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INTEGRATING GENERATIVE AI IN STEM EDUCATION: A PATHWAY TO INCLUSIVE AND ENHANCED LEARNING

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Summary

This article explores the integration of Generative Artificial Intelligence (AI) into STEM education as a means to address educational disparities and enhance learning experiences. Focused on making STEM education more inclusive and accessible, the research delves into Generative AI's potential to democratize education by overcoming geographical and language barriers, thus providing quality educational resources to underprivileged communities. The study underscores Generative AI's capabilities in facilitating personalized and interactive learning experiences, supporting complex subject comprehension, and aiding in practical problem-solving and laboratory work. The findings suggest that Generative AI in the case of ChatGPT 4.0, currently stands as one of the most powerful and popular LLMs, can significantly enhance the quality and effectiveness of STEM education, making it more engaging and tailored to diverse student needs. The article concludes with a call to action for policymakers, educators, and technology developers to invest in infrastructure and training, ensuring Generative AI's benefits reach all learners globally, thereby contributing to a more equitable and enlightened future in education.

Keywords: *STEM, Artificial Intelligence (AI) in education, GhatGPT, Generative AI, LLM, inclusive education, personalized learning, higher education, school, public education, educational equity, educational technologies.*

Introduction. In the context of the rise of artificial intelligence (AI), large-scale language models (LLMs) such as ChatGPT 4.0, recognized for its popularity and power, later as ChatGPT are emerging as ubiquitous transformation tools and their application in education is particularly relevant, it promises it will reshape how knowledge is distributed and received. This is especially important in Science, Technology, Engineering, and Mathematics (STEM) education, where the complexity of the courses often requires high-quality instructional materials and skilled instruction.

The Problem. However, a key challenge in global education is the apparent gap in the availability of appropriate learning materials and qualified teachers, especially in STEM fields. This divide is most acute in disadvantaged communities, where such resources are scarce or nonexistent. Furthermore, the language barrier further exacerbates this divide, as most of the top academic achievement, especially in STEM, is mainly in English. This situation puts non-English speaking students at greater risk , and hinder their educational progress and future opportunities .

However, the emergence of LLMs such as ChatGPT offers a ray of hope in this context. With advanced capabilities in natural language processing and comprehension, LLMs have the potential to democratize education by breaking barriers of language and geographic boundaries [10, p. 611]. They can act as virtual assistants, providing real-time, provide communication, personalized instructional support, and thus fill the gaps left by the lack of qualified teachers in various settings. Furthermore, their multilingual capabilities mean that they can make high-quality academic content accessible in multiple languages, creating a need for a global audience.

The aim of this article is to explore the transformative potential of Generative AI in bridging the educational divide, focusing on its application in STEM education specifically for communities where qualified STEM teachers lack access to English language resources. We will explore how Generative AI can not only make STEM education more inclusive and accessible but also provide quality and effective learning experiences for students from diverse backgrounds. Additionally, we will note the vital role teachers play in integrating these technologies, ensuring they enhance traditional teaching methods and support personalized learning. This insight is essential to

understanding and applying the potential of AI in shaping the future of education, making it a more equitable and inclusive profession.

The novelty of the article lies in its complete exploration of integrating Generative AI, like ChatGPT into STEM schooling to foster inclusivity and decorate getting to know consequences. This research in methodological analysis of LLMs, in the case of ChatGPT's role as a transformative educational device that may bridge the accessibility gap in STEM disciplines. Unlike previous studies which have basically targeted on digital tools' quantitative impact on training, this newsletter investigates the qualitative upgrades added by using ChatGPT, along with personalized learning experiences, interactive engagement, and its potential to simulate real-global trouble-solving scenarios. The have a look at further distinguishes itself by way of comparing ChatGPT's effectiveness across diverse instructional settings, emphasizing its adaptability and the enormous implications for tailoring education to meet individual learner desires. By highlighting particular examples of ChatGPT's utility in a classroom and far off gaining knowledge of environments, the research introduces a novel attitude on AI's potential to democratize schooling and suggests a futuristic method to curriculum development and instructional strategies in the STEM fields.\

LLMs in Democratizing Education. The democratization of education is a fundamental step in the direction of making sure the same possibilities for all, a purpose that Large Language Models (LLMs) like ChatGPT are uniquely placed to facilitate. In areas where admission to certified STEM educators is confined, LLMs can play a vital role in bridging the educational divide.

The gap in instructional exceptionalism and sources between prosperous and underprivileged groups is a global problem. LLMs offer a scalable and value-powerful solution to this trouble. By supplying access to a vast repository of expertise and interactive studying experiences, LLMs like ChatGPT can convey brilliant academic content material to college students irrespective of their geographical region or socio-economic popularity [6, p. 19]. This is mainly massive in STEM schooling, where the need for updated and comprehensive materials is paramount.

Several tasks have tested the impactful integration of LLMs like ChatGPT in academic settings, showcasing their potential to convert conventional coaching methodologies and enhance student mastering reports.

For instance, a have a look at titled "Evaluating Reading Comprehension Exercises Generated with the aid of LLMs: A Showcase of ChatGPT in Education Applications" through Xiao et al. (2023) highlights a pioneering application where ChatGPT become used to generate studying comprehension physical activities for middle school English freshmen in China. They showed that the system-generated substances were now not only appropriate for college students but, in a few cases, even surpassed the great of current human-written resources. This shows the ability of LLMs to offer first rate, customized getting to know substances that cater to the particular wishes of students, thereby enhancing their learning enjoyment [10, p. 612].

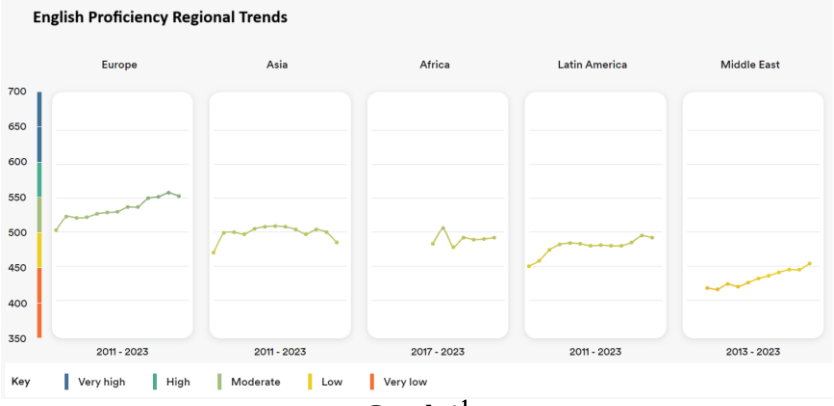
Another first rate example is mentioned in "Beyond Traditional Teaching: The Potential of Large Language Models and Chatbots in Graduate Engineering Education" by using Abedi et al. This article emphasizes the transformative capacity of LLMs and chatbots in graduate engineering training, underscoring their capability to augment conventional teaching strategies and provide customized, interactive studying studies. This instance underscores the wider applicability of LLMs across numerous academic tiers and disciplines, suggesting a promising future for his or her integration into better training to facilitate stronger learning effects [1, p. 9].

These examples display the diverse and huge implications of integrating LLMs into academic frameworks, suggesting a future wherein such technology plays a critical role in turning in personalized, accessible, and engaging educational content across diverse fields and levels of examination.

Other tasks have already established the effect of LLMs in academic settings. For example, in rural areas or urban low-profits colleges wherein there is a scarcity of STEM instructors, packages

using ChatGPT had been added to supplement mastering. These applications provide insights into how LLMs can be used to train complex clinical ideas, offer homework assistance, or even put together students for examinations. The fulfillment of these projects shows the capacity of LLMs to significantly improve academic effects in underserved communities.

One of the most extensive barriers in schooling is language. A huge portion of the world's population does not communicate in English, yet a majority of the STEM instructional content material is to be had only in English. LLMs like ChatGPT, that are able to know-how and generate text in multiple languages, can help conquer this barrier. They can translate present academic materials into diverse languages and even create new content material tailored to particular linguistic and cultural contexts. This localization is not just a translation of words, but an adaptation of examples, analogies, and references that resonate with the neighborhood college students' reports and information base, thereby making STEM training greater inclusive [8, p. 109].



Graph 1[1]

Traditional strategies of teaching, specifically in below-resourced areas, often depend closely on rote memorization and didactic practice. LLMs can remodel this via introducing more interactive and engaging styles of learning. Through personalized dialogues, trouble-fixing sporting activities, and scenario-primarily based getting to know, ChatGPT could make gaining knowledge more charming and effective for college students. This is essential in subjects like mathematics and physics, wherein knowledge of fundamental principles and their application is greater beneficial than memorizing formulation.

While LLMs are not an alternative for human instructors, they can appreciably empower educators by means of serving as an auxiliary resource. Teachers can make use of LLMs to put together lesson plans, generate coaching substances, or even get assistance in grading and offering feedback. For newbies, specially in faraway or underprivileged areas, having access to an AI tool like ChatGPT, they could be trying to find clarification, delve deeper into topics of interest, and learn at their very own pace, outside the confines of a traditional study room.

In summary, LLMs have the ability to play a transformative role in democratizing STEM training. By mitigating the demanding situations of geographical disparities, language boundaries, and aid limitations, they could make nice education greater accessible and powerful for college kids internationally. This democratization not most effectively fosters educational equity however it also paves the way for a more knowledgeable and professional international populace.

Customized Learning Pathways for Diverse Needs. In the area of schooling, the hunt for tailor-made learning reviews to deal with various pupil desires has been perpetual. With the advent

[1] https://www.ef.com/wwen/epi/

of superior technology, particularly artificial intelligence (AI), the landscape of customized learning has witnessed a profound transformation. This section delves into the function of ChatGPT in fostering custom designed learning pathways, thereby selling inclusivity and improving the academic journey for students with numerous necessities.

ChatGPT, a brand new language model evolved by means of OpenAI, stands at the vanguard of AI-powered instructional tools. Its ability to realize and generate human-like textual content helps dynamic interactions, making it an excellent candidate for personalized learning studies. By leveraging herbal language processing skills, ChatGPT can tailor content transport based totally on personal student preferences, gaining knowledge of patterns, and proficiency stages. For example, in a mathematics class, ChatGPT can generate practice troubles of varying difficulty tiers, offer actual-time comments, and adapt the studying pace to fit the student's progress, as a result highlighting the importance of AI in supplying a customized gaining knowledge of experience [4, p. 31].

Imagine a high faculty biology magnificence in which college students own diverse backgrounds and gain knowledge of preferences. Maria, a visible learner, struggles to comprehend the idea of mobile respiration through conventional lectures. Recognizing her unique learning fashion, the instructor integrates ChatGPT into the lesson plan. Maria engages in a conversational speech with ChatGPT, inquiring for visible aids and simplified factors. In reaction, ChatGPT generates interactive diagrams, mnemonic devices, and explanatory texts tailored to Maria's comprehension degree. Through this customized technique, Maria profits from deeper information of mobile respiration, fostering academic success and self-assurance in her skills.

The integration of ChatGPT in unique training holds huge promise for catering to the diverse needs of students with disabilities or mastering challenges. Traditional study room settings often conflict to house individualized getting to know plans for college students with unique wishes due to resource constraints and logistical challenges. ChatGPT gives a viable solution by imparting on-demand help, adaptive content material shipping, and personalized assistance tailor-made to each scholar's necessities, demonstrating sizable advancements in AI for inclusive training [9, p. 6].

Consider a scenario where in a scholar, Michael, recognized with dyslexia, faces difficulties in reading comprehension responsibilities in his English literature elegance. Despite the trainer's efforts to offer extra help, Michael continues to be beaten with the aid of the dense textual cloth. In collaboration with the special education group, the teacher introduces ChatGPT as a supplementary mastering tool for Michael. Through voice-based interactions, Michael navigates via the textual content with ChatGPT, receiving audio summaries, vocabulary explanations, and contextual activities to enhance his information. As a result, Michael experiences a substantial improvement in his analyzing comprehension competencies, empowering him to actively participate in class discussions and academic interests.

In conclusion, ChatGPT emerges as a transformative pressure in the realm of training, imparting personalized mastering pathways tailored to diverse scholar needs. Through its adaptive abilities and interactive interface, ChatGPT transcends traditional pedagogical barriers, fostering inclusivity, accessibility, and empowerment inside the instructional environment.

ChatGPT in STEM Education. The integration of ChatGPT into STEM (Science, Technology, Engineering, and Mathematics) education represents a full-size rise in the direction of interactive and attractive learning environments. As STEM topics regularly embody complicated theories and sensible programs, conventional teaching methodologies may not suffice to cope with the diverse mastering needs of college students. This section explores the multifaceted function of ChatGPT in coaching complicated STEM topics, enhancing trouble-fixing abilities, and facilitating laboratory work through examples and discussion at the importance of interactive gaining knowledge of.

STEM schooling, characterized by its rigorous content and conceptual depth, poses sizable demanding situations to each educator and rookies. ChatGPT, with its superior AI capabilities, gives a unique technique to breaking down complicated ideas into extra digestible segments,

making STEM topics greater accessible and attractive for students [5, p. 11]. By accomplishing personalized dialogues, students can explore topics at their own tempo, ask inquiries to make clear doubts, and get hold of instant comments.

Consider a university-level physics magnificence masking quantum mechanics, a topic notorious for its summary ideas and mathematical complexity. Emily, a scholar, finds herself suffering with the concept of quantum superposition. Using ChatGPT, Emily initiates a communique wherein she expresses her confusion. ChatGPT responds with simplified motives, analogies (e.G., Schrödinger's cat), and interactive content (e.G., simulations) to clarify the concept. Through this tailor-made studying revel in, Emily gains clearer information, which enhances her capacity to tackle associated problems and coursework.

In STEM training, sensible capabilities are as essential as theoretical know-how. ChatGPT can play a pivotal function in supporting students with hassle-solving sports and laboratory experiments by way of offering step-via-step steerage, troubleshooting advice, and real-time support.

A group of engineering students is tasked with designing a bridge model as a part of their civil engineering direction. To optimize their layout for each strength and efficiency, the institution turns to ChatGPT for help. They input their design parameters, materials, and constraints right into a verbal exchange with ChatGPT. The AI then shows improvements primarily based on engineering principles, historical data on bridge disasters, and successful designs. Furthermore, ChatGPT offers virtual assistance throughout their laboratory periods, guiding them through cloth testing processes and deciphering outcomes to refine their prototype. This interactive learning revel in no longer best complements their problem-fixing talents however additionally deepens their know-how of engineering ideas in a realistic context.

The summary nature of many STEM concepts often requires extra than just passive listening or rote memorization. Interactive studying, facilitated by using tools like ChatGPT, allows students to actively engage with the material, thereby fostering a deeper understanding and retention of information.

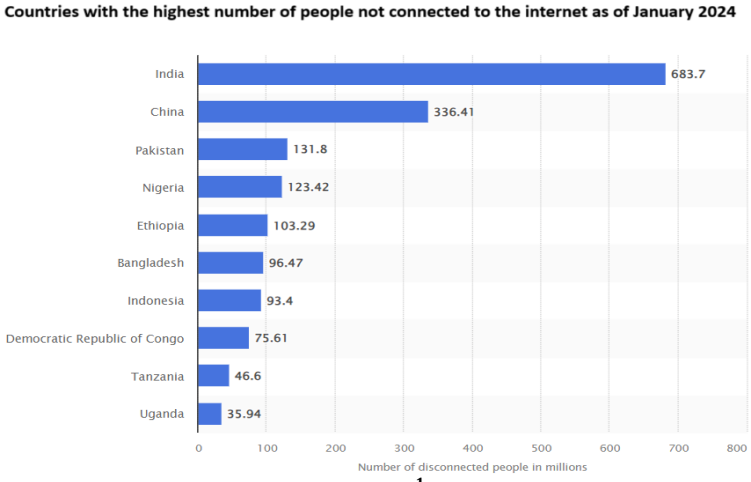
Interactive learning through ChatGPT can take various forms, such as simulated experiments, coding physical games, and mathematical problem-fixing. For instance, in a chemistry class mastering reaction quotes, college students can have interaction with ChatGPT to simulate one-of-a-kind eventualities through adjusting variables like temperature or attention. This hands-on approach permits them to visualize the impact of those variables on reaction prices, bridging the distance among theoretical information and practical knowledge.

In conclusion, ChatGPT's utility in STEM education exemplifies the transformative potential of AI in academic settings. By presenting custom designed reasons, facilitating hassle-solving and lab paintings, and promoting interactive mastering, ChatGPT now not only aids in demystifying complicated STEM subjects however additionally complements college students' engagement and skillability in these important fields. As educators and institutions try to integrate such technologies into their curricula, the future of STEM education seems more and more dynamic, inclusive, and interactive.

Overcoming Educational Barriers with Large Language Models (LLMs). The advent of large-scale language processors (LLMs) such as ChatGPT has the potential to dramatically enhance educational experiences around the world. However, deploying such technologies in resource-limited environments requires discovery strategies and new solutions to ensure optimal deployment This section addresses strategies for deploying ChatGPT addressed areas of resource shortages, the need for teacher training, and the challenges of internet access and digital literacy

Implementing ChatGPT in resource-limited environments requires a multi-pronged approach that focuses on scalability, low-bandwidth solutions, and community engagement. One approach is to use ChatGPT with offline or low-bandwidth versions that can operate over limited internet connections. Innovative solutions in applied technologies will serve to emphasize the importance of education. These versions can be used on local servers or integrated into educational software to

give schools access without the need for high-speed Internet connections. Additionally, using community centers or local libraries as locations for ChatGPT-enabled educational tools would help avoid personal interaction issues [2, p. 100].



Graph 2[1]

Teachers in a rural school with limited Internet access could use a local server with a miniaturized version of ChatGPT. This server can be accessed through the school computer lab, allowing students to communicate with ChatGPT for course assignments. The school can organize tailored events for different courses, ensuring that all students have the opportunity to benefit from the personalized learning experiences offered by ChatGPT.

The successful integration of ChatGPT into the educational environment depends primarily on the ability of instructors to use this technology effectively. Training programs designed to increase digital literacy, expose teachers to the potential of AI, and integrate ChatGPT into the curriculum are essential to ensure teachers are prepared to harness the potential of AI in education [11, p. 10], such programs can be delivered through workshops, online courses and higher professional development workshops are easy to explore alternative teaching methods.

The education board can partner with technology companies or educational institutions to provide comprehensive training for teachers. These sessions can include basic applications of AI and natural language, practical exercises on integrating ChatGPT into curriculum, and strategies for using ChatGPT to support students with special educational needs. By empowering teachers with these skills, schools can maximize the usefulness of ChatGPT to enhance learning outcomes.

Internet and digital literacy remain important barriers to the widespread adoption of technologies such as ChatGPT in education. The guidance includes narrowing down these choices to edit online systems and digital devices to provide digital devices to provide digital systems in addition to incorporating digital literacy into the original text as students including chatgpt be useful to do discussion benefits. Knowledge is gained to acquire, based on technology. - Achieving uniform and successful learning [3, p. 4].

A government initiative aimed at tackling the digital divide could focus on setting up satellite internet connections in remote areas and distributing tablets or laptops to students. In parallel with this strategic plan, schools could introduce a mandatory digital literacy curriculum, which specializes in essential skills such as online communication, online safety, problem solving etc. Through this concerted effort, students in resource-limited areas can access and effectively use ChatGPT for their academic achievement.

[1] https://www.statista.com/statistics/1155552/countries-highest-number-lacking-internet/

In conclusion, addressing instructional barriers with an LLM such as ChatGPT requires a collaborative and strategic approach, including infrastructure development, teacher training , and fostering digital literacy. Addressing these key areas could uncover ChatGPT's potential to transform educational settings - Interaction experiences are facilitated.

Conclusions. Exploring large-scale language models (LLMs) such as ChatGPT in education highlights a significant shift towards more flexible, personalized and interactive learning experiences. This article covers various aspects of the ChatGPT project, from democratizing education to improving learning pathways, and enhancing STEM education, thus addressing the critical challenges in the current education ecosystem.

Our discussion highlighted the tremendous potential of ChatGPT to bridge the educational divide by providing high-quality educational resources to communities historically marginalized due to geographic isolation, socioeconomic status, or language barriers the emphasis of the. ChatGPT's ability to support multiple languages and adapt to different learning needs provides an opportunity to make education more inclusive. In particular, in STEM education, ChatGPT has shown promise in simplifying complex topics, supporting problem solving and laboratory work, and providing a deeper understanding of abstract concepts through interactive learning [7, p. 583].

Furthermore, strategies for implementing ChatGPT in resource-limited environments, emphasizing teacher training and overcoming infrastructure challenges, are a way to integrate LLM into educational systems in the world. All these options are critical to ensuring that ChatGPT benefits are not limited to areas of high-quality content

ChatGPT stands as a beacon of innovation in STEM education, providing an inclusive and effective approach to learning. By customizing learning materials to meet students' individual needs and engaging students in interactive, meaningful learning experiences, ChatGPT has the potential to transform how STEM subjects are taught and learned. This is particularly important in fostering interest and skills in STEM fields among students from diverse backgrounds, preparing a more diverse and skilled workforce for the future.

Insights from this study suggest a call for teamwork for policymakers, educators, engineers, and stakeholders in education. Investment in the infrastructure and training required to introduce similar ChatGPT and LLM into education systems around the world is essential. Such investments must prioritize accessibility, ensuring that new educational tools do not exacerbate existing inequalities but serve as catalysts for equity and inclusion.

In addition, ongoing research and collaboration between educators and AI practitioners is essential to successful implementation of LLM in education, ensuring that this technology addresses educational challenges and meets the needs of students everywhere.

In conclusion, ChatGPT offers the potential to make STEM education more accessible, personalized, and inclusive, helping to produce generations of thinkers, innovators, and consumers problem solving. These technologies, combined with strategic thinking and a commitment to inclusion, can lead to transformative educational experiences, ultimately narrowing the global educational divide and moving societies towards a future that is perfect and very bright.

ИНТЕГРАЦИЯ ГЕНЕРАТИВНОГО ИСКУССТВЕННОГО ИНТЕЛЛЕКТА В STEM-ОБРАЗОВАНИЕ: ПУТЬ К ИНКЛЮЗИВНОМУ И РАСШИРЕННОМУ ОБУЧЕНИЮ

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Аннотация

В этой статье рассматривается интеграция генеративного искусственного интеллекта (ИИ) в STEM-образование как средство устранения неравенства в образовании и расширения возможностей учебного процесса. Сосредоточив внимание на том, чтобы сделать образование в области STEM более инклюзивным и доступным, автор изучает потенциал генеративного искусственного интеллекта в демократизации образования путем преодоления географических и языковых барьеров, тем самым предоставляя качественные образовательные ресурсы малообеспеченным сообществам. Исследование

подчеркивает возможности генеративного искусственного интеллекта в вопросе содействия персонализированному и интерактивному обучению, поддержки в понимании сложных предметов и помощи в практическом решении проблем и лабораторных работах. Результаты показывают, что генеративный ИИ в случае с ChatGPT 4.0, который в настоящее время является одним из самых мощных и популярных LLM, может значительно повысить качество и эффективность STEM-образования, делая его более привлекательным и адаптированным к разнообразным потребностям студентов. Статья завершается предложением к политикам, работникам сферы образования и разработчикам технологий инвестировать в инфраструктуру и обучение, чтобы преимущества генеративного ИИ дошли до всех учащихся во всем мире, тем самым способствуя развитию более справедливого и просвещенного образования в будущем.

Новизна статьи заключается во всестороннем исследовании интеграции генеративного искусственного интеллекта, такого как ChatGPT, в обучение STEM для содействия инклюзивности и улучшения результатов обучения. Это методологический анализ LLM на предмет роли ChatGPT как преобразующего образовательного инструмента, который может преодолеть разрыв в доступности в освоении дисциплин STEM. В отличие от предыдущих исследований, которые в основном были сосредоточены на количественном влиянии цифровых инструментов на образование, в этой статье рассматриваются качественные улучшения, привнесенные ChatGPT, такие направления, как персонализированный опыт обучения, интерактивное взаимодействие и его потенциал для моделирования реальных сценариев решения проблем. Исследование также отличается тем, что в нем оценивается эффективность ChatGPT в различных образовательных условиях, подчеркивается его адаптируемость и последствия для адаптации образования к индивидуальным потребностям учащихся. Выделив конкретные примеры применения ChatGPT в классах и средах при дистанционном обучении, исследование представляет новый взгляд на способность ИИ демократизировать образование и предлагает футуристический подход к разработке учебных программ и стратегий обучения в областях STEM.

Ключевые слова: *СТЕМ (STEM), искусственный интеллект (ИИ) в образовании, ЧатГПТ (GhatGPT), генеративный ИИ, Большие языковые модели (LLM), инклюзивное образование, персонализированное обучение, высшее образование, школа, общее образование, равенство в образовании, образовательные технологии.*

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Ամփոփում

Այս հոդվածը ուսումնասիրում է գեներատիվ արհեստական բանականության (AI) ինտեգրումը ՍԹԵՄ կրթության մեջ՝ որպես կրթության անհավասարության դեմ պայքարի միջոց, ինչպես նաև ուսուցման գործընթացի հնարավորությունների ընդլայնման միջոց: Կենտրոնանալով ՍԹԵՄ կրթությունն ավելի ներառական և հասանելի դարձնելու վրա՝ հետազոտությունը ուսումնասիրում է Generative AI-ի ներուժը, որը կարող է կրթությունը դարձնել առավել հասանելի՝ հաղթահարելով աշխարհագրական ու լեզվական խոչընդոտները, դրանով իսկ ապահովելով որակյալ կրթական հնարավորություններ անապահով համայնքներին: Ուսումնասիրությունն ընդգծում է Generative AI-ի կարողությունները՝ տրամադրելու անհատականացված ու ինտերակտիվ ուսումնական ծրագրեր, բարելավել բարդ առարկաների ըմբռնումը և օգնել գործնական ու լաբորատոր աշխատանքներում: Հետազոտությունը ցույց է տալիս, որ Generative AI-ն ChatGPT 4.0-ի դեպքում, որը ներկայումս ամենահզոր և հայտնի LLM-ներից մեկն է, կարող է զգալիորեն բարձրացնել ՍԹԵՄ կրթության որակն ու արդյունավետությունը՝ դարձնելով այն ավելի գրավիչ ու հարմարեցված սովորողների բազմազան կարիքներին: Հոդվածն ավարտվում է քաղաքագետներին, կրթության գործիչներին և տեխնոլոգիաների մշակողներին գործելու կոչով՝ ներդրումներ կատարել ենթակառուցվածքներում ու կրթության մեջ, որպեսզի Generative AI-ի առավելությունները հասանելի լինեն բոլոր սովորողներին ամբողջ աշխարհում:

Հոդվածի նորույթն այն է, որ համապարփակ ուսումնասիրվում է Generative AI-ի, ինչպես ChatGPT-ի ինտեգրումը ՍԹԵՄ կրթության մեջ՝ օժանդակելու ու բարելավելու ուսուցման արդյունքները: Սա LLM-ի մեթոդաբանական վերլուծություն է ChatGPT-ի դերի՝ որպես փոխակերպող

կրթական գործիքի վերաբերյալ, որը կարող է հաղթահարել ՍԹԵՄ առարկաների մատչելիության բացը: Ի տարբերություն նախորդ ուսումնասիրությունների, որոնք հիմնականում կենտրոնացած էին կրթության վրա թվային գործիքների քանակական ազդեցության վրա, այս հոդվածը ուսումնասիրում է ChatGPT-ի կողմից բերված որակական բարելավումները, ինչպիսիք են անհատականացված ուսուցման փորձը, ինտերակտիվ փոխազդեցությունները և նրա ներուժը իրական խնդիրների լուծման մոդելավորման համար: Ուսումնասիրությունը նաև առանձնանում է նրանով, որ այն գնահատում է ChatGPT-ի արդյունավետությունը տարբեր կրթական միջավայրերում՝ ընդգծելով դրա հարմարվողականությունն ու զգալի հետևանքները՝ կրթությունը հարմարեցնելու սովորողների անհատական կարիքներին: Ներկայացնելով ChatGPT-ի օգտագործման կոնկրետ օրինակները դասարաններում ու հեռավար ուսուցման միջավայրերում՝ ուսումնասիրությունը նոր պատկերացումներ է տալիս AI-ի՝ կրթությունը ժողովրդավարացնելու ունակության վերաբերյալ և առաջարկում է ֆուտուրիստական մոտեցում ՍԹԵՄ ոլորտներում ուսումնական ծրագրերի մշակման ու ուսուցման ռազմավարությունների նկատմամբ:

Բանալի բառեր՝ *ՍԹԵՄ, արհեստական բանականությունը (AI) կրթության մեջ, ChatGPT, գեներատիվ AI, Լեզուների մեծ մոդելներ (LLM), ներառական կրթություն, անհատականացված ուսուցում, բարձրագույն կրթություն, դպրոց, հանրակրթություն, կրթության հավասարություն, կրթական տեխնոլոգիաներ:*

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