

THE ROLE OF AI MODELS IN VIRTUAL EDUCATION

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Abstract

The Artificial Intelligence is transforming the online education by digital revolution in designing course curriculum in AI Tools of Grammarly, Quill bot, Turnitin, Stealth writer, Chat GPT, Linked In, Canva Pro, Chegg, MS Office, Write Sonic, Course Hero, Scribd. The online education will be transformed by monolithic effects of Chat GPT for future designs like websites can read words and convert them into stories, ideas can develop themes, sketches can be transformed into pictures and voice leads can generate AI samples of mental schemas. The AI has certain limitations of what it does is asked for rather what Humans mean like facial recognition systems can search individuals globally by human pictures but human instincts of fear, love, hate needs to be measured by intelligent AI. The SLAs service level agreements for resources of digital libraries, e books and course materials of discussion panels in AI are the contracts provided by teachers for expected education quality for service based, student based and internal designs of education through generative AI. The Data Science for statistical analysis and computer architecture machine language ML are transforming virtual education in accuracy, speed, reliability and scalability. The KPIs are the performance metrics for quality standards, lectures for designing content management systems for course curriculum in learning depth, feed backs by use of generative AI. The AI tools of dash boards for updating records, data visualization track for narratives used by educational leaders for developing insights of students for improvements and opportunities. The AI can measure the qualitative learning data through survey methodology by questionnaire, online tests applied to vast number of students by interview for AI models of teaching. The AI test scores will measure the student abilities of being intelligent, hard working, IQ, openness, agreeableness and efficiency.

INTRODUCTION

Computer based education is the term used for any kind of learning by use of computers in applications and software by presenting media to the users. (Techopedia). According to Techopedia, the computers based learning mainly used in knowledge based training, Simulation based learning, Creative and instructional games and problem solving training. Furthermore AI based teaching models are

Adaptive learning, Personalized learning, AI tutors, content creation, Gamification, Predictive analysis, Engagement, Data driven insights and Natural Language Processing (Google). Artificial intelligence comprises machine learning and deep learning performing and transforming education in innovative techniques and applications by TEM traditional education methods (ResearchGate). The

SLRs for scalability in key data resources of digital libraries , e books and course materials for scope of data sources now available in research inquiries , ideal solutions and research paradigm for learning analysis tools.

DISCUSSION

According to **Wikipedia** powered **adaptive learning** systems can adjust to pace and difficulty of the course material based on learners performance. AI enabled adaptive learning uses algorithms to evaluate a student abilities and identify gaps where they require more support. **Personalized learning** AI enables experiences by analyzing individual student data and tailoring educational content. AI **tutors** enables the QA sessions , discussions and helping student learning in online environments. **Content creation** creates web based courses by generative AI and designs e learning visuals . **Gamification** uses games in education for rewards and competition for motivation of students. **Predictive Analysis** is use of historical data in education and students can see their progress by comparison. **Engagement** is use of digital systems and technologies for hands on computers . **Data driven** AI enables students interactions and user experience in facilities by customization. NLP is the natural language programming is the understanding of computers closest to human language like Python .

CHAT GPT is an artificial intelligence program that generates dialogue. IT uses Machine language Chat Bot for algorithms in process and analyze large amount of data to generate responses to user queries.

LITERATURE REVIEW

The environmental cues can effect the learning process and abilities of students by experiential learning through artificial intelligence in problem

solving , critical analysis , contextual and situational mental schemas of cognition , attitude and behavior (**Winston, 1993**). According to **AI tutorials** point AI uses heuristic , fuzzy logic and expert intelligence by intelligent expert AI systems provides assessment and feed backs to students by evaluation and automatically grade assessments such as essays or MCQs . The teachers can provide feedbacks and coaching for spelling , grammar ,vocabulary , sentence structure and coherence . CMS combines multiple tasks in Learning management systems .

CHAT GPT stands for Generative Pretrained Transformer . It uses human language to interpret the responses in social media , emails , texting and humanly images , videos or text (**Tech Accelerator**). The features and limitations of chat GPT are it can answer questions , solve math equations , translate between languages , debug and fix code , write a story or poem and classify things (**UCA Edu**). The future of AI will identify documents and pictures for imaging in visual aids (**Lighthouse Guild**).

The AI has been transformed by data representation in grammar, analysis , predictions , sketches , suggestion in scholarly writing for synthesis , paraphrasing , evidence , citations , summarizing, editing ,quoting , styling and texting by various AI models. The *Grammarly* , *Quill bot* , *Turnitin* , *Stealth writer* , *Chat GPT* , *Linked In* , *Canva Pro* , *Chegg* , *MS Office* , *Write Sonic* , *Course Hero* , *Scribd* for various Artificial Intelligence tools in research analysis and findings are used for better presentation . Students can use them in studies and course work for writing and building arguments . The data manipulation by MATLAB and CHEG in data analysis for Grammarly and quill bot. The following table depicts the use of AI editor tools in research .

AI EDITOR TOOLS FOR RESEARCH	UNDERSTANDING
CHEG	Online tutoring
QUIL BOT	AI writing tools
CANVA PRO	Imaging
WRITE SONIC	SEO optimization technique
MATLAB	Math's
GRAMMARLY	MS Office
SCRIBD	Digital documents , SlideShare

MS OFFICE	Word , PowerPoint, Excel
STEALTH WRITER	Convert AI context to Human context
LINKED IN	Social media learning
CHAT GPT	Open dialogue for answers
TURNIT IN	Plagiarism detector
COURSE HERO	Study resources

METHODOLOGY

Performance Management foster creativity and bring motivation for individual to learn and explore the knowledge by data driven cues . (**Herman Aguinis,2018**) . How AI transformed the virtual education . AI enables **personalize learning** experiences by analyzing individual student data and tailoring educational content . According to **EDUCAUSE** AI is providing instructors and course designers new tools and techniques to improve the course design and development process. ASR automatic speech recognition , image description generation , plagiarism detection , assessment and grading , mathematical interpretation , graphing and mind mapping , spelling and grammar writing as learning and instruction are highly personalized . AI is also being used for custom code and power scripts embedded in learning management systems by scripting and editing videos.

Generative AI has the potential to transform teaching practices , classroom dynamics , assessment , and more by relacing human teaching .(**Searson , Jason , Elizibeth, 2024**). Generative AI can create learning as per student individual needs , preferences , interests and skill levels. The students can achieve their goals , skills and career paths . The AI platform uses reading , writing and comprehension skill data to identify learners areas of proficiency and unproficiency . The course content can match the student mix of test based lessons ,interactive activities , videos and audio recordings. As the learner progresses through the course , technology monitors the student's progress and adjust the course by providing the instant feedback on assignments and exercises to keep learners motivated .

Adaptive learning is competency based learning and differentiated instruction . AI powered adaptive learning can adjust the pace and difficulty of course material based on learners performance for better

retention , learner engagement . AI can build new experimental pathways for not only proficiency based rather generative pathways that are created dynamically using a combination of the learners responses and time on task , difficulty level of the activity and other data. The students can learn mathematics by exercises answering factorials and quadratic equations.

OPEN AI has beefed up its CHAT GPT generative AI chatbot to provide real time data and information of weather forecast and stock prices (**Newspaper**). The open AI challenge the google decade dominance of finding answers on web . The App can get fast , timely answers with links to relevant web sources which students have previously go to search engines . AI can stimulate self learning by personalized guidance and feed back either to get the result by default or manually choose the capability by clicking the web search icon . The Technology for generative AI in Chat GPT with AI tools of DALL-E, Muse Net use facial recognition for educational purpose . (**Searson, Jason, Elizabeth,2024**). **CHATGPT** has launched its own search engine rather using google for key word searching and corelating data bases by use of AI enables scripting and smart codes (**wiki BLOG**). Although AI is yet not enabled in website design in Java but future GPTs will read words , pictures and symbols like stories and enabling future artificial intelligence in leading Chat GPT for future designs like websites can read words and convert them into stories ,ideas can develop themes, sketches can be transformed into pictures and voice leads can generate AI samples of mental schemas.

AI driven **NLP Natural Language Processing** tools enables simultaneous tailored to each learners preferences and deeply embedded into the learning

experience (Tom, Dotz, Susan, 2023). The system performs the initial testing and adjust the course curriculum. The AI enabled Natural language Processing uses the chatbot and virtual assistants for NLP Natural language Processing that allows machines to read, comprehend and derive meaning from human language. The NLP interfaces will be deeply embedded into course products allowing learners to directly respond to learning activities like conversational exchanges. The student speaks and voice recognition records the conversation into written form then the main extracts are decoded for future referencing and guidance.

CONTENT MANAGEMENT SYSTEM are the KPIs for design, depth of knowledge and course curriculum for better learning through video lectures and e books. Machine learning, systems development, big data and evolution of AI is impacting education. (Rajiv Malhotra, 2021). AI powered **learning analytics tools** can help instructors track progress and areas of improvement by automatically adjust the course material. It identifies patterns and trends to optimize and improve learning experience and adjusting the decisions and

optimize content in the form of quizzes, modules and discussion boards.

The Agent and types of environments effecting AI have been explored by belief states by set of possible worlds and state estimation for maintaining the belief state. How agents can use representation by use of AI in real world such as factored representation in which each state is a set of attributes with values pairs, atomic each state is treated as black box (Russel Norvig, 2022).

FINDINGS

The Intelligent AI can interpret the student abilities by correlating the data base of students ratings by reviewing the specific tests and scores achieved by qualitative survey of questionnaires (Verbal or written) administered by online interviews, panel discussions. Facial recognition systems can in future track the images of students for environmental cues to foresee the thinking process of students. The tests can seek and generate knowledge by observation and pre defined codes for detecting anomalies or variations in findings.

STUDENT ABILITIES	Environmental CUES	VIRTUAL EDUCATION AI TOOLS
Intelligent	Cognition	Personalized learning
Openness	Questions	Adaptive AI
IQ	Mental ability	AI Tutors
Hardworking	Efforts	Predictive analysis
Communication skill	Rewards	Gamification
Problem solving	Difficulty Level	Engagement
Motivation	Understanding	Data driven
Neuroticism	Negative view	Content management
Consciousness	Awareness	NLP

CONCLUSION

The predictive analysis of matching the survey results with student abilities provides the best use of AI tools in virtual education. Does computers take cues in the form of indices from environments by the use of intelligent AI. The expert tutoring systems for neural networks in adaptive mode for multiple tasks simultaneously like voice recognitions and speech

conversion into text forms. The AI enables the pattern behavior in planning, directing, leading and

monitoring tasks for educational leaders. The smart algorithms as tasks for operation and objects as cues in Python programming. The AI has been transformed by data representation in queues, lists, trees and stacks for better presentation. The data manipulation by MATLAB and CHEG in data

analysis for Grammarly and quill bot . The AI has transformed Audiometry by analyzing and converting audio signals into electrical forms through software for directing messages to concerned students . The AI can understand the educational Jargons for teaching methods , assessment types , educational policies and academic theories . It can collaborate , communicate and effective in education sector.

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