

Artificial Intelligence in Education

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Abstract

In this paper, we explore the potential and current applications of artificial intelligence in the academic setting. The 21st International Conference on Artificial Intelligence in Education (AIED) will be held in 2020, and it is expected to be one of the fastest-growing areas of Ed Tech at the moment. Teachers aren't sure how to take full pedagogical advantage of AI or how it will affect classroom instruction and student learning. The positive and negative effects of AI on classroom instruction are discussed. It also details the aftereffects of AI in education and provides a detailed plan for creating an AI-enabled platform for teaching.

Keywords: Artificial Intelligence, AIED, Emerging, Pedagogical, Instruction.

Introduction

Artificial intelligence (AI) is commonly understood by the general public as the capacity of machines or computers to emulate human cognition and behaviour, reflecting the ongoing endeavours to develop computerized systems that simulate human thought processes and actions (Wartman & Combs, 2018). In this regard, the fundamental characterization of artificial intelligence can be articulated as the adept mastery of computational systems to exhibit intelligent behaviour.

The replication of human behaviour or cognition through the use of tools or software has been explored by Mohammed and Watson (2019). Timms (2016) posits that the prevailing structure may engender a fallacious perception that artificial intelligence will manifest within the domestic computer format. It has the potential to permeate various aspects and forms of our lives.

According to Ng (2017), artificial intelligence is posited as the contemporary equivalent of electricity. Artificial intelligence has emerged as a potential cornerstone of the Fifth Industrial Revolution, offering significant potential for driving economic development (Golic, 2019). This phenomenon may explain the notable surge in investments

in artificial intelligence in China, reaching a remarkable sum of \$40 billion in 2017 (Mou, 2019). China is projected to experience a significant increase in its gross domestic product (GDP) by 2030, amounting to a 26% growth equivalent to \$7 trillion, primarily driven by its earnings derived from artificial intelligence (AI). According to PwC's report in 2017, it is projected that North America will experience a 14.5% growth, equivalent to \$3.7 trillion, within the specified time period. The presented data elucidate the enhanced value and worldwide ramifications of artificial intelligence, thereby facilitating comprehension of its significance for the forthcoming economy.

The comprehensive advancement of artificial intelligence will have implications in various domains, encompassing the reorganization of the societal structure at large, as well as the transformation of educational and administrative practices within classrooms and schools. Educational institutions that are anticipated to conform to the demands of the digital era and incorporate 21st century proficiencies into their core objectives are among the primary establishments that may encounter significant implications arising from the advancement of artificial intelligence. According to Karsenti (2019), the emergence of novel technological advancements is expected to become increasingly prevalent in our daily lives, particularly

captivating the younger generation. Consequently, educational institutions may find themselves compelled to accommodate these technologies within their learning environments.

This study focuses on examining the perceptions of stakeholders from the fields of law, business, education, and engineering regarding the development of artificial intelligence and its potential impact on education. The objective of this study is to investigate the implications and significance of incorporating artificial intelligence in the field of education, as perceived by participants from various sectors.

AI in Education

Artificial intelligence (AI) is a new academic discipline that is already influencing how we educate future generations. Having certified educators on hand all the time is a best practise in the field of education. The emergence of AI has reshaped the job of teachers, who are now more important than ever. The AI makes extensive use of complex analytics, deep learning, and machine learning to keep track of one person's speed relative to the rest.

As AI tools advance, they reveal classroom weaknesses and help teachers fix them. Since computers still struggle with understanding and adaptability, AI has the potential to free up more time for teachers to focus on these areas.

Using a hybrid system of human and robotic teachers can improve student outcomes.

Despite the importance of education to human survival, the existing system leaves much to be desired. Therefore, in the future, artificial intelligence will have a significant impact on the educational sector. Classrooms of the past lack the flexibility of those that AI will soon make possible. Teachers are essential to any school system but are notoriously hard to hire and reward financially. Some countries' educators face excessive paperwork and little pay. Artificial intelligence can personalize education by analyzing data about each student's preferences and strengths.

Advantages of AI in Education

Most modern adolescents and young people cannot imagine life without their smart phones. They can use this downtime to study with the help of AI for as little as ten or fifteen minutes. It's possible that AI may use Gesture Recognition Technology to determine whether or not pupils are calm or tense in class. Machines will soon be able to read a student's facial expressions and body language to determine if they are having trouble keeping up in class and provide appropriate accommodations.

Soon, AI-enabled machines will be able to adapt their teaching methods to the unique needs of each pupil. The use of AI techniques has made it possible to include the

deaf and hard of hearing in classes all around the world. Students who are too sick to come to school will benefit greatly from this. Grading homework and tests takes up a significant portion of class time in most courses. In this case, artificial intelligence (AI) would greatly improve efficiency. It also tells you how to fill in the blanks in your education.

In today's world, those who have trouble communicating verbally, visually, or both have access to a wide variety of assistive technologies, all made possible by AI. Presentation Translator, an AI-powered tool for presentation systems, provides live captioning. Students can, for example, use Google Translate to read and hear content in their native language. Examples of how modern technology can improve classroom interaction include virtual reality (VR) and gamification.

Existing applications use machines to evaluate multiple-choice tests, and future research will likely provide applications that use computers to grade written solutions, such as paragraphs and sentences. This allows educators to devote more time to assessing and supporting the development of their individual students.

Although artificial intelligence's full potential has yet to be realised, it may one day be applied in the admissions and enrollment procedures. The use of AI can help students

who prefer to study in the comfort of their own homes. Soon, AI will be able to work with a variety of teaching styles. Study and tutoring aids have advanced swiftly because to advancements in artificial intelligence (AI). There are now ongoing efforts to create AI-based educational applications, such as AI-based mentors for students.

AI can automatically group students with complimentary skill sets into study groups. Adaptive group formation is a term used to explain this occurrence. A computer algorithm that grades essays automatically. These papers have been gathered in one convenient location so that scholars may use them as a source of ideas or for comparative studies. Individualised, adaptable, and in-depth teaching is made possible with the help of AI in the classroom. The AIED system's ability to do activities that need human judgement and input from students is greatly enhanced by the use of the Domain Knowledge paradigm. The Development of the Learner's Skills and Knowledge as Depicted by the Student Type. Finally, the Interface part of the system represents the pedagogical model of the system and opens a channel of communication between the learner and the system.

Learning can take place outside of formal settings when a voice assistant is used to retrieve relevant materials. To save money on printed handbooks (which students only

use for a short time at the beginning of their enrollment), the primary purpose of these voice assistants is to answer frequently asked inquiries (FAQs) regarding campus life and individual students' schedules and classes. It is anticipated that the use of this technology will grow in the next years. It is hardly surprising that educational institutions are rushing to meet the growing demand for educated AI workers as AI becomes increasingly pervasive in everyday life.

The current investment wave and increased interest in AI will have an impact on the curriculum of future universities.

AI Based Solutions in Education

The team at London University College responsible for creating the Third Space Learning system deserves a lot of credit. It suggests ways to enhance classroom practices, such as notifying teachers when they are going too slowly or too quickly when explaining something. The Little Dragon creates smart apps that can read your emotions and react to what you're doing just by looking at you. The Little Dragon studio also develops educationally focused "serious games."

Companies like Carnegie Learning and Content Technology have led the way in implementing AI in education by developing innovative approaches to curriculum design and digital platforms used in settings ranging from primary

school to higher education. Cram101 is an AI-powered online tool provided by CTI that scans a student's assigned readings for the most crucial ideas. It may even generate educational materials for students, such as flashcards and mock exams. It is the goal of another platform, Netex Learning, to use cutting-edge technology to expand digital learning opportunities in corporate and academic settings. Teachers are urged to advocate for online courses that make use of multimedia tools including audio, video, and speech recognition software. Experts in technology predict that classroom instructors will soon be replaced by robots. Augmented reality (AR) will also make its way into the classroom.

Developing of An AI Enabled Platform For Education

First, we need to perform a thorough evaluation of competing solutions and improve upon them by including innovative features. Look into the concepts. Users are more interested in practical information, therefore you can pick from fields like medicine, literature, mathematics, and more. You can also get this helpful information from teachers at various educational institutions, as well as from courses and training programmes.

Before beginning development on a project, it's important to define the business's objectives and the scope of the work to be done. A seasoned group of software engineers that

are also familiar with AI is required for the development team. Starting with a basic version of your app or platform, you may then regularly upgrade it with new content and features based on user feedback and reviews. More users can be attracted with a high quality user experience. This is possible if we uncover and solve the flaws before launching the platform and the users have no complaints. Qualified Quality Assurance Engineers can fix these issues. There must be consistent platform upgrades based on user feedback.

Disadvantages of AI in Education

Concerns that an AI application like the Intelligent Tutor System may replace human educators and support workers are understandable. The massive amounts of data required by AI systems, including personal information on students and faculty, raises severe privacy concerns. Artificial intelligence is very costly when you factor in the price of setup, upkeep, and fixing. Such cutting-edge technology can only be afforded by the well-endowed academic institutions. Users risking harm by becoming socially isolated if they rely too heavily on this device. When an AI is damaged and in need of repair due to external factors like natural catastrophes or accidents, the amount of data lost is impossible to predict.

Challenges For Artificial Intelligence in Education:-

The paper by Woolf et al. (2013) outlines several significant challenges that artificial intelligence (AI) faces in the field of education. These challenges include the implementation of virtual coaches for individual students, which provide continuous assistance through user modeling, social simulation, and information presentation. The virtual coaches aim to support students in self-direction, self-evaluation, collaboration, and other aspects of learning. Additionally, the integration of vast The role of Artificial Intelligence in the modern digital landscape is remarkable, and it is anticipated to significantly enhance the acquisition of knowledge in the foreseeable future. According to Sharma (c.),

As previously mentioned, there exist a multitude of advantages associated with the utilization of artificial intelligence in the context of education, encompassing benefits for both educators and learners. Furthermore, the potential applications of AI in this domain are indeed remarkable. However, higher education institutions are anticipated to encounter several challenges when implementing artificial intelligence within their universities. Several factors need to be considered in relation to the updated academic achievement and instructional support provided by AI, including authorization and economic support.

Privacy regulations pose a significant limitation, as they necessitate regular updates to address the capacity of AI systems to track and utilize information for analytical purposes.

Engaging with students poses an additional limitation. If AI takes over certain job responsibilities, such as evaluating and responding to student inquiries, it is expected that directors and employees will shift their focus towards addressing complex issues and engaging with students at deeper levels.

In order to effectively navigate the challenges and benefits associated with the integration of artificial intelligence (AI) in the realm of higher education, it is imperative for educational institutions to carefully consider several key factors. These factors include determining the appropriate timeframe for AI implementation (whether in the short or long term), identifying the specific areas within the institution where AI can provide significant assistance, devising strategies to safeguard students' privacy while utilizing data to support their educational needs, and establishing a clear definition of success for the university in relation to the implementation of AI. The integration of artificial intelligence in higher education has the potential to create significant opportunities for advancement. Institutions that effectively incorporate this technology will

reap the benefits it offers to students, educators, and administrators.

Conclusion-The use of AI in the classroom is a game-changer. The Centre for Integrative Research in Computer and Learning Sciences has released a research stating that the most advanced applications of AI in education have not yet been developed. Our future is AI. Artificial intelligence will have the greatest initial impact on elementary and secondary education, before spreading upwards to higher levels. Only time will tell what kind of impact AI has on classroom instruction. AI's primary function is to aid teachers in their work rather than to replace them.

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