Exploring The Perceptions And Experiences Of Artificial Intelligence Based Chatgpt

Application Among University Students: A Qualitative Study

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Abstract

The current paper aims to emphasize the perceptions and use of artificial intelligence tools such as ChatGPT among students of higher education institutions. To achieve the purpose of study, qualitative study design was implied. Semi-structured interviews were conducted among students of four universities located in Pakistan. Data were analyzed using Nvivo software, version 14 and thematic analysis was conducted to identify major themes of study. Results showed 5 major themes reflecting the objective of the current study and indicate students' perceptions, usage, advantages and disadvantages of the artificial intelligence tools used for their study. It was found that mostly students used ChatGPT to take help for their academic achievements. The current paper address the emerging research need to comprehend role of AI technologies such as ChatGPT in improving students' academic performance. This article contributes towards the body of knowledge through exploring ideas regarding ChatGPT usage among higher education institutes.

Keywords: Artificial Intelligence, ChatGPT, Higher education, Qualitative study

1 Introduction

The use of Artificial Intelligence (AI) is growing at a rapid pace in various disciplines, specifically among computer science and engineering. It is also contributing to the discipline of psychology, healthcare, business and in education ((Tahiru, 2021; Zawacki-Richter et al., 2019). AI based tools like ChatGPT is widely used in academia and advantageous for students. It is a tool developed by OpenAI and have the ability to answer wide range of text based requests (Lund et al., 2023). The use of ChatGPT in education needs to be studied as till now scant literature have been explored. Thus, it is dire need to understand how AI tools are contributing towards students' learning, improving the quality of education and the way it facilitates acquisition of knowledge and skills (Zawacki-Richter et al., 2019; Lund et al.,

2023). It is equally vital to study the frequency and popularity of AI tools usage among Pakistani students. There is scarcity of research on this topic in developing countries, although much research has been done so far in western countries (Ali et al., 2022). This article is intended to get the idea about the importance and usage of AI technologies specially ChatGPT in higher education institutes (HEIs) of Pakistan and to explore the student's perceptions about new ways of learning through these technologies.

This paper will broaden our viewpoint regarding the perception and importance of ChatGPT among HEI's by employing a qualitative design to better approach the essence of such AI technology usage in academia.

The major questions of this research involves:

1. How do students perceive the use of ChatGPT applications in their learning experience?
2. How do they perceive the ease of use and accessibility of ChatGPT applications have impact in their academic performance of students?
3. What are the challenges and opportunities of using ChatGPT applications in their education?
4. How students perceive the ethical consequences of using ChatGPT applications in higher education Institutions?

2   Literature Review

Research among universities' and degree-awarding institutions (DAIs) is vital and contributes significantly to higher education and towards nation's development. It encourages faculty professional excellence for the provision of quality education (Javed et al., 2020). In this regard, long-term survival is the main goal of higher education institutes i-e., universities which must adapt to the most recent wave of business-changing strategies, technological advancement, different working methods, and quick change in the learning culture (Tibbs, 2011; Tidd & Bessant, 2020). The learning and change processes in an organization are inextricably linked but there is lack of literature review research in this regard (Ho & Wang, 2015; Waddell, 2017). An organization can have a competitive advantage if prioritize learning, which is a major component of organizational change processes (Tidd & Bessant, 2020). Longo in his study conducted in 2019 stated that one of the fields with the quickest growth rate is artificial intelligence, which is upending numerous industries. Originally intended primarily for computer scientists and engineers, it has been broadening its boundaries and empowering many other disciplines. However, education is one of the fields where artificial intelligence tools have not yet been properly

investigated and utilized. Scholars, teachers, and practitioners in this field use a variety of research techniques to examine how various instructional strategies affect student learning and to comprehend how students pick up skills and knowledge (Bates et al., 2020). The focus of this study is on an artificial intelligence-based tools (AI) like ChatGPT in HEIs as now every industry is being affected by artificial intelligence (Ahmed et al., 2021). Although Pakistan is now progressing in its educational reforms, there are still some issues that are impeding the development of learning organization disciplines in HEIs (Cierna et al., 2017). According to Ahmed et al 2023, the Pakistani government has so far established nine national educational strategies, but it has not yet been able to achieve the desired results. All of the difficulties stem from a lack of materials, money, bad application, and an unsuitable learning environment (Ali et al., 2022).

2.1 Artificial Intelligence in higher education

Artificial intelligence refers to intelligence displayed by robots as opposed to humans (AI). Animal or human intelligence exhibits consciousness and emotions, but the other lacks these qualities. In 1955, John MsCarthy coined the phrase "artificial intelligence," and he defined it as a machine which can behave intelligently just like human beings are. So it has been described as devices that are capable of carrying out mental tasks like learning and problem-solving in a way that is similar to how humans think (Ouyang et al., 2022).

Study conducted by Ahmad et al (2023) found out that the field of education uses a wide range of technologies, including artificial intelligence (AI). Education employs a variety of AI technologies (Nemorin et al., 2022). Mainly comprises plagiarism detection, exam integrity, Chabot specially ChatGPT for enrollment and retention, transcription of faculty lectures, enhanced online discussion boards, analysis of student success metrics, and academic research (Ade-Ibijola et al., 2022; Nakitare and Otike, 2022). In order to measure social and emotional development, Education Technology (EdTech) organizations are now using emotional AI (McStay, 2020). The term "emotional AI" (AI) refers to a combination of artificial intelligence, affective computing techniques, and machine learning. More than any other invention from a previous century, artificial intelligence (AI) has the capacity to change our future. Anyone who does not comprehend it will quickly feel left behind as they awaken in a technologically advanced world that increasingly seems magical (Maini and Sabri, 2017). The current pandemic has shown how important AI technology is, and this is without a doubt. It can be crucial in teaching, many scholars concur (Sayed et al., 2021).

However, this does not guarantee that it will always be advantageous and free of moral dilemmas (Dastin, 2018). As a result, many researchers concentrate on its creation and application while keeping in mind their ethical obligations (Justin and Mizuko, 2017). AI has uses in a variety of fields, including education. Tutoring, educational support, feedback, social robots, admittance, grading, analytics, trial-and-error, virtual reality, etc. are only a few examples of the numerous AI uses in education (Tahiru, 2021).

By giving educational institutions, teachers, and students numerous opportunities to continue their educational processes, AI has further strengthened its role in education, especially during the most recent COVID-19 pandemic (trbo, 2020; Al-Ansi, 2022; Akram et al., 2021). Chatbots like ChatGPT, virtual reality, personalized learning systems, social robots, tutoring systems, and other AI applications and technology help the educational environment address contemporary difficulties and mold the educational and learning processes (Schiff, 2021). Additionally, it is assisting with administrative responsibilities including record-keeping, admission, grading, curriculum development, and so forth (Andreotta and Kirkham, 2021). One may say that AI is expected to have a stronger impact on, enter, and alter the educational process from both the institutional and student sides (Xie et al., 2021).

3 Methodology

3.1 Research design

The purpose of the study is to explore the perception and importance of AI technologies among students of Pakistan. For this purpose, an exploratory qualitative design (Meriam, 2009) was adopted to capture the viewpoints of students who are using such technologies and to know its impact on their academic life.

3.2 *Sampling strategy*

Purposive sampling is used for the current study which is the most appropriate sampling strategy for qualitative studies as suggested by Patton (2002). Students from various universities are selected based on their ability to explain the usage of latest AI technologies such as ChatGPT.

3.3 *Data collection techniques*

Data were collected from 4 major universities of Islamabad/Rawalpindi using semi-structured interviews. Questions were open ended to get maximum information. Students were informed about the purpose of study before the interview. They were first asked to

provide their demographic information. Later, questions related to study were asked. Interviews took place within the university and students were asked before about the free time they have for interviews. Each interview lasts for about 20 to 40 minutes and questions were asked related to their AI usage. Interviews were voice recorded and permission to record was taken before the formal interview. The voice recorded interviews were then transcribed into Microsoft word format for analysis.

3.4 Data analysis

Thematic analysis was conducted using Braun and clark, (2006) six step process. First, the transcribed data was read again and again to get familiarization. Secondly, initial coding was done by combining similar concepts. Third, similar concepts were again categorized and sorted by looking at the initial codes. Fourth, themes were reviewed and refined. Fifth, naming and finalizing themes. Sixth, final reporting of data in the form of themes. Further, data were analyzed using NVivo software 14 which helps to analyze and manage data efficiently.

4 Results

Interviews were taken from total 13 students from total four universities. The demographic information of the participants involves 77% male and 23% females given the idea that mostly males were involved in using ChatGPT. 39% of the respondents were between the ages 19-24, 46 % were 22-24 having maximum contribution and only 15% were between age ranges 25-27. Regarding education is concerned 23% were having bachelor's degree completed, 62% were having intermediate degree but enrolled in bachelors program of university and 15% were having master's degree. Majority of the students were unemployed (46%), 23% have setup their own work and 31% were employed and continuing their education as well. As far as specialization is concerned 54% were business students, 16% were from computer science department, 15 % belongs from mass communication and 15% from software engineering department.

4.1 Themes

The detailed thematic analysis revealed few broad categories involved the AI tool-ChatGPT perceptions, its usage, Ethical issues in using ChatGPT and academic performance improvement due to ChatGPT. These categories are refined and have few sub-categories resulted in data analysis process through using NVivo 4. Participants' quotes have been provided to support the evidence for each category.

Thematic development of the categories presented in below table.

Table 1. Thematic development

Themes	Sub-themes	Supporting evidence by Participants' quotes
AI/ChatGPT Perception	AI tools	"as AI tool it has been widely used all over the world and it contains all type of the data. So it is important and it depends on us that what data we want from it. So we have to look for the type of data it is providing"
ChatGPT usage	Ease of use of ChatGPT	"It is quite easy to use like you just have to tell about a question that what information you require so write a topic name and you get details about it easily"
Academic improvement due to ChatGPT		"there is improvement as I usually don't understand concepts in class so when I went home and see lecture again, I cannot understand, at that time I use it and ask questions from it and get relevant answers. That how I get help in my studies"
Advantages of ChatGPT		"due to the arrival of ChatGPT which I am using now is much beneficial, you just have to command and it gets your work done in no time"
Ethical issue is using ChatGPT	Disadvantage of ChatGPT	"its disadvantage is that it is unethical to use because you depend on it too much that whatever your task or assignment is, you do so through it by copy pasting"

4.1.1 Theme 1: AI and ChatGPT Perceptions

Theme 1 depicts the students' perceptions regarding the artificial intelligence (AI) and the various tools they use for their studies. Students' main focus was on the use of ChatGPT because they were taking help for their studies from it. Following quotes represent the ideas and concept about AI based ChatGPT and other applications:

"ChatGPT is an artificial intelligence tool and have data till 2021 in that. We get help from it and it saves our lot of time...we simply write and ask a question just like we ask from any person, it gives us answer as a human. We get relevant answer easily for example if we

require just 1 paragraph for the assignment then we ask and write query that we require only 1 paragraph and it will give us" (ID 12)

"ChatGPT is a form of google. In google, we get the information after visiting various websites. But in ChatGPT you get the overall answers. You don't have to visit various websites to get the relevant answer you need. You just get the answer in one click. You write the question and get the answer with proper reference" (ID 13)

"…as AI tool it has been widely used all over the world and it contains all type of the data. So it is important and it depends on us that what data we want from it. So we have to look for the type of data it is providing" (ID 2)

"ChatGPT is AI basically. You can solve any academic problems as well as personal problems" (ID 5)

"It is and AI tool and introduced on December 10, 2020, I got to know about it in March, 2023 from one of my friend. I have been using it since last month and it help me to generate different kinds of business modules and innovative business ideas" (ID 9)

4.1.1.1 AI tools-ChatGPT

When asked about the AI tools students use for their studies, they describe various forms of AI tools which shows that most of them have advanced knowledge regarding AI usage.

"I have got to know about ChatGPT and Mid journey, copyright AI and different kind of paraphraser and picture generating tools as well" …. "I am using ChatGPT, hashtag generators and currently I am using Instagram account marketing and also studying digital marketing on my own so it also help me to come across other new AI tools which can be used and to enhance the other marketing fields" (ID 9)

"In designing, we use photo and picture making tools like Tome, for e mail generating, social media content making or website making, we use ChatGPT" (ID 1)

"Yes I use few AI tools for presentation making such as Quino and Tome as well. Other than that for more data and knowledge I use ChatGPT… Mid journey is also an AI tool like if we want to insert some picture, we type the data and it automatically converted into pictures" (ID 11).

"..I am using Grammarly form last 2 years and it is very helpful for me so I think everybody should use Grammarly which is very productive tool and correct your vocabulary and tense. So I use this tool" (ID 3).

4.1.2 Theme 2: ChatGPT usage

Theme 2 representing the use of different AI tool like ChatGPT by the students for their studies as well as for their own work. Following quotes show the ease of use of ChatGPT.

"Before this we use google, on google we don't found whole information about the topic but in ChatGPT, we give command to find some topic and it will give all the information about that" (ID 11)

"It is easy and simple to use as we just write a question and it will answer us. For example, if I wanted to make a procedure in accounts like transactions, ledger or income statement. So for that I just ask and write transactions to it and it makes a journal for me" (ID 12).

"Yes if we get any assignment to do from teacher or if we need to do a project then we go and search in ChatGPT and get the answer accordingly. Then, we interpret the answer in our own words. In ChatGPT there is one new innovation called Magic Slides. You just write the topic and it gives you images as well as the content of the topic" (ID 13).

"I am using content writing and I am also designing templates on Quino which is used most probably in designing different projects and I also prepare presentation slides on Quino. For creating different business models I use different soft wares as well as for getting the idea of new products, business models so I use Pinterest as well" (ID 9).

4.1.3   Ease of use of ChatGPT

"It is quite easy to use like you just have to tell about a question that what information you require so write a topic name and you get details about it easily" (ID 4)

"So it is difficult for us to write content in our own wording. That's why we use ChatGPT because it provide us the right content in easy wording"…"Google have very vast content and use difficult language which is sometimes difficult to understand. That's why this AI tool is available in easy wording and understandable" (ID 2)

"Yes it is much user friendly. You just connect your google account with it and command anything which you want" (ID 5)

4.1.4   Theme 3: Academic improvement due to ChatGPT

Majority of respondents agree that use of ChatGPT improved their academic performance and save their time when facing tight deadlines to submit assignments. It also provides them relevant an exact information they need regarding a topic.

"there is improvement as I usually don't understand concepts in class so when I went home and see lecture again, I cannot understand, at that time I use it and ask questions from it and get relevant answers. That how I get help in my studies" (ID 6)

"It (ChatGPT) has been of a great support for us in our studies and for doing assignments and projects. We easily collect and manage data and information for our assignments to submit it timely" (ID 8)

"Our course content easily available from that and it is beneficial because it give us information in easy language which is understandable to all of its users. So whatever knowledge I need, it is easily available and accessible in easy wording so it is helpful" (ID 2)

"Basically, ChatGPT provide the information and details and make it easy for anyone to get different type of information easily. So it will also help in future to make assignments and quizzes" (ID 1)

"I am currently using Artificial intelligence tools like ChatGPT to enhance my study skills like whenever I find any difficulty in understanding some topics, I use ChatGPT to gain some information I needed" (ID 11)

" it is beneficial for study that by using it we can manage time well. It answer us about queries to the point and relevant" (ID 12)

"sometimes students sometimes got stuck and unable to understand anything and google also don't help much so they get some idea through ChatGPT that how to do a certain task and get the direction" (ID 5)

"It is very reliable and helps to save our time and gives us the same type of vocabulary what we are asking like if I talk about myself, I am a business student so it will answer my question in the terminology which we ask...so it is very reliable to use" (ID 9)

4.1.5 Theme 4: Advantages of ChatGPT

"It's more informational like visiting websites for information, like you'll get different information not relating to our main course that we are searching so in ChatGPT we directly go to the main objective of the course where we get the study material" (ID 1)

"On the one hand it is appropriate as when there is more burden on student then he/she didn't have any option but to timely submit assignment through any means so that's why it is good to use ChatGPT" (ID 4).

"I face difficulty in start but due to the arrival of ChatGPT which I am using now is much beneficial, you just have to command and it gets your work done in no time. It reduces the time and effort which previously used hours to do...as I have already told you, that is difficult to get data from already existing research, that's why I use ChatGPT to make the work easy and short" (ID 5)

"Yes definitely it helped me a lot as where ever I got stuck and think that I need a broader view and books also don't help you out in that. In such situation you get data from only giving one command" (ID 7)

4.1.6   Theme 5: Ethical issue is using ChatGPT

Theme 5 involved the ethical concerns using AI tools like ChatGPT. Students presented their viewpoints regarding the unethical use of these tools which also highlights its disadvantages. Their major concern was hindrance in creativity as students just copy paste material and not use their minds.

"students of computer sciences and software engineers use coding from it and making different soft wares to hack different systems and the main ethical issue is that students are not gaining information rather than just copy pasting from that to solve their assignments. So it is a bad thing to just copy pasting" (ID 11)

"teachers assign us work which can improve our knowledge but it is unethical that we cheat and copy paste things from ChatGPT and submit our assignment" (ID 12)

"its disadvantage is that it is unethical to use because you depend on it too much that whatever your task or assignment is, you do so through it by copy pasting" (ID 4)

"we can get coding of from ChatGPT....people of IT and computer sciences who have made their own apps because their coding is already there in ChatGPT, so it's a kind of theft. So current generation should not use it like that and shouldn't go for data theft rather they should take only data and then modify or transformed it in their own way for innovation and creativity, they are making assignments and presentations by directly copy pasting material and don't use their brain so this is unethical" (ID 7)

4.1.7   Disadvantage of AI

"there is disadvantage also because you get so much used to it that whatever assignments you have to prepare, you used ChatGPT for it and copy paste material and don't use your own creativity" (ID 4)

"its major disadvantage is that before using it, I used my mind very well. I used to think and creative ideas comes to my mind. But now if I had to do an assignment, my mind is totally dependent on ChatGPT. So now ideas don't come to my mind and I fully dependent on it. So this is its major drawback" (ID 12)

"if you are not interpreting what you have get from ChatGPT and if you are just copy pasting it then it is disadvantageous" (ID 13)

"when students use ChatGPT, they get data easily and because of that their thinking abilities got effected" (ID 8)

"Students use it by completely relying on it which is not an ethical thing because when we are studying something" (ID 9)

The above mentioned themes highlighted the perceptions and usage of ChatGPT by students of higher education. It is clearly reflected that ChatGPT help improve their knowledge and education which is advantageous but side by side it also have repercussions if used negatively by just copying and pasting material provided. The model below showing the themes and impact of ChatGPT on student's academic performance.
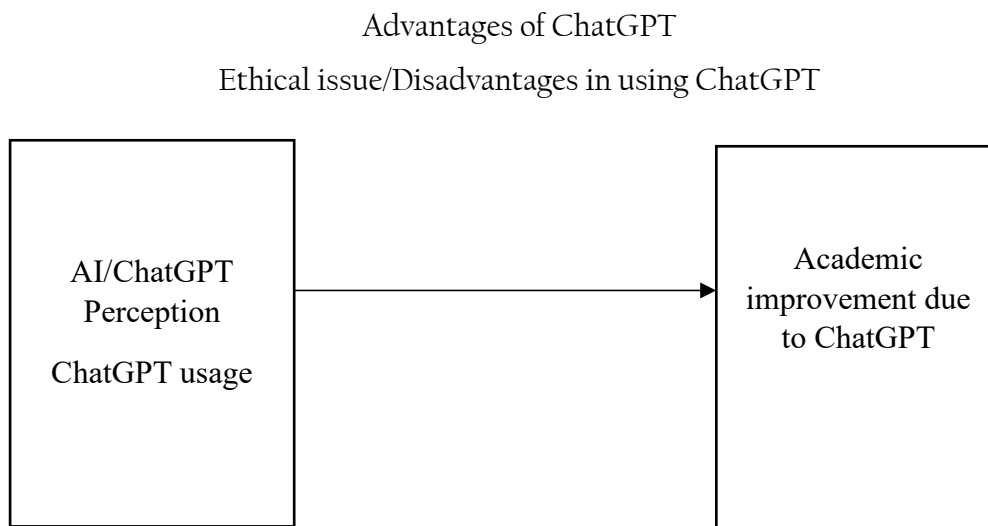
Advantages of ChatGPT

Ethical issue/Disadvantages in using ChatGPT

AI/ChatGPT Perception

ChatGPT usage

Academic improvement due to ChatGPT

Figure 1: Conceptual Model of ChatGPT

The word cloud below representing the frequency of terminology used by students to describe artificial intelligence and its usage.
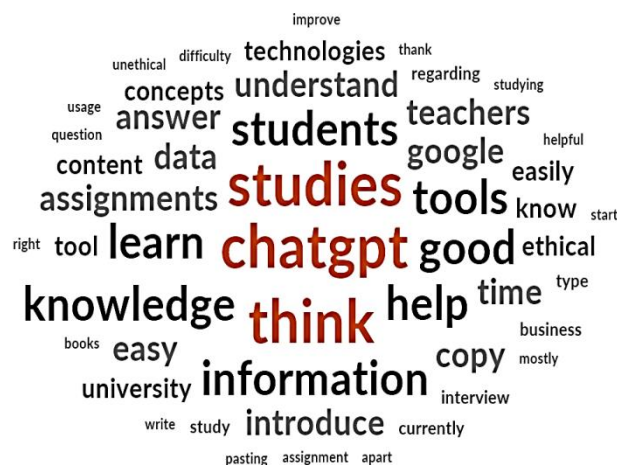
Figure 2. Word cloud

5   Discussion

The purpose of this research is to help develop understanding of the technological advancement in academia in the form of artificial intelligence. Along with other fields now AI technologies play a vital role in Higher education and help students and faculty members in numerous ways (Bates et al., 2020). Therefore, to understand this phenomenon in a better way, the present study has been conducted for identifying the students' perceptions regarding the use and importance of AI applications. Results indicated that students majorly rely on ChatGPT for completing their academic tasks assigned to them. Thematic analysis resulted in five major themes after having in-depth analysis of the interview data taken from students of different universities. These included, AI-ChatGPT perceptions, ChatGPT usage, Performance Improvement due to AI tool ChatGPT, Advantages and disadvantages of ChatGPT and Ethical issues in using ChatGPT.

Students' experiences reflected during interviews and they majorly perceive artificial intelligence as very useful tool for doing their assignments and projects. ChatGPT impact their academic life and improve their ability to comprehend complex concepts which were difficult to understand. They also gave their opinion about the use of google before using ChatGPT which they think is now outdated and taken much time to search their query. The second theme generated highlight the AI usage which is aligned with previous work (Kuleto et al., 2021). Most of the students have idealize the use of ChatGPT which they think is much

easier to operate and save lot of their time by providing relevant data according to their field of study. The sub-theme ease of use of ChatGPT emerged due to the students' opinion regarding easy login to the application and user-friendly interface. The third theme involves improvement in their academic performance which is obvious as per students' remarks and aligned to previous research (Hooda et al., 2022). They were of the view that their academic performance improved as their complex queries are just one click away in ChatGPT. They submit their tasks on time and study load can easily be managed during whole semester. In this regard students have quite positive impression of the AI application which constituently described in fourth theme of study. Students' felt that it's advantageous for them as topics are now easily understandable and study material also easily available.

However, along with the arguments of advantages, students also expressed their concerns regarding disadvantages of ChatGPT as suggested by Brendel et al., 2021). Most of the students recommended that it is unethical to use ChatGPT because study material is directly copy pasted for assignments. So this is the major disadvantage of using ChatGPT that students don't use their brains and their thinking abilities are being affected. As there is no creative writing because everything is available through these AI applications. Students also suggest that there should be limited usage of ChatGPT just for taking help in understanding concepts being taught but not for copy pasting and strict actions should be taken by the teachers to cater this issue.

5.1 Theoretical and Practical Implications

This study contributes towards the body of knowledge by expressing the use AI applications in academia as there are scant studies in which qualitative exploration have been done. The current work shed light on the students' opinion about usage and importance of ChatGPT which is a worth contribution among HEIs. Present research provides insights to students about the merits and de-merits of using ChatGPT and to avoid its excessive use. The ethical implications have also been presented. This study guides teachers and administration of universities to check and balance the means through which students complete their academic obligations. Creative writing skills should be given more importance in this regard. The management of universities specifically should be involved and such policies should be formulated which puts a limit to unethical use of AI applications for study purpose.

5.2   Limitations and future research directions

The current research work is not free from limitations which should be avoided in future studies such as only students perspective have taken into account for this study. Future studies should explore it from the teachers' perspectives as well. The present study used only qualitative research design to get insights in depth. Based on these findings, future studies should also use empirical data to support the findings in their context thus, to broaden the literature on artificial intelligence

5.3   Conclusion

To conclude, the study tries to explore the concept of artificial intelligence from students' of higher education. Using thematic analysis, results revealed the pivotal role, ChatGPT plays in academia and have beneficial outcomes for study. Ethical perspectives regarding application of AI tools also shed light on the disadvantages of the latest technologies being used in HEIs. So a balanced approach in using ChatGPT have been recommended for students and suggestions for administration have also been given in this regard.

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