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Digital Innovation with Artificial Intelligence in Higher Education

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Abstract

Artificial intelligence (AI) is permeating many facets of our daily life, appearing in household appliances, cellphones, and popular online apps. Artificial Intelligence (AI) is a fast-growing topic in education with the potential to significantly expand and improve teaching and learning in higher education (Crompton et al., 2020). According to Popenici and Kerr (2017), artificial intelligence (AI) is defined as "computing systems that are able to engage in human-like processes such as learning, adapting, synthesizing, self-correction and use of data for complex processing tasks." Artificial Intelligence (AI) is one of six technologies that have the potential to have a significant impact on higher education, according to Brown et al.'s 2020 Horizon Report. An yearly publication called the Horizon Report (2020) looks at the key developments in educational technology that are influencing higher education around the world. This paper will discuss some of the ways artificial intelligence (AI) is helping educators and students, such as customized learning, intelligent tutoring programs, collaborative tools, and computerized grading. A discussion on the ethical ramifications comes next.

Keywords : Artificial intelligence (AI), Education, Higher education, Education technologies. AIEd, Artificial Intelligence in Education, Information, Learning, Digital Education.

Introduction

Scholars have long argued for learning that is relevant to each individual student. This has been done in a variety of ways, including differentiated learning, individualized learning, and the most recent approach, personalized learning. It is crucial that learning be tailored to the needs of the student, not the other way around. Presenting content that is appropriate for that particular student is one method AI gives pupils individualized instruction. AI systems are able to make precise recommendations for reading material and activities based on observations of a student's conduct in a course. Intelligent agents, intelligent teaching systems, intelligent e-learning systems, and adaptive AI systems are all systems that offer or recommend educational resources according to what they have "learned" from the student as they collect data on the behaviors. It can be a question level determined by the student's previous responses, or it might be reading recommendations based on previous searches. The many facets of intelligent tutoring systems in higher education were delineated by Huang & Chen (2016) as follows: 1) Student model: Details on the knowledge, cognitive ability, motivation for learning, and learning style of the student. 2) Teacher model: Examining pupils, tactics, and approaches. 3) Domain model: The collective knowledge representation of educators and learners 4) Diagnosis model: In this scenario, the AI system assesses the intelligent model's errors and flaws.

Putting students into groups for cooperation and coming up with conversation starters might take a lot of time for faculty members. AI can be used to create adaptive groups for students with high accuracy and speed (Luckin et al., 2016). In addition to organizing students by interests, AI can use the students' knowledge to create matched or differentiated groups based on the students' learning needs. Reading and moderating discussion forums is a time-

consuming duty for higher education faculty members. Artificial intelligence (AI) technologies can examine the talks and notify the faculty person when students stray from the topic or have misconceptions.
One of the most well-known applications of AI is in computerized grading. This truly utilizes AI to grade more intricate student writing contributions, moving beyond multiple-choice exams. For professors who can spend hours grading long papers, essay scoring is a huge help. More one-on-one contacts between instructors and students could be accomplished with the time saved. Write To Learn, Research Writing Tutor, and other AI Automated Essay Scoring Systems can be used by students to evaluate ways they can improve a paper before giving it in for marking, but more crucially, they can be utilized to provide in-depth feedback. These are helpful resources for students that can provide them with revision ideas and in-depth instructions on how to go about making adjustments.

Objective

Objective of this study is to analyze the possible changes in learning, teaching and knowledge processing in higher education with the availability of AI tools and its use in academia. Digital innovations have changed the boundry for the students as well as for the teachers, understanding the changes and adaptation techniques for the betterment of higher education is objective of this study.

Literature review

Popenici, S. A. D., & Kerr, S. (2017) investigates the phenomenon of artificial intelligence's growing application in higher education's teaching and learning processes. It looks into how new technologies are affecting education and how schools are changing and teaching kids. In an increasingly artificial intelligence-infused university setting, the nature of higher education is predicted by examining recent technology developments and the rate at which new technologies are embraced in higher education. We identify certain barriers to the adoption of these technologies for teaching, learning, student support, and administration in higher education institutions and student learning, and we investigate potential areas for further research.
Luckin, R., Homes, W., Griffiths, M., & Forcier, L. B. (2016) The resources provided by AI in Education (AIEd) will enable us to address the new innovation imperative in education, which is the requirement that, in a technologically transformed labor market, learners attain higher standards and a broader range of competencies than have been accomplished by any educational institution up to this point. As AI in Education (AIEd) takes shape, three key factors need to be controlled: integrating educators, parents, and students in the co-design of new tools to ensure that AI in Education (AIEd) meets the needs of classrooms and other learning environments; incorporating tried-and-true pedagogical practices into the creation of new AI in Education (AIEd) - powered ed-tech products; and generating intelligent demand for high-quality, commercially available AI in Education (AIEd) products.

Crompton, H., Bernacki, M., & Greene, J. (2020) More attention is being paid to the psychological mechanisms underpinning teaching and learning with educational technologies as the body of research on this topic grows. Using educational psychology theory as a framework, we investigate six modern technologies that were included in the Horizon Report 2020. In particular, we demonstrate how taking these processes into account can inform research into and usage of educational technologies as well as learning outcomes by highlighting the educational, cognitive, and social psychological processes that take place during teaching and learning with each technology.

Huang, J., & Chen, Z. (2016) As intelligent tutoring systems gain popularity, artificial intelligence is being used to investigate and build web-based intelligent tutoring systems. In particular, it analyzes the main technologies and

structural composition of these systems. Artificial intelligence and computer assisted instruction are merged in these systems. Five models make up the intelligent tutoring system, which is based on intelligent technology. They are learning guidance reasoning model, intelligence frame tutoring model, knowledge representation model, and cognition student model. Based on the five models, the college tutoring system may be more sophisticated. It has the potential to increase productivity while also establishing a clever system for teaching and learning. Then it has a great deal of practical significance and can make tutoring much more convenient.

Faisal, R.,Sarhandi,P.S.,Patahn, H. (2021) Learning platforms powered by artificial intelligence (AI) may be able to assist students in meeting the expectations of the workforce of the future. Utilizing AI systems in education can help students acquire 21st-century skills more successfully by offering personalized, interesting, adaptable, and welcoming learning environments. The use of artificial intelligence (AI) in education (AIEd) has proven beneficial in optimizing student learning outcomes and can equip students to prosper in the expanding knowledge society and the automation of the future. In order to assist students in developing advanced talents, this paper discusses 21st-century skills as well as certain shortcomings in the current educational system. Additionally, it provides a brief explanation of the AIEd concept in relation to the development of 21st-century skills. The study outlines the benefits of AI learning technologies while highlighting their current and future applications.

Sarhandi, P.S., Faisal, R., Bugti, F., Brohi, A. (2021) The regulation of learning (SRL) is significantly impacted by emotions, which also play a critical role in cognitive functioning. In addition to establishing personalized, captivating, adaptable, and welcoming learning spaces, artificial intelligence (AI) learning platforms, particularly intelligent tutoring systems (ITSs), has the capability to detect a learner's affective states and adapt accordingly to preserve the learning process. The idea of AI in education (AIEd) is covered in this essay, after which the function of emotions in SRL is explained. It offers an explanation of ITS along with an illustration of how it might be beneficial for learning, emphasizing both theoretical and technological elements. Additionally, it summarizes the impact of detection and response on sensitive ITSs. The study discusses some of the shortcomings of AI learning systems in identifying affective states and maximizing learning outcomes for students before coming to a close.

Methodology

Methodology used for this study is qualitative analysis of text available on internet and previous research analysis of scholars and academicians. Researcher used this method because goals and objective of this paper is exploratory and thus researcher gathered the textual thoughts and perceptions available on internet in form of research paper and contextual articles.

Analysis

The possibility that artificial intelligence will support current prejudices and demarcation in education is one of the main worries. enterprises live over how AI may affect pupil sequestration and data security as well. preceptors have also noted that the chatbot can give perceptive answers to test and assessment questions. likewise, it's constantly insolvable to link these answers to a specific source, making plagiarism discovery challenging. The possibility of employment relegation in the education assiduity due to technological advancements is a concern as well. preceptors and other support workers may find smaller jobs available as a result of the robotization of numerous executive duties. Another issue that needs to be resolved is making sure all scholars have indifferent access to AI- powered education. It's pivotal to make sure that all scholars, irrespective of their position or socioeconomic situation, have access to the expanding quantum of online education and educational coffers available on the internet.

Findings

It's set up that the scholars have their own pace and style of learning anything. Bodying or marking the content and fashion of literacy can be acclimated by artificial intelligence. Intelligent agents, intelligent tutoring systems, intelligente-learning systems, and adaptive AI systems is what we're looking for in present and unborn. further one on one commerce, feedback and acclimations are anticipated in this approach. Grading and Revision and in depth instructions are anticipated with all possible scripts. Although enforcing AI in education has multitudinous advantages, there are also moral issues that must be resolved.

Conclusion

AI has enormous potential to improve higher education teaching and learning. A few instances of that potential are given in this study, including automated grading, intelligent tutoring systems, customized learning, and collaboration facilitation. Teachers are urged to investigate these new resources, which will offer students precise, timely help and content in addition to freeing up time for them to concentrate on their studies. immense power entails immense responsibility as well. While AI has a great deal of potential to help instructors and students in higher education, it's also critical to think about what student data is required to power this intelligence. AI must gather data about the student in order to determine their cognitive level and preferences. Only then will it be able to make intelligent decisions. When it comes to protecting student data, faculty members need to be aware of where that information is going.

Limitations and Recommendations

This paper is prepared with the help of texts available online with the related context in form of research paper and articles. Also the data references used in this paper lacks updation as current status of AI advancement and its implication to the higher education is missing. This paper only states the possible outcomes of advanced technology and ever-growing academia collaboration.

Further research with data of advanced AI technology and its implementation cause, cost and ceasation is needed.

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