Chat GPT and Its Potential in Education

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Abstract

　　ChatGPT is a powerful and innovative tool that has the potential to transform education in various ways. This article covers the uses of chatGPT in teaching and learning, administration, research, and community engagement. In this article I used chatGPT in classroom with the use of prompt engineering. I have carried out activities such as lesson planning, motivating the students towards learning, formative assessment, learning tasks, and preparing students for explicit teaching. Encouraging students to self-assess, reflect, and monitor their work. Use formative assessment strategies to inform teaching and learning.

Keywords

　　Artificial Intelligence, Chat GPT, Prompts Engineering.

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Introduction

Chat GPT is a language model that allows people to interact with a computer in a more natural and conversational way. GPT stands for "Generative Pre-trained Transformer" and is the name given to a family of natural language models developed by open Artificial Intelligence (AI). This is also known as a form of generative AI because of its ability to produce original results.

ChatGPT uses natural language processing to learn from Internet data, providing users with artificial intelligence-based written answers to questions or prompts.

These models are trained on large text datasets to learn to predict the next word in a sentence and, from that, generate coherent and compelling human-like output in response to a question or statement. In the case of ChatGPT, 570 GB of data representing 300 billion words have been supplied to the system and it has around 175 billion parameters [1].

We can think about ChatGPT as a "computer robot" with which you can talk about anything [2] This is helped by its user-friendly interface. ChatGPT can be asked for data, analysis and even an opinion. However, the algorithm by which it works does not take a definite position, as its interpretation is based on the statistical analysis of billions of texts on the Internet.

Artificial Intelligence

Artificial intelligence is a field of science concerned with building computers and machines that can reason, learn, and act in such a way that would normally require human intelligence or that involves data whose scale exceeds what humans can analyze.

AI is a broad field that encompasses many different disciplines, including computer science, data analytics and statistics, hardware and software engineering, linguistics, neuroscience, and even philosophy and psychology.

On an operational level for business use, AI is a set of technologies that are based primarily on machine learning and deep learning, used for data analytics, predictions and forecasting, object categorization, natural language processing, recommendations, intelligent data retrieval, and more [2].

Applications of ChatGPT in education:

Although still a recent development, ChatGPT has already been applied widely in different functions of higher education. This section outlines some possible uses of ChatGPT in teaching and learning, research, administration, and community engagement.

Teaching and Learning

Due to its ability to generate and assess information, ChatGPT can play a range of roles in teaching and learning processes. Together with other forms of AI, ChatGPT could improve the process and experience of learning for students. To do this, ChatGPT can be used as a standalone tool, or it can be integrated into other systems and platforms used by HEIs

Chat GPT can perform many simple or technical tasks (e.g. basic research, calculations, proofing) and the examples outlined in the table show how ChatGPT could be incorporated and used to augment teaching and learning.

Research

ChatGPT can be used by researchers at different stages of the research process. This is summarized in Figure 3. ChatGPT has also been trialed in other processes relating to research, such as completing the technical parts of research grant applications (e.g., communications plans). Experimental use of ChatGPT to assess its ability to provide peer review of academic papers found that it may be able to aid in predicting whether a paper will be accepted [3]

ChatGPT has also been used to generate entire academic journal articles,8 opening an ethical debate about whether a non-human author can be considered a contributor to the creation of knowledge. At the time of writing this Quick Start Guide, no consensus had been reached. Some publishers have argued that ChatGPT cannot take responsibility for the content or integrity of articles and therefore cannot be an author, whereas others accept its role as co-creator.9 With ChatGPT, the style is more conversational, creating a more personalized experience.

Writing up
- Improve writing quality
- Reformat citations and references
- Translate writing

Research design
- Generate ideas for research questions or projects
- Suggest data sources

04 01

03 02

Data analysis
- Code data
- Suggest themes or topics for analysis

Data collection
- Search archives and datasets
- Translate sources into other languages

Image created by UNESCO IESALC [3]

Administration

ChatGPT's main role in supporting higher education institutions (HEI) administration has been to improve the efficiency of processes. In this way, ChatGPT can reduce human administrative time spent on tasks such as:

- Responding to queries from applicants (potential students)
- Helping students to sign up for courses, complete course requirements, and check administrative information (e.g., exam timetables, location of classes) Finding news, resources, and other information Sending reminders or notifications.
- Translation of information for international students/staff

With the use of ChatGPT, administrative services can be available 24/7 and can be supported across different platforms. As well as integration into websites, it can also be used with social media, messaging services and learning management systems/virtual campuses. When interacting with ChatGPT, the style is more conversational, creating a more personalized experience

Community Engagement

HEIs can also use ChatGPT to develop sound strategies for community engagement. Considering their own specific characteristics (geography, location, community needs, local demographics), ChatGPT could be asked to develop targeted strategies to improve the well-being of the overall community. Based on those strategies, they could develop communication campaigns geared to the community and with a specific call to action.

ChatGPT Usage Statistics & Facts

ChatGPT is a conversational language generation model developed by Open AI.

- More than 1 million users in only 5 days
- 100 million monthly users in January 2023 according to UBS analyst estimates
- There were +266 million visits to the ChatGPT website in December 2023 according to a Similar web estimate
- In August 2023 the number of visits had reached 1.43 billion.
- The highest percentage of ChatGPT users belong to the USA (15.22%), followed by India (6.32%), Japan (4.01%) and Canada (2.75%).
- Each user spends an average of 8 minutes and 32 seconds on the website [6]

Prompt Engineering

Prompt engineering is the process of refining prompts that a person can input into a generative artificial intelligence (AI) service to generate text or images. Anyone can do this using natural language in generators like ChatGPT and DALL-E. It is also a technique that AI engineers use when refining large language models (LLMs) with specific or recommended prompts.

For example, if you are using ChatGPT to brainstorm a professional summary while refining your resume, you might write a command such as, "Write a sample professional summary for a marketing analyst." To ChatGPT's response, you might prompt it with feedback like "too formal" or "shorten to less than 100 words." You can do the same for text-to-image models like DALL-E [4].

Importance of Prompts in Generative AI

Prompt engineering is important for AI engineers to create better services, such as chatbots that handle customer service tasks or generate legal contracts. Making sure that generative AI services like ChatGPT can deliver outputs requires engineers to build code and train the AI on extensive and accurate data.

We've reached a point in our big data-driven world where training AI models can help deliver solutions much more efficiently without manually sorting through large amounts of data. Proper prompt engineering can also identify and mitigate injection attacks (malicious attempts to hack the logic behind ChatGPT or chat bots) to ensure companies deliver consistent and accurate services [5]

Methodology

I have used the experimentation method in writing this article. In the left-hand column of the table, I have considered the different aspects of the teaching-learning process and in the right-hand column I have used prompts to take assistance from chatGPT and found that the results are extremely useful in the teaching-learning process.

Expectations

Table-1

Challenging students to learn new things	"How could you use your prior knowledge and skills to tackle this new challenge? What strategies would you use to overcome any obstacles?"
Use regular formative assessment to understand students' strengths and areas for improvement	"Create a quiz with 5 multiple choice questions that assess students' understanding of [concept being taught]."

Prior knowledge and ability of each student.	"Create an assignment that is challenging for students who have a strong understanding of [concept being taught], but also provides support and Scaffolding for students who are struggling with the material."
Provide students with quality examples and exemplars of responses and learning tasks.	"Generate an example of a well-written essay on [topic] that meets the criteria for an 'A' grade (above)."
Establish clear and consistent expectations for learning and behavior.	"Create a poster that lists the classroom rules and explains the consequences for breaking them."
Guide and support students towards meeting expectations.	"Generate a list of specific and actionable steps that a student can take to improve their performance in [subject/task]."

Explicit Teaching

Prepare for explicit teaching.	"Create a lesson plan for a unit on [concept being taught] that includes a variety of activities and assessments and takes into account the following paragraph where I provide a brief description of the skills and knowledge of my students."
Explain, model and guide learning.	"Create a lesson outline with learning intentions, Creative activities, and success criteria for a lesson on [concept being taught]."
Monitor student progress and check for understanding.	"Generate 5 multiple choice questions that assess students' understanding of [concept being taught]."
Use high-quality exemplars to help students understand success criteria.	"Generate an exemplar of a well-written essay on [topic] that meets the criteria for an 'A' grade (above), with detailed annotation explaining the success criteria."

Effective Feedback

Reflect and communicate about the learning task with students.	"Create a set of questions that students can use to reflect on their performance in [subject] based on the following Submission and marking criteria and identify areas for improvement."

Provide students with detailed and specific feedback about what they need to do to achieve growth as a learners.	"Generate specific and actionable steps that a student with the above-submitted essay/work can take to improve their performance in [subject/task]."
Encourage students to self-assess, reflect, and monitor their work.	"Create a rubric that students can use to self-assess their work on [assignment or task]."
Ensure that students act on feedback that they receive.	"Generate a list of 5 alternative assessment methods that could be used to assess students' understanding of [concept being taught]."
Use a variety of teaching strategies to engage and challenge all students.	"Create a list of 5 teaching strategies that could be used to engage and challenge students of different ability levels in a lesson on [concept being taught]."

Use of Data of Inform Practice

Regularly dedicate time to using data effectively.	Create a list of 5 professional development activities that could be used to help teachers improve their skills in using data effectively."
Collect meaningful data.	"Create a list of 5 types of data that teachers can collect to monitor student learning and progress."
Analyze the data to monitor student learning and progress.	"Create a set of questions that teachers can use to analyze data and identify strengths and gaps in student learning."
Make teaching decisions based on data analysis.	"Create a list of 5 teaching strategies that could be used to support the learning needs of this student that has the following data..."

Assessment

Carefully structure group assessment activities to ensure that students are supported, challenged, and able to work together successfully.	"Generate an explanation for 8 Math class on the benefits of using group assessments and how they align with the learning outcomes from the syllabus."
Use formative assessment strategies to inform teaching and learning.	"Generate a formative assessment activity for a Year 8 class on topic."
Use summative assessment to evaluate student learning.	"Generate a summative assessment task for 8 class on topic…………."
Use technology to enhance assessment and feedback.	"Generate ideas for using technology to provide feedback on student writing in a Year 11 English class." Follow this up by asking it to create those tools.

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Conclusion

ChatGPT is an incredible AI tool that can be used in education in many ways. It is helpful in teaching, learning, assessment, administration and research this can be done by means of giving simple prompts. A teacher can generate reading passages, quizzes, generating lesson plans. Providing translation assistance and many more. It is useful for students to write essays on different topics, and practice conversational skills such as debating and interviewing. Learning new concepts like math, science and language. Developing critical thinking and information literacy skills.

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