

INVESTIGATING THE POTENTIAL BENEFITS AND RISKS OF USING CHATGPT IN HIGHER EDUCATION

Umar Latif¹, Dr. Mobeen ul Islam²

Abstract

The integration of Artificial Intelligence (AI) technologies, such as ChatGPT, into higher education has revolutionized traditional approaches to teaching and learning. ChatGPT offers opportunities for personalized learning, instant feedback, and enhanced academic support. While these tools offer numerous benefits, they also pose potential risks to users that warrant careful consideration. The primary purpose of this research was to investigate the potential benefits and risks associated with using ChatGPT in higher education. The research objectives for this study were set as; to explore the potential benefits of using ChatGPT in classroom, to identify the threats associated with the use of ChatGPT in teaching and learning. Qualitative research design was used for the study. All relevant articles published in 2018 to 2023 were comprised the population of the study. The researcher selected 20 articles as the sample for the study. The content analysis both manual and computational (using NVivo 14) was used for qualitative analysis of sample. The study investigated that engagement, time savings, proactiveness, planning, motivation, quick feedback, virtual support, 24/7 accessibility and individualized assistance are main potential benefits of using ChatGPT in classroom. It was identified through the study that Inaccurate information, plagiarism, problems with academic integrity, over-reliance, knowledge manipulation and a loss in higher order cognitive skills were found to be the main risks connected to chatbot use. It recommends that higher education institutions can proactively organize training seminars and workshops focusing on the integration and utilization of ChatGPT within their educational systems. It is essential for universities to proactively identify and address potential threats and risks associated with the use of ChatGPT.

Keywords: CHATGPT, Higher Education

1- Introduction

ChatGPT is a large language model designed for conversation generation and language translation. Trained on extensive data, it can produce text that closely resembles human writing, showcasing potential applications across various fields (Ina, 2022). ChatGPT handle many types of education tasks, for example, answering FAQs, organizing and handling paperwork, mentoring students, cheering them on and checking their progress (Pérez, Daradoumis & Puig, 2020). They also play a key role in developing simulations, teaching specific knowledge and skills, and encouraging introspection and metacognitive techniques. Cardenal Herrera University (CUE), for example, has introduced a chatbot to assist with student inquiries and mentoring. As a personal assistant, this chatbot is skilled at handling administrative inquiries. ChatGPT have become super popular, and more people will use them in the future. It has attracted a lot of interest in the realm of education as a cutting-edge tool that can improve both teachers' and students' learning experiences (Opara, Theresa & Aduke, 2023).

ChatGPT have some great strengths. They are easy to use and can be used on phones or

¹ PhD Scholar, Department of Education, University of Gujrat

² Assistant Professor, Department of Education, University of Gujrat

computers. When you talk to them or type to them, it feels like having a conversation. This can make learning more interesting (Klímová & Seraj, 2023). Right now, ChatGPT are being used in education, especially in some public universities. This is part of a big change in how things work, called "digital transformation." These ChatGPT are used to offer new services or make existing ones better. This idea of using ChatGPT in education isn't new. People have been studying it for over 10 years. ChatGPT are really helpful in places like schools and universities where students need to practice things over and over (Pérez, Daradoumis & Puig, 2020).

While education benefits a lot from ChatGPT, it also introduces some important risks. When users, especially students provide prompts, it becomes possible for the tool to produce answers that raise ethical questions and may breach academic standard. If you use ChatGPT to generate work without giving credit, you may face plagiarism and end up with academic charges (Sok & Heng, 2023).

1.1 Statement of Problem

Despite the increasing adoption of ChatGPT and other AI-powered tools in higher education, there remains a significant gap in understanding the potential benefits and risks associated with their use. This study aims to address these gaps by investigating the potential benefits and risks of using ChatGPT in higher education.

2- Literature Review

A conversational language model from the GPT (Generative Pretrained Transformer) family, ChatGPT was created by OpenAI. These Transformer-based models produce responses that resemble those of a person after being extensively trained on textual material. Developed for conversational applications such as virtual assistants, chatbots, and customer support representatives, ChatGPT excels in generating text that is coherent, contextually relevant, and often indistinguishable from human-produced text. Trained on diverse conversational data from websites, books, and social media, the model can offer responses that align with the input prompt's context. When a user uses ChatGPT, they input a prompt, which can be either a question or a statement. The model then uses its understanding and training data to construct a response. Notably, it can provide multiple responses, varying in length, style, and content depending on the input context (Sakib, 2023).

The addition of chatbots into instructive settings has demonstrated positive outcomes, fostering a helpful learning setting by delivering timely and precise information while alleviating managerial burdens. ChatGPT serves as an intelligent learning assistant, offering interactive support to learners regardless of time or location. It excels at answering queries, organizing information, aiding in exam preparation, and delivering response. Pupils can engage with ChatGPT to address emergent challenges, discuss problem-solving strategies, and enhance their reading and writing skills by analyzing generated explanations, solutions, and suggestions.

Acting as a mentor or tutor, ChatGPT contributes to heightened learner motivation, thereby enhancing the overall learning experience. In foreign language education, the application of ChatGPT, as explored by Ref., proves advantageous due to its ability to facilitate language practice through everyday conversations, offering learners continuous opportunities for language immersion. This approach helps overcome language learning anxieties, stimulates interest, and ensures a more engaging learning experience. ChatGPT's capacity to make accurate dialogues provides pupils with trustworthy examples of language usage. Research findings indicate that ChatGPT excels in generating easily understandable explanations and code, aiding in the comprehension of algorithmic concepts, code error identification, and optimization suggestions, ultimately saving time for learners (Kiryakova &Angelova, 2023).

With ChatGPT, teachers use less time making resources and can focus more on planning their courses and approaches to teaching. ChatGPT supports educators in coming up with ideas for seminars, workshops, lectures and hands-on teaching. ChatGPT is useful for less experienced teachers when developing new lessons and in making, reviewing and offering individual feedback on assignments. Because of its information management, ChatGPT saves its users time by providing directly relevant answers, unlike traditional search engines that display many irrelevant links in a long list. Because of this step, users reach the information review stage sooner and with less effort. Thanks to ChatGPT, students can grow their critical and creative thinking by exchanging texts about various subjects and supporting their points of view with suitable information (Kiryakova &Angelova, 2023).

Even though General Artificial Intelligence (GAI) has some positive aspects, several challenges require close attention. Many academics have pointed out that AI tools could be misused, students' integrity may be harmed and teachers cannot be effectively evaluated using AI. Managing AI in education has not been easy, since infrastructure is weak, the process is too slow and the curricula needed are not clear to all involved. In addition, a variety of disadvantages related to technology have been found such as bias and inaccurate data, stressed privacy, does not always explain well, often gives inappropriate answers, lower accuracy, fails to use common sense, struggles with emotional intelligence and risks for security issues. Dependence on GAI may decrease our ability to participate fully in critical thinking or solving problems and this can get in the way of gaining important abilities like creativity, innovation and critical thinking (Liu et al.,2023).

1.2 Research Objectives

- To explore the potential benefits of using ChatGPT in classroom.
- To identify the threats associated with the use of ChatGPT in teaching and learning.

3- Research Methodology

The researcher used qualitative research design for the study that was exploratory in nature because exploratory research provides better understanding of a subject that may not be well-defined or thoroughly explored. All the books and articles related to study that published in the years between 2018 to 2023 were selected as a Population. Twenty articles were selected as a Sample for content analysis. NVivo Software version 14 was used to select codes and references of selected articles for content analysis.

4- Data Analysis

Content analysis was employed to systematically analyze and interpret textual data extracted from selected articles. The codes found in research articles are identified using analysis manual and auto coding. The word clouds and tables are used to represent the numerous codes and themes for their interpretations.

Results on Benefits of using ChatGPT in classroom

The given Figure 4.1 of Word Cloud illustrates variety of Benefits of ChatGPT which are very effective in context of teaching and learning. The most dominant Benefits in this regard can be identified by examining the word cloud generated through NVivo14. The theme "Helping" explores how ChatGPT serve as tools for providing assistance and support in various aspects of education. The theme "Learning" delves into how ChatGPT impact the learning experiences of users. Engaging ChatGPT capture and maintain students' interest throughout the learning process. ChatGPT can be utilized for both formative and summative assessments. They can pose questions to students, evaluate their responses, and provide instant feedback. The assistance theme emphasizes the role of ChatGPT as virtual aides. They can offer immediate help by clarifying doubts, providing additional explanations, or directing students to relevant resources. ChatGPT enhance communication in education by facilitating seamless interaction between students and learning materials. ChatGPT can stimulate critical thinking by posing challenging questions or presenting complex scenarios. They guide students to separate, assess and put together information which stimulates the development of high-order thinking abilities important for successful learning. ChatGPT act as virtual guides, providing step-by-step instructions and guidance. ChatGPT contribute to generating interest in learning by tailoring content and interactions to individual preferences. It inspires and encourage students through positive reinforcement, personalized feedback, and goal-oriented messages. It assists students in planning their learning activities by helping them create study schedules, set goals, and organize tasks. It was found that this technology not only facilitates the delivery of educational content but also contributes to shaping users' levels of confidence. The theme "Proactiveness" in the selected files reflects the observed proactive engagement between users and ChatGPT in an educational context. It helps students in decision making process.

8	Teaching Method	4	9
9	Save Time	4	20
10	Attitude	5	58
11	Strategies	5	9
12	Digital Skills	5	32
13	Guidance	6	44
14	Personalize	6	54
15	Engage	6	50
16	Critical thinking	6	23
17	Assessment	6	34
18	Management	6	19
19	Communication	7	63
20	Motivation	7	19
21	Prompt	7	95
22	Support	7	44
23	Interest	8	46
24	Conversation	8	102
25	Training	8	35
26	Resource	8	52
27	Improve Performance	8	62
28	Assistance	9	94
29	Artificial Intelligence	9	118
30	Helping	9	164
31	User Experience	10	61
32	Teaching	10	132
33	Learning	10	249
34	Response	10	99

Table 4.1 presents a comprehensive overview of the various themes and their corresponding frequencies that emerged from the analysis of data related to the integration of ChatGPT in classroom. The data was coded using NVivo 14 software, and the table provides insights into the diverse ways users employ ChatGPT in classroom. Each row in the table represents a distinct theme, and the columns provide information on the number of files associated with each theme and the references supporting these findings. The analysis reveals that ChatGPT plays a pivotal role in enhancing learning experiences, with "Learning" emerging as the most referenced theme, reflecting its profound impact on educational processes. Other highly referenced themes, such as "Helping," "Artificial Intelligence," and "Conversation," highlight its capability to assist students, leverage AI to transform teaching methods, and facilitate meaningful interactions. ChatGPT's ability to personalize experiences and maintain student engagement is evident through themes like "Personalize," "Engage," and "Interest," which emphasize tailored interactions that capture attention and spark curiosity. Its potential to promote higher-order cognitive skills is demonstrated by references to "Critical Thinking" and "Problem Solving Skills," indicating its effectiveness in fostering analytical abilities. ChatGPT supports practical and organizational aspects of education, as seen in themes like "Assistance," "Support," "Guidance," "Planning," and "Management," which showcase its role as a virtual assistant for structuring tasks and providing actionable insights. The efficiency it offers, highlighted by themes such as "Save Time" and "Digital Skills," is particularly valuable in modern, technology-driven educational environments. Themes like "Teaching" and "Evaluation" underscore its utility in innovating pedagogical practices and assessing student performance effectively. ChatGPT also positively influences attitudes and motivation toward learning, as reflected in the themes "Attitude" and "Motivation," fostering a supportive and inspiring educational environment.

Results on the Threats of Using ChatGPT

Figure 4.2 illustrates of diverse threats linked to the implementation of ChatGPT in the context of education, particularly in teaching and learning environments. These threats are taken from selected literature. The significant risk associated with employing ChatGPT for educational purposes is evident in the word cloud generated by N-vivo 14.

5	Declining in High Order Cognitive Skills	4	25
6	Plagiarism	5	23
7	Biased Response	6	19
8	Unfair Learning Assessment	7	18
9	Lack of Expertise	5	13
10	Copyright issues	4	12
11	Knowledge Manipulation	5	12
12	Over-reliance	5	11
13	Potential Misuse	5	11
14	Unreliable information	3	7
15	Incorrect Citation	3	7
16	Accessibility	2	6
17	Job Replacement	1	6
18	Multilingualism	1	4
19	Commercialization	1	4
20	Logical errors	3	3
21	Lack Transparency	1	3
22	Lack of Emotional Interaction	3	3
23	Training Data Poisoning	1	3
24	Digital Divide	2	2

Table 4.2 presents a comprehensive overview of the various threats and concerns that are associated with the use of ChatGPT. These themes are emerged from selected sample. The data was coded using NVivo 14 software, and the table provides insights into threats user may face in using ChatGPT/ChatGPT. All themes are represented as treats in using ChatGPT for teaching and learning. Each row in the table represents a distinct theme, and the columns provide information on the number of files associated with each theme and the references supporting these findings. The table highlights a comprehensive range of challenges related to the integration of ChatGPT into education. These challenges are categorized into privacy and security, academic integrity, content accuracy, ethical concerns, and other implications impacting educational practices and equity. Privacy and security concerns emerge due to the need for handling sensitive student data, requiring institutions to adopt stringent cybersecurity measures.

Academic integrity issues highlight the potential misuse of ChatGPT by students to engage in dishonest practices, necessitating clear policies and monitoring. The risk of inaccurate information underscores the importance of regular updates to ensure the reliability of educational content provided by ChatGPT. Ethical concerns include bias and discrimination, which may arise from flawed training data, emphasizing the need for ethical programming. A decline in high-order cognitive skills and over-reliance on ChatGPT point to the importance of fostering independent thinking and problem-solving among students. Additionally, issues such as plagiarism, logical errors, and incorrect citations underscore the need for institutions to educate students on responsible ChatGPT usage and implement checks to maintain academic integrity. Practical challenges include accessibility barriers for students with disabilities and the digital divide, which limit equitable access to these technologies. Furthermore, lack of transparency and logical errors in ChatGPT systems raise accountability and quality concerns, while the lack of emotional interaction highlights limitations in replicating human empathy and support. Broader implications involve potential job replacement fears among educators, the commercialization of ChatGPT compromising educational priorities, and multilingual challenges requiring investment in linguistic inclusivity. Ethical considerations extend to knowledge manipulation and training data poisoning, emphasizing the need for vigilant oversight in chatbot development.

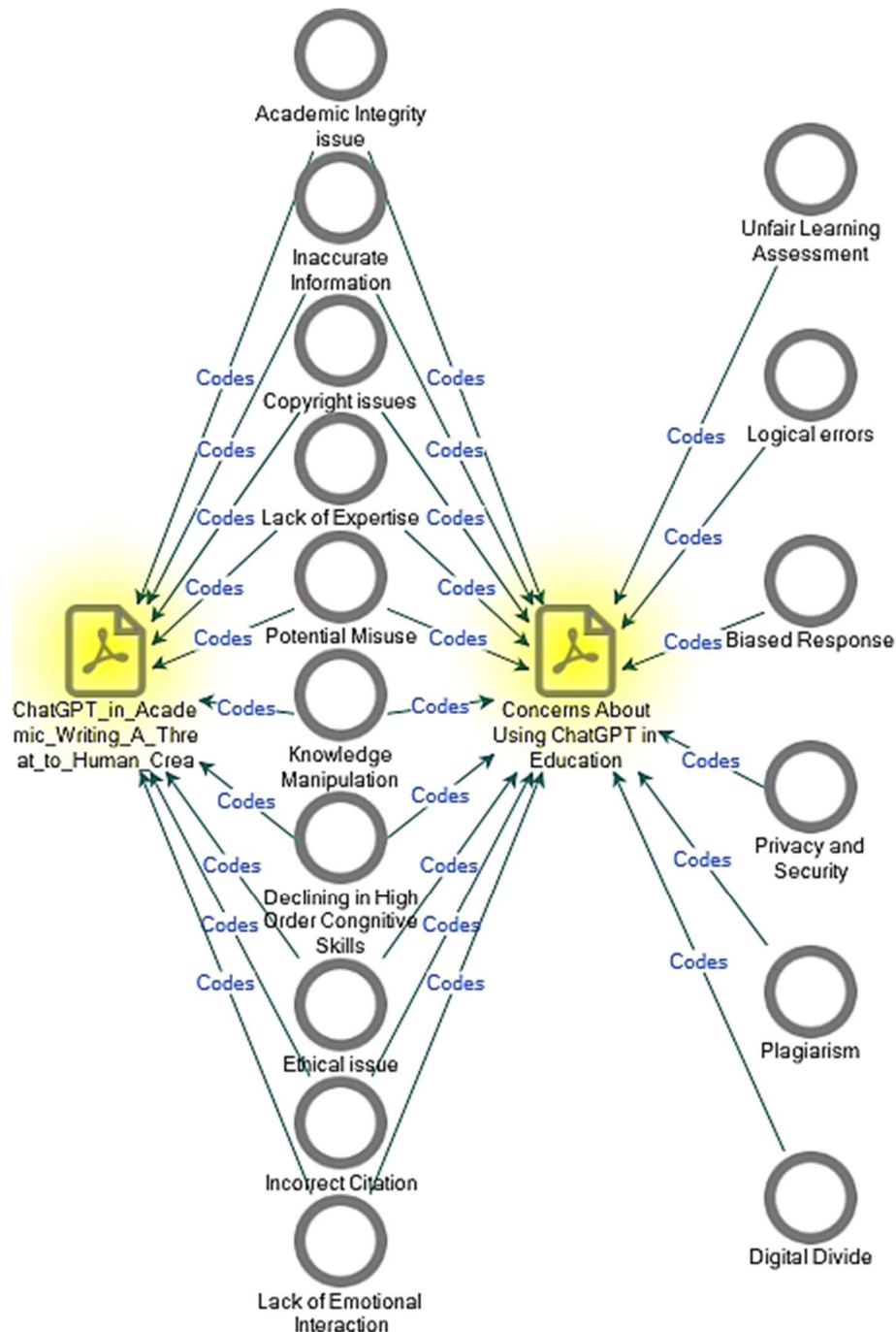


Figure 4.3 Comparative Analysis of Two Articles Related to Threats of Using ChatGPT

Figure 4.3 representing the similarities, differences and relationship between coded themes. This comparative picture is taken from NVivo 14 software. In the picture themes of two articles are

compared. These articles are related to threats and challenges in using ChatGPT for educational practices. It can be seen as ten themes of both articles are similar whereas one article has some differences which are shown in the right side of the picture.

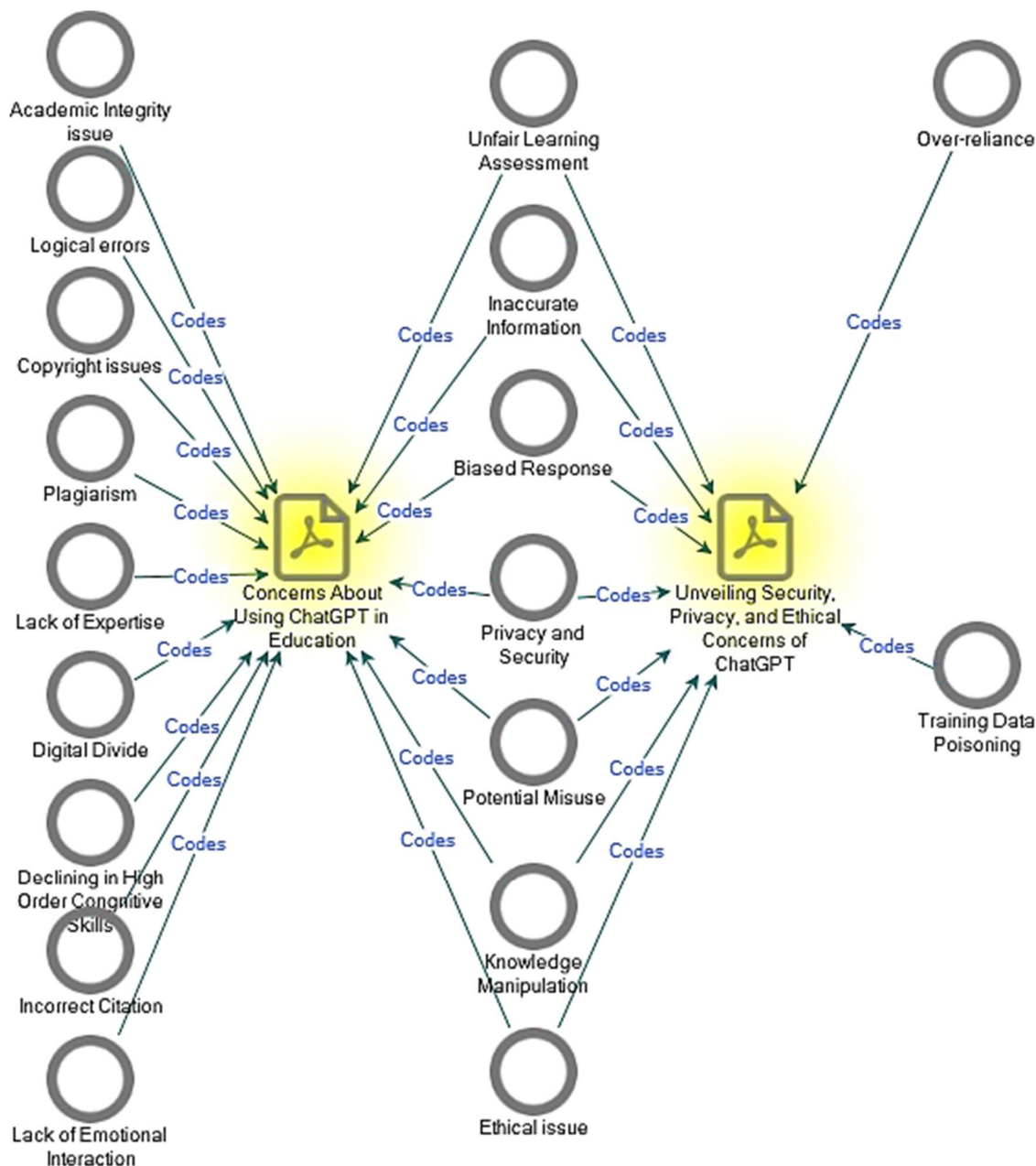


Figure 4.39 Comparative Analysis of Two Articles Related to Threats of Using ChatGPT

Figure 4.3 representing the similarities, differences and relationship between coded themes. This comparative picture is taken from NVivo 14 software. In the picture themes of two articles are compared. These articles are related to threats and concerns in using ChatGPT in teaching, learning and research. It can be seen as 7 themes of both articles are similar whereas left article has more differences as compare tow second article.

Conclusion

The study concluded that ChatGPT are valuable addition in contemporary era of education. ChatGPT improve students' participation and make them active member by providing them support in their learning process. ChatGPT are significant tools of AI as these tools provides quick response to students' questions. ChatGPT change difficult contents into clear and easy language. They have ability to provide individualized instructions. ChatGPT add gamification element to education. Chatbot engaged users in learning through healthy interaction. It eliminates boring element. Users are motivated when they use ChatGPT in their learning and teaching process. It is also found that ChatGPT are available 24/7 for the users. They can take help at any time when they needed. ChatGPT are like personal assistant. It was also found that ChatGPT assists teachers in assessment process. They can develop assessment plans through ChatGPT. It has ability to assess the performance of students. ChatGPT is very significant. It makes learning more efficient. ChatGPT provide knowledge of latest learning and teaching strategies to users. It was seen that ChatGPT is user friendly. Users can easily interact with this chatbot. ChatGPT have potential to save users' time. It was seen that user feel more engaged in learning when they use ChatGPT. While the study highlights the positive impacts of ChatGPT on student behavior, it also underscores several critical threats. These include the dissemination of inaccurate information, challenges to academic integrity such as plagiarism, over-reliance on ChatGPT, potential misuse, manipulation of knowledge, and a decline in high-order cognitive skills. Noticing and managing these risks helps make sure ChatGPT is properly and successfully part of the educational environment. The study concludes that universities should consider ways to oversee ChatGPT's use in their teaching efforts. It would also be useful for universities to train their stockholders on how to use ChatGPT so that they can respond well to challenges in such domains.

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