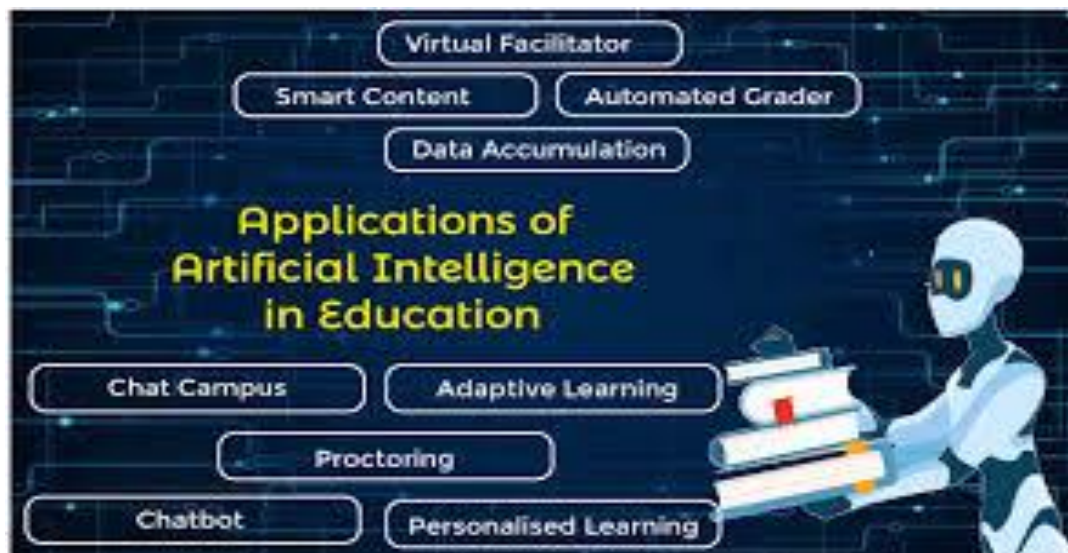
How AI Beneficial For Teachers?

1. Auto Grading

Auto grading is one of the most exciting ways that AI is transforming workload and productivity for teachers. Grading can be a time-consuming and overwhelming task for teachers, but AI can automate this process by grading written assignments for teachers.

AI Grading tools:

For example, a teacher could use an AI-powered grading tool like Gradescope which allows teachers to upload assignments and assessments, and then automatically grades them using machine learning algorithms. Teachers can easily review and adjust the grades before releasing them to students.

Sr.No	How AI is used in education	Teachers can use tools
1	Course and lesson plan creation	Top Hat, Education Copilot, ChatGPT
2	Differentiated learning	Dreambox, Smart Sparrow, Knewton
3	Auto-grading	Gradescope
4	Pinpointing knowledge gaps	Exact Path
5	Test prep	ExamSoft, R.Test, ClassPoint
6	Admin & task automation	Zapier
7	Personalized, virtual tutoring	Squirrel AI
8	Providing student feedback	Turnitin Feedback Studio

FUTURE OF ARTIFICIAL INTELLIGENCE

Artificial Intelligence (AI) is undeniably a transformative area within computer science, poised to play a crucial role in the development of various cutting-edge technologies such as big data, robotics, and the Internet of Things (IoT). Its influence as a driver of technological advancement is expected to grow in the years ahead. What was once a concept confined to science fiction has now materialized into reality? Intelligent machines that assist humans are no longer limited to cinematic portrayals; they are present in our everyday lives. We are currently experiencing a world where Artificial Intelligence, once merely a narrative, has become an integral part of our reality.

Conclusion:

The integration of artificial intelligence into various aspects of our lives is increasing rapidly. In education, AI is beginning to make a significant impact, serving as a valuable resource for both students and educators while enhancing the learning experience. Nevertheless, not all colleges have fully embraced AI technology, and the transition will require considerable time and effort. Research indicates that in the foreseeable future, AI is expected to positively influence the educational

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landscape. The influence of artificial intelligence in education is expanding, with its effects increasingly evident in classrooms globally. AI offers opportunities for tailored learning experiences and tutoring, while also alleviating teachers' workloads through automation. By incorporating AI into your teaching practices, you can provide more individualized instruction, enhance student performance, and minimize the time dedicated to administrative responsibilities. Begin by experimenting with AI tools that correspond to your educational objectives, and progressively investigate how they can enrich your teaching methods and enhance students' learning experiences. The potential for advancing education through AI is boundless, promising a positive future for both teachers and students.

The education sector is undergoing significant transformation, yet it has not yet realized its full potential. While computer systems can greatly enhance the learning experience, they are unlikely to completely replace human educators in schools and colleges.

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