

Generative AI Capabilities And Limitations in Teaching and Learning Process

Tamanna Siddiquee

Assistant Professor, Dept. of Islamic History & Culture, North Bengal International University, Rajshahi

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ABSTRACT

Today many priorities for improvements to teaching and learning are unmet need. Educators seek technology enhanced approaches addressing all this priorities that would be effective. Educators use AI-services in their everyday lives and exploring AI-tools improving lessons, process for finding, adopting materials for use in lessons. Artificial intelligence rapidly advancing class of foundational capabilities which are increasingly embedded in all types of educational technology systems, educational settings. AI can be defined as automation based association. AI model uses in education are most important to evaluate for alignment to intended educational goals. Teaching and learning in all considerations about the suitability of an AI model for an educational use such as ensuring human alternative that making recommendation. AI in education take strong steps to data privacy of student and teacher, accountable use of AI in education by involving humans in the loop to ensure that educational values and principles are prioritized. Our collective vision of a desirable, achievable educational system leverages automation while protecting and centering human agency provided throughout the Learning, Teaching, Assessment and Research sections by dispensing artificial intelligence. It is beneficial to students learning experience and to the efficiency of classroom instructions to the use issue of potential liability. Limitations are not technical in nature, It is a serious issue that needs to be addressed.

Introduction

The integration of AI in educational system has flaked in illustration alternatives in teaching and learning, dedicated both supreme benefit and complicated object. This Article analyses careful analytical evolution and sight of implementing AI in education to precede pedagogical obligations, moral discretion in various evolutions and the epithet of admiration for AI-conducted manifestations. Also recapitulate the synthesis of run AI- propagate thing in professional functions and hit of impartiality and accessibility connexion. By weaving these key into a comprehensive converse, this article provide perspective of useful and accountable use of these technologies in education, its limitation and its solution. This study explored the opportunities and challenges of using Chat GPT in education. Gen AI Tools can greatly enhance teaching and learning across various contexts, supports qualitative and quantitative methodologies of research and also enrich educational experiences.¹

Generative Artificial Intelligence (Gen AI)

The Field of artificial intelligence has evidenced a remarkable transformation. Innovation of ChatGPT stands out as a leading contestant offer potent consummation of task for imposing in natural language conversations across AI. Recent development of artificial intelligence (AI) enhanced para diagram of instrument technology, data- driver shifting and creative tasks through generative AI. Fueled by advancements in DL techniques, deep generative model (DGM) have emerged as a class of DL models to generative new content based on existing data, creating new possibilities of AI application.² Complementing discriminative AI, GAI has recently emerged as a novel tool with a wide range of new possibilities impacting academic health care. Almost indistinguishable from human created work, discussions arise on whether this new technology even holds early signs of artificial general intelligence departed progression in ML (machine Learning) and DL (Deep Learning) already have extended data-driver AI tasks like classification,

recommendation through generation of unique, predictions, originative conciliate, optimization and processed or decision making.³ Artificial intelligence (AI) has taken a prominent place in research and practice across.

Past decades all these technologies transformed surveyed ways to society, venture into the new area of generative AI, becomes more and more crucial to understand the core concepts and rapid evolving technology.⁴ Artificial intelligence performs tasks that typically require human intelligence such as making decisions, learning and teaching, understanding languages.

Generative AI in Education and Function of ChatGPT

Generative artificial intelligence (AI) has attained vast popularity, it has also brought forth new challenges and concerns in academia, Recently, ChatGPT has emerged as a powerful generative artificial intelligence (GenAI) tool with efficiency of dominance over pedagogy, which provides avail for learners, researchers, practitioners to accomplish the aimed or cherished yielding of knowledge in various disciplines.

This issue examines the diverse applications and implications of GenAI tools including ChatGPT in education, highlighting their potential to enhance teaching and learning.⁵ Both in qualitative and quantitative research GenAI tools can highly improve educational outcomes supporting and facility language learning. GenAI capability increment student's inspiration. ChatGPT was trained on all sorts of text from the internet. Wikipedia, blog posts, books, academic articles, this AI-powered language model developed by open AI. It has been trained on a massive amount of text data from the internet and can generate human like text responses to a given prompt. It can answer questions, converse on a variety of topics and generate creative writing pieces. Chat GPT was released in late November 2022; within 5 days it reached one million users, excitement about this chat boat is rising exponentially. While some observes are predicting that it will partially or completely destroy the human generated writing; other are considering it as an actual qualitative technology with a subscription to ChatGPT, ChatGPT- 4, Generative AI models of this type are trained on vast amount of information. Information from the internet, including websites books, new articles and more are included in ChatGPT.⁶ Since its inception, Social media feeds have been showed with users displaying ChatGPT seemingly versatile uses, such as cheating on university assignments by generating essays; here are some crystal clear ways one can take advantage of this without violating ethnical code.⁷ ChatGPT can generate complex concepts. It would be more difficult to spot and prove plagiarism for widespread availability and accessibility bring both benefits and risks. There is potential of misuse and educators and researchers must be conscious of the technology. Student may misuse this technology by using it to complete their task without actually understanding the concepts. Developing these skills is important for success in both education and professional career. ChatGPT is a language model created to hold a conversation with the end user. This can be useful for uploading worksheets, graph, charts to be analyzed. ChatGPT is a great resource to help with job application. The job search can be tedious and difficult; ChatGPT can help anyone effectively and efficiently. ChatGPT showing the way toward our tech future.⁸ ChatGPT demonstrates strong natural language understanding capabilities, various tasks, including conversation, text generation, applicable across different domains and use cases. It allows to stay relevant and up to date with evolving language patterns and user preferences.

Emergence of IT in Education:

IT is a much spoken term now-a-days. Different features of IT have been applied to education, changing the mode of learning and teaching curriculum and methodology have changed, accommodating more use of computers in classrooms, which are now found in all educational institutions irrespective of level. Educational institutions use computer as a tool to develop skills of the students. AI have taken over the role of teachers. Classrooms are adorned with AI like computer, projectors and other gadgets of IT. Teachers can show any slide with animation and video with audio on monitors and magnify it through projector. This makes learning more attractive to the learners. Text books are now available on online soft copy version. Assignments and other tasks are being done by AI and student's educational propagation smarter than previous

generation. All the courses and subjects are supporting software format. Experiments are demonstrated with audio, video along with necessary text instructions.

Teachers do not need to go to library physically now. Students click and enter the virtual libraries and download necessary reading materials. Internet has tremendous impact on the sphere of education. By this students browse internet to collect information on various websites to utilize their purpose. Distance Learning has emerged, learners can learn sitting far from the teachers. Instantaneously teacher's lecture can be transmitted from one part of the globe, through web-corn, VSAT, satellite. Universities offer distant learning program; collect students without bringing them into campus physically. They get connected virtually. This method spreading rapidly and getting popular to avoid the hazard of visa processing for education.⁹ Academic assessment mode, program courses are getting held by the aid of computer. It is controlling job of education management. By using automatic software teachers are facing little labor. Examinations are being held by video conferencing; students submitting assignment's soft copy version. Through banking software semester fees are getting filed. By clicking once in online student can have a look on published result. Lecture materials are mostly available in online. Education has greatly been influenced by the development IT, new features of it has changed educational method. By taking thoughtful, inclusive adequate initiatives to the development and use of this technologies, people ensure their impact on society is positive and beneficial. Artificial intelligent are profound things working as a human being paving the way for AI tools in education.¹⁰

AI-Guided Learning

Technologies like artificial intelligence has developed years ago but it seems abruptly untie in the prospect. AI has become Ubiquitous potentials for education.

Students making their education more operative to individual needs. This technologies let one assisting in administrative tasks, let education focus of streamlining function along with teaching. The future of artificial intelligence has great possibility to manage educational system. AI understand natural language and significantly impact educational sector, finance health issues, industrial, technical sides. It has educational ethics.¹¹ In earlier mainframe computer used to be instructional materials to assist education. Desktop computer emerged as intelligent tutor offers immediate response to show easier path to process learning evolution including demonstrated personalized and potential learning process. This technology made lesson attractive to learners.

Artificial intelligence offering solutions to K-12 educational system more adaptive and advanced learning platforms smart tutoring, automated grading executive tasks, facilitates individually tutoring instructional content, by which both teacher and student gets benefited.¹² This contiguity assume learners to prosper in their own motion, engage with various activities along with its learning mode, obtained more rules through pedagogical process. Educator and researchers remove workload by experiencing different kind of AI assistant to enhance assignments. The intelligent tutoring System AI offering quick response, correct command based on learners representations. Educational technology are being assisted by all there modern application by providing detailed data for learners to improve theoretic understanding and to handle huge tasks. Such as traditional grading system was little bit biased or teacher to influence on grade sheet for personal interest. AI has Change those system, For AI lack of realism, improper, incoherent assessment of any teacher has been reduced. Rather the nature of grading large numbers of students is time-consuming which is being solved by AI capacity. AI evaluating, students performance by turning consecutive direction. AI can prolong grading ability, limpidity and integrity by decreasing grading time and take measures quickly, also feedback us in detailed. This help educators to engage more writing persuasive, deliver in shortest time, formative feedback by which exhort witting skills in learners. It is important that teacher should carefully observe AI-generated feedbacks to match up with educative goals and addresses distinct needs AI-tool must be treated as the replacement of booster, by helping teacher. AI can solve critical thinking matter in a second and by spot-audit AI output, teachers sustain the completion of assessment to confirm students good feedback. Now AI is being used for make teachable content creation, saves teacher's valuable time streamline text planning customized materials for research

on content creation for educational objective, finding high quality research materials, to lessen work load of hard copy or hand copy system, also plays important role in searching hundreds of research papers from home and abroad, collecting information and data instantly, extracting important information virtually, obtaining information quickly without wasting time on research or writing articles which ultimately beneficial for students and teachers. Educational institutions depend on all of AI technologies to reduce workload and administrative pressures. ChatGPT- 4 automatically analyze executive tasks organizing session, professional development substance, maintaining schedules, solve massive data frame, any kind of effective judgment to take strategic initiatives. Teachers or educators are using generative AI tools to enhance learning outcomes. AI capabilities are being used various ways to assist academic quest. Mathematics problem solving, article material, vocabulary instruction, visual assistant applications are very useful AI-application today. Different level and disciplines are using AI-instructor today to identify challenging vocabulary term, purposeful easy access AI tool to generate specific images or explain lexicon. The concept of AI is getting introduced to all sphere of pupil. Specially critical mathematic lesson tricks effectively using artificial intelligence, and can be use as instructional coach. Projects that align with curriculum grade to generate word problems, graph extensive text design with vital question to solve problem and flare convenience, AI- based functions develop difficult conception and quantitative elementary proficiency or abilities. AI-driven learning can serve interactive aid and simplify creating contentment to teachers and students. AI ensure that educational components are effectively meets several learners needs, such as virtual lab, educational collaborating platforms, essential videos on online can expedite equal learning.

Future aspects and Limitations of AI

Large number of educational institution school, college and universities are adopting AI widespread since last ten years means earnest binding, however AI-tools evolving and switching to AI- technology based educational administrations, administrator need to come to term with varied moral regard about AI pedagogy. AI training for both the teachers and students should be compulsory that everyone get benefited. Education in AI is very decisive. Learner should know about AI limitations along with capabilities. It actually maintain academic probity. AI has got implementation challenges. AI education are high cost for implementing in best way this system integrate similar education technology. AI tool must ensure equal accessibility and moral disquiet to maintain intimation to supportive community, by this way AI can be implanted for best practice for the next generation. Though the developed countries have utilized AI or information technology, our achievement is not satisfactory at all. Government initiatives are not satisfactory in this sector. Private Organizations are offering IT education mainly costly. Lack of investment is another problem. Infrastructural facilities are very poor and inappropriate to demand. AI technology ChatGPT excels at generating coherent responses on the immediate context of a conversation. AI language model generate biased information in its trained data, not more than that, its limited. This limitation can sometime lead to repetitive interaction. Ensuring ethical and responsible use of ChatGPT requires ongoing monitoring and intervention to address such issues. ChatGPT is susceptible to misuse for generating malicious or harmful content. ChatGPT is highly influenced by diversity or training data, gaps in training data can result in suboptimal behaviors. It is crucially important to recognize the potentials of ChatGPT. The disadvantage of all AI is vulnerability to misuse, dependency on training data and ethical concerns. By taking balanced inclusive initiatives technologies impact on society is beneficial. Limited access to AI technologies or AI-driven learning may cause limited provided opportunities to learners, provide homogenization ideas, students may loss their imagination power or creativity, ethical dilemmas such as plagiarism is one of those. Very vulnerable thing is AI- driven learning method can reduce human interaction and social emotional attachment, aggravate the teacher's preface, which diminish mentorship and guidance process. AI assistance implementation lead to job displacement of teacher post. In case of AI learning materials provide wrong direction or information would spread those biases in educational place students get wrong message. Over-reliance of AI-technology is detrimental for essential human skills.

Conclusion

AI has changed the way of teaching and learning process. Through this student get more personalized instructions, AI-based tools assist teachers to perform better and allow more efficient use of resources. Overall AI-tools creating more enjoyable learning background for learners. If supportive AI-tools are designed with equity and privacy can be more efficient use of resourcing. ChatGPT has radically changed education system and handle great challenges to education, ChatGPT and other AI- tools providing quality education and this technology is time saving for increasing workflows. All institutes are accepting AI- driven learning system as beneficial technology to solve critical educational question and research materials provider. Educator must ensure that next generation use AI for effective learning and develop their skills that they may go one step further in their pursuit of knowledge and scientific research. Increasing engagement with AI-learning will be fundamental for the bound's combined prosperity. By taking a thoughtful inclusive initiatives to the development and use of AI- technologies, we can ensure the good impact and positive response in society. This sector has brought the world in one's hand, this innovation mostly making auspicious impression on students, teachers and education manager.

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