An Overview of Artificial Intelligence and its tools in Education

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Abstract

Artificial Intelligence (AI) refers to the ability of technology, particularly computer systems, to simulate human intelligence processes. The increasing availability of artificial intelligence and related tools and technologies has made it possible to use AI in various domains of life. To develop innovative teaching and learning strategies in the field of education, artificial intelligence is now being made an effort in a variety of educational settings. AI is being applied to examine enormous quantities of data to find trends and insights that might guide the creation of new educational policies and plans. The main aim of this paper is to study the need for AI in the field of education and find out the different challenges therein. The study is qualitatively done by reviewing various articles on artificial intelligence (AI). The field of education is also witnessing an increasing use of AI. The benefits of AI in education include greater flexibility in terms of time and space and a changing role of the tutor as a facilitator. We also discussed key challenges, including ethical issues such as data privacy, lack of inclusion and equity for students of all backgrounds, and lack of human touch. Based on these themes, we concluded that AI's role in education will increase in the future, but the challenges also need to be addressed to fully unlock the benefits of AI in the education field. On these themes, we concluded that AI's role in education will increase in the future, but the challenges also need to be addressed to fully unlock the benefits of AI in the education field.

Keywords: Artificial Intelligence, Education, Tools

Introduction

In today's fast-paced technological world, AI is all around us, subtly enhancing our daily experiences.[1]. The landscape of education is continually changing, and new technologies are becoming more and more prevalent in the classroom. One of the such technology is Artificial Intelligence (AI). AI tools integrated into educational settings have the potential to revolutionize learning experiences for both educators and learners. These tools encircle a wide range of AI applications and systems that assist educators and students in various aspects of the learning process. AI also contributes to the creation and of educational content, generating lesson plans, designing instructional materials, and recommending resources, thereby fostering the development

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of high-quality educational resources[2].AI-powered tools and applications are now being used in many industries, including education, to enhance the quality of services provided to students and teachers[3] .The application of AI in education makes the entire educational system convenient and individualized. The widespread use of technology in education is changing how we learn and teach. AI is such an innovative method for adapting the experiences of various learning groups, teachers, and instructors.[4]

Artificial Intelligence

Artificial intelligence (AI) is the capacity of a machine to carry out cognitive tasks similar to those carried out by humans, such as perception, learning, reasoning, and problem-solving. AI is focused on emulating human decision-making processes and carrying out intellectual activities in a manner akin to that of human tasks comprising problem-solving, learning, understanding languages, recognizing voices, images etc. AI can be defined as "the capability of a machine to imitate intelligent human behavior". With the help of AI, digital and automated processes get smarter. Additionally, it improves technology's reliability level. The simulation of human intelligence in robots that are designed to think and learn like humans is known as artificial intelligence or AI. The goal of this multidisciplinary area of computer science is to develop intelligent systems that are able to carry out tasks that normally call for human intelligence. These include solving problems, identifying patterns, comprehending spoken language, drawing lessons from past experiences, and making judgments. Simple rule-based systems extremely sophisticated neural networks and machine learning algorithms are two examples of AI systems [5].

Artificial Intelligence in Education:

Education is a fundamental human right and a key driving force for social and economic development. However, education also faces many challenges: such as access, quality, equity, relevance, innovation, identifying diverse student needs, rapidly shifting information landscapes, and a pressing demand for 21st-century skills. AI is not a magic bullet, but a powerful tool waiting to be harnessed with creativity and purpose. Moreover, it is the key to meeting these challenges head-on. From adapting lessons in real-time to providing instant feedback on student projects, AI is poised to reshape the way we teach, learn, and conduct research. The principal objective of artificial intelligence is to facilitate machine information processing that approaches problem-solving as closely as possible to that of human beings. Artificial intelligence is impacting education in two primary ways [6]: (1) Curriculum designed with AI in mind, which can be customized to fit the

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unique requirements of every learner. AI systems can create individualized learning pathways by analyzing student data, including learning preferences, skills, and shortcomings; (2) Automation of Administrative duties: By automating administrative duties, AI can free up educators' valuable time so they can concentrate on instructional activities and student engagement. Regular administrative duties like assigning grades, setting up classes, and maintaining student records can be performed by AI-powered systems: AI-generated emails can notify students of upcoming deadlines, encourage them to sign up for classes, turn in assignments on time, and pay fees on schedule.

Artificial Tools used in Education

1. ChatGPT: One of OpenAI's most well-known AI technologies is ChatGPT. It has completely changed the industry and opened up AI to all. This platform allows you to write code, solve complicated problems, brainstorm ideas, and have conversations in addition to creating AI content. It can be used by students to explore any subject, simplify difficult ideas, generate original ideas, revise and edit their work, and more. Additionally, they can write code in any language, debug it, and obtain an explanation.

Pricing: With its free version, you may create an infinite amount of material in a matter of seconds.

Use ChatGPT For: AI Writing

2) Grammarly: Another well-liked tool for editing, proofreading, and grammar checking is Grammarly. You must have used it for document editing, I'm sure. It provides real-time recommendations for enhancing your writing style, grammar, spelling, and other areas using a potent AI system. In order to deliver your message with the appropriate emotion, it also recognizes the tone of your content.It is quite good at identifying mistakes in language, pointing out trends, and providing helpful advice on how to fix them. For school and college submissions, students who wish to enhance their grammar and produce flawless documents should read this.

Pricing: You can produce 300 documents or 150k words each month with both the free and premium options.

Use Grammarly For: Editing & grammar correction

3)Quillbot: It's a truly amazing paraphrase tool that transforms your information into polished, business like prose using artificial intelligence.23 languages and two paraphrase modes Standard mode and Fluency mode—are available on QuillBot's free plan.

Pricing: You can only write 125 words at a time with their free plan.

Use QuillBot For: Paraphrasing

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4. Google Gemini: It is a Google designed conversational generative AI chatbot. It has some amazing skills, having been trained on 137 billion parameters. It serves as your AI helper and is comparable ChatGPT.It can retrieve trustworthy content regarding currenteventsand the most recent news from the internet since it has access to real time data. It is therefore perfect for study.For added ease, it even offers voice input and a variety of export choices.

Use Google Gemini For: Research

5. ChatPDF: They can easily obtain the information they require from any journals and papers by posing pertinent queries!

Pricing: The free plan lets you upload 2 PDFs per day and pose 20 questions/day.The PDFs should not exceed 120 pages, though.

Use ChatPDF For: Research

6. Ask Codi: AskCodi is an AIdriven coding assistant that makes development and programming easier for you.You can use it to generate code in more than 55 languages, translate it into another language, and obtain code explanations.

Pricing: Most students find that the 50 monthly credits that are included in the free plan is enough.

Use AskCodi For: Coding

7. Hocoos AI: It creates three sample website styles based on the inputs.It creates a lovely website for you once you choose your favorite font combinations, color schemes, and style.It has pertinent graphics,design, and text based on your feedback.

Pricing: The free plan offers 20 AI content creations, a limited amount of media uploads, andlittle customization. Additionally, the subdomain URL cannot be changed.

Use Hocoos Flor: Website Building with AI

8. Kickresume features: an AI writer who can assist you with revising the content and tone of your profile section to be more professional.In addition, by inputting your position, you can obtain valuable career advice and interview questions.

Pricing: With limited AI usage, the free plan allows you to create one cover letter and one resume.

Use Kickresume For: Resume Building

Benefits of AI Tools for Students

Incorporating AI tools in the educational journey can have many benefits. Some major benefits are listed below.

1)Increase Productivity: Automating monotonous chores and increasing productivity is the main advantage of utilizing AI tools.AI note taking, paraphrase, and web page summary tools.

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2) Customized Learning: Every student can receive individualized learning experiences based on their needs and success rate thanks to AI tools.Each student can have the best possible grasp of the course material with the support of a customized approach.Effective learning results from this.

3) Better Research: AIenabled solutions can even make the process of collecting and evaluating data for your study more efficient. With their assistance, you can obtain pertinent sources and useful insights while saving time when analyzing vast volumes of data.

4) Creating and Language Support: Grammar and spellchecking features are also provided by artificial intelligence techniques.They can offer recommendations for enhancing word choice and sentence structure.Articles, essays, project reports, and other creative content can also be produced with the aid of an AI writing tool.Students can improve their language learning and strengthen their writing and communication abilities by doing all of this.

5) Knowledge Advancement: AI systems support the development of skills in a variety of fields, not just academic ones.Students' creative abilities and artistic expression are improved as a result.

Benefits of AI in Education

1**. Individualized Learning:** AI can assist in tailoring each student's educational experience so they can study at their own speed and in accordance with their unique requirements and skills.Higher levels of student engagement and better learning outcomes may result from this.

2. Enhanced Effectiveness: AI may automate time consuming jobs like data analysis, grading, and administrative duties, giving teachers and students more time to work on more important projects.

3.Increased Student Engagement: By offering dynamic and captivating educational opportunities, artificial intelligence (AI) can contribute to increased student engagement.Chatbots and virtual assistants, for instance, can make learning more enjoyable and participatory, and adaptive learning technologies can keep students interested by providing information at their comprehension level.

4.Improved Data Analysis: Teachers can better understand their pupils and adjust their instruction by using AI's ability to analyze vast volumes of data and offer insights into student performance. Better student performance and learning outcomes may result from this.

7. Challenges of AI in Education:

Need for Technological skills:

Teachers who are not familiar with AI may find it difficult to integrate this technology into their lesson plans and may need help and training to get started.

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Cost of AI software and resources:

The majority of educational institutions do not have the money to buy and maintain the resources needed to use AI in the classroom. Concerns about ethics related to using

AI in the classroom:

As AI becomes more complex, questions have been raised about how it will affect security, privacy, and the labor market.As children explore with fast evolving technology, educators need to be aware of these issues and take precautions to keep them safe.

Information safeguards:

Concerns about privacy and data security are likewise getting more and more attention. It might be necessary to collect and examine private information, including behavioral patterns and academic achievement, in order to apply AI in higher education.Organizations using AI must make sure that the data they acquire is used for that purpose, is not misused, and is not shared with unauthorized parties. [7]

Future Prospects of AI in Education:

"Technological advances have opened a world of opportunities for students and teachers lately. With new access to online and traditional learning platforms, the possibilities for furthering educational goals seem limitless"[8]. The potential for AI in education to revolutionize several facets of the educational system is bright. AI in higher education has bright prospects and is expected to have a big impact from many perspectives. Some of the prospects of AI in education include:

From the perspective of the innovator:

AI offers significant commercial potential from the perspective of ed-tech businesses and inventors.They view AI as a tool to challenge long standing educational paradigms by offering new strategies and platforms that can adapt to the evolving needs of both institutions and students.

From the perspective of the student:

A lot of students see AI as a mixed gift. On the one hand, they value the accessibility and personalized learning opportunities that AI can offer. The overuse of AI, on the other hand, has raised concerns that it may depersonalize education and diminish the importance of human mentors and teachers

From the perspective of the teacher:

Teachers frequently hold a cautiously upbeat view of artificial intelligence. Some educators are concerned about job displacement or a decline in educational quality if AI is not applied

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properly, even though they acknowledge the potential for AI to enhance teaching through personalized help and automated grading. They also stress that instructors' roles should be enhanced by AI rather than replaced.

From the perspective of the researcher:

Academics working in the fields of AI and education perceive a chance to advance the study of learning. They are enthusiastic about the possibility that AI will produce new teaching approaches and a greater comprehension of human cognition revealing the most effective ways for children to learn best.

From a regulatory and policy perspective:

Data privacy, algorithmic prejudice, and the possibility of surveillance in educational settings are among the concerns of policymakers and regulators. They emphasize the necessity for precise laws and policies to guarantee the ethical application of AI in education.

Conclusion

This in-depth investigation of the use of AI in education puts into stark relief the complex dynamics and potential transformation of the educational environment. While there are many benefits to incorporating AI in education, there are also several challenges and concerns that need to be addressed. With immersive learning environments and a variety of learning tools, AI revolutionizes education and offers prospects for up skilling and reskilling. To properly create the future of education, collaboration between administrators, educators, researchers, and students is crucial. With AI as its painter, education's future holds the possibility of a more open, fair, and progressive learning environment.

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