

“THE ROLE OF ARTIFICIAL INTELLIGENCE AND GENERATIVE AI IN MODERN EDUCATION: OPPORTUNITIES AND CHALLENGES”

Qosimova Marjona Shavkat qizi

Student of Uzbekistan State

World Languages University

E-mail: marjonanosirova22@gmail.com

Annotation: This article explores the transformative role of Artificial intelligence in education and teaching. Additionally, it focuses on particularly generative AI technologies like CHatGPT. The study represents AI's functions and its potential in different educational purposes like individual learning, creating engaging activities, lesson plans, how to manage time and students' engagement in classes. Also, it gives a little bit information about AI in other fields and usage of AI by big companies as a main part of them. Some key points include the impact of AI in both teaching and learning. Furthermore, this research article discusses the contrubutions of early pioneers like who introduced the term "artificial intelligence." In the article, scenarios of AI and functions are given by tables, the first table examines the role of artificial intelligen and second one highlights the functions of AI that can do in the teaching and education.

Key words: artificial intelligence, generative AI, ChatGPT, education and teaching, scenarios of AI education, the functions of AI, AI-related techniques

Аннотация: Эта статья исследует преобразующую роль искусственного интеллекта в образовании и обучении. Кроме того, в статье уделяется внимание особенно генеративным технологиям ИИ, таким как ChatGPT. Исследование представляет функции ИИ и его потенциал в различных образовательных целях, таких как индивидуальное обучение, создание увлекательных активностей, планов уроков, управление временем и вовлеченностью студентов на занятиях. Также дается краткая информация о ИИ в других областях и его использовании крупными компаниями, где ИИ является основной частью их работы. Некоторые ключевые



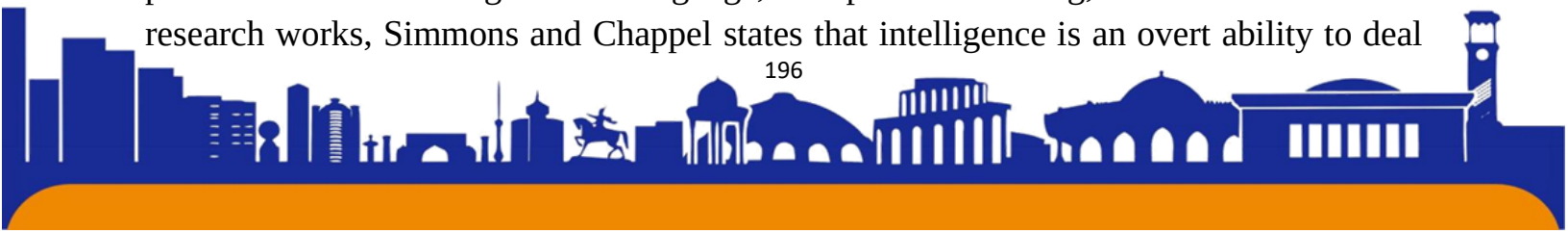
моменты включают влияние ИИ как на преподавание, так и на обучение. Кроме того, в статье обсуждаются вклады первых пионеров, которые ввели термин "искусственный интеллект". В статье приведены сценарии ИИ и его функции в виде таблиц. Первая таблица исследует роль искусственного интеллекта, а вторая - функции, которые ИИ может выполнять в обучении и образовании.

Ключевые слова: искусственный интеллект, генеративный ИИ, ChatGPT, образование и обучение, сценарии ИИ в образовании, функции ИИ, ИИ-технологии.

Annotatsiya: Ushbu maqola sun'iy intellektning ta'lim va o'qitishdagi ahamiyatli rolini o'rganadi. Shuningdek, ayniqsa, ChatGPT kabi generativ sun'iy intellekt texnologiyalariga alohida e'tibor qaratilgan. Tadqiqot sun'iy intellektning turli ta'lim maqsadlaridagi funksiyalarini va uning potensialini, jumladan, individual o'qish, qiziqarli faoliyatlarni va dars rejalarni yaratish, vaqtni boshqarish va talabalar bilan sinfda ishlashni o'z ichiga oladi. Shuningdek, maqolada sun'iy intellektning boshqa sohalarda va yirik kompaniyalar tomonidan foydalanilishi haqida qisqacha ma'lumot berilgan. Ba'zi asosiy nuqtalar sun'iy intellektning o'qitish va o'rganishdagi ta'sirini o'z ichiga oladi. Bundan tashqari, maqolada "sun'iy intellekt" atamasini birinchi bo'lib taqdim etgan dastlabki pionerlarning hissalarini muhokama qilinadi. Maqolada sun'iy intellekt va uning ta'limdagi funksiyalarini ko'rsatuvchi jadvalar keltirilgan. Birinchi jadval sun'iy intellektning rolini o'rganadi, ikkinchi jadval esa ta'lim va o'qitishda sun'iy intellektning bajarishi mumkin bo'lgan funksiyalarini yoritadi.

Kalit so'zlar: sun'iy intellekt, generativ sun'iy intellekt, ChatGPT, ta'lim va o'qitish, sun'iy intellekt ta'limi, sun'iy intellektning funksiyalari, sun'iy intellektga oid texnologiyalar.

Introduction. Over the last decade, The role of Artificial Intelligence (AI) in the branch of education and teaching has been significant. Also, it has emerged as a revolutionary force reshaping global industries and societies. Among the diverse facets of AI, generative AI models like ChatGPT have gained prominence for their ability to produce text resembling human language, fast problem solving, even advices. In the research works, Simmons and Chappel states that intelligence is an overt ability to deal



with specific problems and an innate ability to learn solutions for new issues.[1]Based on the definition of AI, it is clear that it is created to act as humans and to facilitate human work and make easier that humans do.

AI has been used even by various digital platforms as a main part of them. Some technology companies have implemented artificial intelligence including Amazon, Google, Microsoft and Facebook. Generative AI models can find relevant types of applications for companies. Beyond basic chatbots, they create content for marketing, help writers in content creation. ChatGPT and other similar one at first comprehend context, producing coherent context-aware answers and stimulating their deployment across diverse branches.[2] These company programmes are also used in education. Its impact is particularly noticeable in STEM fields, but AI promises to revolutionize education.

This technology is gaining significant attention for its ability to streamline tasks and improve various job functions, especially within education. AI empowers educators to understand individual student needs better, enabling personalized learning experiences that cater to diverse learning styles and address specific challenges. This ultimately facilitates more effective and accessible education for all students. Learning, education and teaching consist of many administrative tasks and self-studies. Some of them are students' enrollment in several courses or sessions with deadlines. In addition, education institutions are also dealing with hiring human resources and analyzing them. [3] AI applications are nowadays helping institutions to manage the above-mentioned tasks in an easier manner.

This study aims to explore the role of artificial intelligence in education. This paper includes groups of article and researches according to concepts and themes of using AI wisely into education. It identifies the current 'understanding' of the role of AI in current educational systems, discusses not only the advantages of Generative AI but also the challenges of integrating AI into education.

Methodology: Artificial intelligence (AI) was created by many scientists, researchers, and engineers. It is the result of several contributions. During creating AI, Alan Turing, John McCarthy, Hebert Simon and Aleen Newells had significantly contributed with their researchs. John McCarthy, an American computer scientist, used the term “artificial intelligence” in 1956. At the Darmouth Conference, he introduced this term fully. Actually



the Conference was organized to explore the possibilities of machines simulating human intelligence. In the proposal, pioneer defined the scope of AI and expressed the belief 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.”[4] He chose the term "artificial intelligence" to emphasize the goal of creating machines capable of performing tasks that would require intelligence if done by humans. McCarthy preferred this term over alternatives like "machine learning" or "cybernetics" because it captured a broader concept of machine-based reasoning and decision-making.

Technical features of AI in the classroom

AI-based education includes data analysis and prediction, creative virtual learning, and intelligent teaching. Table 1 lists some of the primary scenarios and supporting technologies for AI in education. The article "Recent Advances in Conversational Intelligent Tutoring Systems" claims that as learning requirements increase, AI-enabled education is becoming increasingly significant. Both teachers and students receive timely, individualized training and feedback from intelligent education systems. They are made to increase learning value and efficiency through a variety of computing technologies, particularly those connected to machine learning, which are intimately linked to cognitive learning theory and statistical models.[5]

Table 1. Techniques for scenarios of AI education.

Scenarios of AI education	AI-related techniques
Assessment of students and schools	Adaptive learning method and personalized learning approach, academic analyticts
Grading and evaluation of paper and exams	Image recognition, coputer-vision, prediction system
Personalized intelligent teaching	Data mining or Bayesin knowledge interference, intelligent teaching systems

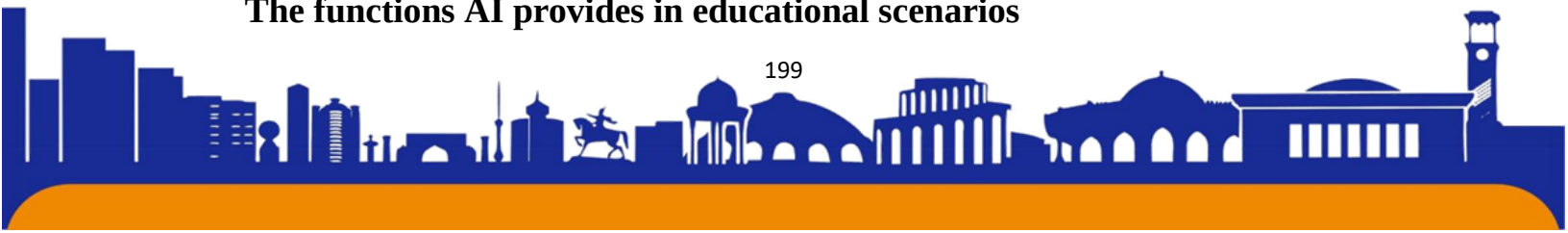
Smart school	Face recognition, speech recognition, virtual labs, A/R, V/R, hearing and sensing technologies
Online and mobile remote education	Edge computing,virtual personalized assistants, vreal-time analysis

Several are included into AI system for learning analysis, recommendation, knowledge understanding and acquirement, based on machine learning, data mining and knowledge model [6].

The role of AI in education

Timms has noted that generative AI is extremely potent and has the capacity to infiltrate and alter a number of societal domains.Indeed, it is clear from the several articles we analyzed that artificial intelligence (AI) has been embraced and used in the field of education, where it has promoted advancements across the board. AI has been utilized in education, especially in administrative and teaching roles, which has had an influence on students' learning. This finding aligns with the framework and narrative presented by Chassignol et al., which also defines the scope of the study [7]. AI has been applied to education for a variety of reasons, according to a review of several sources. AI is capable of producing tables, presentations, infographics, and even images in specific domains. It is able to empathize with you when you are feeling so stressed. AI has been applied to teaching as well as learning, and it is quite beneficial. Teachers may learn how to engage students in the classroom and manage their time effectively by using generative AI to develop daily lesson plans and curricula. The use of AI in education was covered and shown in a number of works. One of the earliest pioneers to define the function of artificial intelligence in education was Chassignol. He noted that AI was incorporated into computers and computer related technologies like the World Wide Web and the Internet. In the education sector, artificial intelligence (AI) is moving beyond simple computers to embedded systems, including robots or colleague robots (cobots), which can operate alone or in conjunction with teachers to carry out teacher-like tasks [8].

The functions AI provides in educational scenarios



AI can create a professional environment for both learners and teachers as a virtual platform. Moreover, it is helpful for students to navigate through several learning path, and personalize every student-selves according to their strengths and weakness. In the Table 2, the different functions of AI are showed and written some prinsiples that AI can do[9].

Table 2. The work AI can do in education

	The work AI can do in education
Administration	● Perform the administrative tasks faster that consume much of instructors' time, such as grading exams and providing feedback. ● Identify the learning styles and preferences of each of their students, helping them build personalized learning plan. ● Assist instructors in decision support and data-driven work. ● Give feedback and work with student timely and directly.
Instruction	● Anticipate how well a student exceed expectations in projects and exercises and the odds of dropping out of school. ● Analyze the syllabus and course material to propose customized content. ● Allow instruction beyond the classroom and into the higher-level education, supporting collaboration. ● Tailor teaching method for each student based on their personal data. ● Help instructors create personalized learning plans for each student.
Learning	● Uncover learning shortcomings of student and address them early in education. ● Customize the university course selection for students. ● Predict the career path for each student by gathering studying data ● Detect learning state and apply intelligent adaptive intervention to students.

Discussion. From different researches and articles viewed, It is clear from the numerous studies and publications that have been examined that instructional technology, including chatbots, cobots, and systems, can help teachers improve the quality of their lessons. However, as evidenced by numerous studies, AI's use of machine learning allows students studying computers and computer-related technologies, as well as other industries, to have a better and gence that has permeated many aspects of society and a

richer learning experience. AI's use of machine learning has the potential to significantly impact various industries in evaluating capabilities and needs, and subsequently, during its trials.

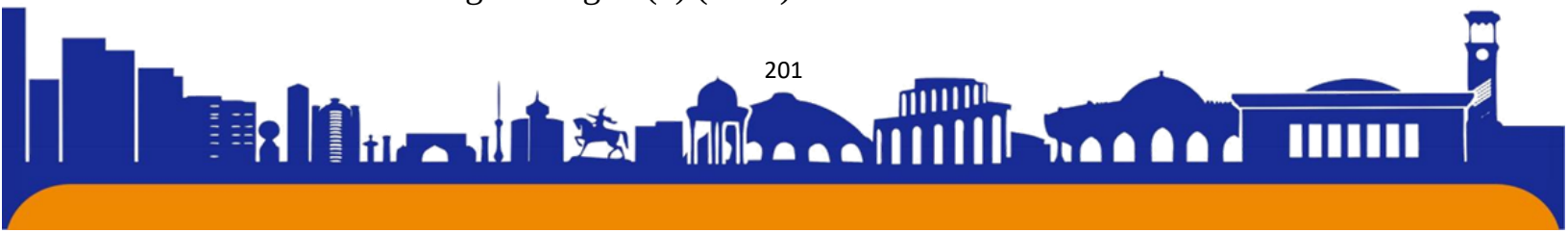
While AI-enabled education will become more significant as learning requirements evolve, AI learning is now thought of as an educational assistant in its early stages. It has not yet attained the highest level of intelligence in intelligent education and currently offers courses of varying difficulty based on basic rule judgment. Knowledge maps and probability models are used in AI system education studies. As the educational process interacts more frequently, AI systems will produce more data to paint a clearer picture of the teaching and learning process, allowing for more precise content recommendation.

Conclusion: The main goal of the research work how artificial intelligence is playing a significant role in today's world. Professional conference reports, journal articles, and other publications were found and employed in an analysis that made the study's goal easier to achieve. Some researchs and articles represents the development of AI across several industries were foreshadowed by the advancement and use of computers and computer-related technology. Computers and computer-related systems were the first examples of artificial intelligence in education. Later, web-based and online learning platforms followed. Using cobots or humanoid robots as independent instructors or teacher colleagues, as well as chatbots to carry out teacher-like tasks, has been made feasible by embedded systems. These platforms and technologies have made it possible for teachers to be more effective and efficient, which has enhanced the quality of instruction. In a similar vein, AI has improved learning experiences for students by making it possible to tailor and personalize course contents to each student's requirements and skills. In general, artificial intelligence (AI) has significantly impacted education, especially in the areas of learning, administration, and instruction.

Overall, Artificial intelligence has a major impact on teaching, education and some sector of them, also within the individual learning institutions.

REFERENCES:

- [1] A.B. Simmons, S.G. Chappel, Artificial intelligence-definition and practice, IEEE Journal of Oceanic Engineering 13(2) (1988) 14-42.



ISSN (E): 2181-4570 ResearchBib Impact Factor: 6,4 / 2024 SJIF 2024 = 5.073/Volume-3, Issue-2

[2] Hall W, Pesenti J. Growing the artificial intelligence industry in the UK. 2017. .

[3] Karam, R.; Pane, J.F.; Griffin, B.A.; Robyn, A.; Phillips, A.; Daugherty, L. Examining the implementation of technology-based blended algebra I curriculum at scale. Educ. Technol. Res. Dev. 2017, 65, 399–425.

[4] McCarthy "A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence." page 17(12) (1956)

[5] V. Rus, S. D'Mello, X. Hu, and A. Graesser, "Recent advances in conversational intelligent tutoring systems," AI Mag., vol. 34, no. 3, pp. 42–54, Sep. 2013

[6] S. Nunn, J. T. Avella, T. Kanai, and M. Kebritchi, "Learning analytics methods, benefits, and challenges in higher education: A systematic literature review," Online Learn., vol. 20, no. 2, pp. 1–17, Jan. 2016

[7] Artificial Intelligence in Education: A Review LIJIA CHEN¹, PINGPING CHEN ^{2,4}, (Member, IEEE), AND ZHIJIAN LIN ³, (Member, IEEE) page 6

[8] M. Chassignol, A. Khoroshavin, A. Klimova, and A. Bilyatdinova, "Artificial intelligence trends in education: A narrative overview," Procedia Comput. Sci., vol. 136, pp. 16–24, Jan. 2018.

[9] United Nations Education Scientific and Cultural Organization (UNESCO). How Can Artificial Intelligence Enhance Education? Available: <https://en.unesco.org/news/how-can-artificialintelligence-enhance-education>