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Enhancing Higher Education Pedagogy with ChatGPT: Leveraging the Power of Generative AI

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ABSTRACT

Background. The prevalence of burnout among students at madrasas has reached a critical level, highlighting the need for efficient administration of counselling services to tackle this issue. Understanding how counselling may mitigate student burnout is crucial for improving educational achievements and promoting student welfare.

Purpose. This research investigates the efficacy of counselling service administration in mitigating burnout among students in madrasas. The study aims to analyse the effects of these services and provide not just valuable insights, but practical, actionable suggestions for enhancing counselling practices in educational institutions, making the research directly applicable to the field.

Method. This research employs a qualitative approach, using a case study technique to assess the function of counselling services in the school setting. Data were gathered via comprehensive interviews, participatory observations, and documentation studies involving students, counsellors, and instructors. Thematic analysis was used to identify the primary themes that arose from the data.

Results. The study results indicate that doing a thorough evaluation of student requirements has a substantial impact on reducing the likelihood of burnout by facilitating the development of more suitable remedies. Appointing qualified counsellors improves the efficacy of counselling services by fostering a more profound comprehension of student concerns. Continuous mentorship programs provide crucial emotional and practical assistance, aiding students in cultivating appropriate coping mechanisms. Moreover, including student input enhances the quality of counselling services.

Conclusion. This research provides a substantial advancement in understanding counselling service administration. It introduces intervention models that may be used in different educational institutions to address student burnout effectively. The results provide pragmatic advice for other academic environments, including strategies to improve their counselling services and effectively tackle student burnout.

KEYWORDS

Artificial Intelligence, Conseling Services, Student Burnout.

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INTRODUCTION

Generative AI in Education

Generative Artificial Intelligence (AI) in education is a rapidly growing field in educational technology (Zawacki-

Richter et al., 2019; Crompton & Burke, 2023; Chiu, 2024).Potential advantages in higher education encompass the facilitation of personalised learning, improvement of language practice (Adiguzel et al., 2023; Bozkurt, 2023), streamlining the learning process for students, aiding in academic tasks and assignments, and delivering tailored feedback (Crawford et al., 2023). AI educational applications include personalised learning systems, intelligent tutoring systems, natural language processing, assessment automation, technology-based learning platforms, and teacher-student collaboration (Escotet, 2023; Adiguzel et al., 2023; Kamalov et al., 2023; Bahroun et al., 2023). These apps can transform conventional teaching and learning approaches by providing individualised education, student assistance, immediate feedback, automated grading, and content creation (Escotet, 2023; Adiguzel et al., 2023).

Growing Interest and Potential of ChatGPT

Recent evaluations of artificial intelligence (AI) in higher education demonstrate an increasing fascination with its pedagogical uses among the academic community (Chen et al., 2020; Chen et al., 2022; Crompton & Burke, 2023). The need to do a more thorough examination of the impact of AI in higher education, with a focus on pedagogical and social factors and technological issues, has been highlighted (Crompton & Burke, 2023; Bearman et al., 2023). ChatGPT, a sophisticated AI chatbot released in November 2022, has quickly garnered attention and ignited conversations in the realm of higher education (Strzelecki, 2023; Strzelecki & ElArabawy, 2024; Dai et al., 2023; Hsu & Ching, 2023). ChatGPT, a cutting-edge generative AI tool, is anticipated to need a reassessment of educational procedures (Trust et al., 2023). ChatGPT has shown remarkable competence in producing fresh material and providing replies that resemble a person's (Grassini, 2023). It provides several advantages, such as customised learning experiences, editing, summarising, language translation, research support, creating literature, and grading and evaluation (İpek et al., 2023; Baidoo-Anu & Owusu Ansah, 2023).

Benefits and Challenges of AI as a Research Assistant

Studies have identified various benefits of using a research assistant, including assisting with literature reviews, refining research questions, generating concise abstracts, finding relevant academic sources, and summarising research papers (Imran & Almusharraf, 2023; İpek et al., 2023). Nevertheless, AI and ChatGPT in higher education present challenges and concerns, such as the risk of academic dishonesty in assignments, excessive dependence on AI tools like ChatGPT (Crawford et al., 2023), ethical and privacy dilemmas (Zhang & Aslan, 2021; Adiguzel et al., 2023), and student apprehension regarding future career prospects (Chiu et al., 2023). ChatGPT raises specific problems about the dependability and precision of information, possible biases in data, and the preservation of academic integrity (Adiguzel et al., 2023; İpek et al., 2023).

Aim and Scope of the Study

This work investigates the potential of using generative AI, ChatGPT, as a research assistant tool to improve pedagogical practices in higher education. While the use of AI in higher education has been previously explored (Zawacki-Richter et al., 2019; Zheng et al., 2023), the release of ChatGPT at the end of 2022 marks a noteworthy advancement. This project aims to fill the research vacuum highlighted in a recent review (Crompton & Burke, 2023), which pointed out the scarcity of research on the use of AI in supporting instructors in higher education. This study adds to the continuing discourse over the potential of artificial intelligence (AI) in higher education and the function of ChatGPT as a research assistant. It seeks to generate global attention, considering the expected influence of AI on educational methods. This study primarily examines generative AI and ChatGPT, using the words "Generative AI" and "AI" interchangeably. Generative AI pertains to algorithms that generate novel material using learning parameters like text, graphics, or music.

Generative AI models like ChatGPT are trained using online resources, published texts, and pictures. These models may create answers in different conversational or academic styles, including journal articles and academic presentations (Boscardin et al., 2024). ChatGPT, an advanced language model created by OpenAI, is intended to imitate human conversation using text or voice. It can create natural language answers to user inputs (Rudolph et al., 2023). The model is trained on extensive datasets from various sources and can generate ideas and provide recommendations (Dai et al., 2023).

RESEARCH OBJECTIVES

The main goals of this study are to examine artificial intelligence's capacity to improve teaching methods in higher education and to use ChatGPT as a research assistant tool in this investigation. The purpose of these aims is to provide valuable perspectives on how artificial intelligence might revolutionise educational approaches and enhance academic endeavours.

- To explore approaches for using artificial intelligence to enhance teaching techniques in higher education.
- To use ChatGPT as a research assistant tool for the above inquiry.

RESEARCH QUESTIONS

The research questions driving this study is:

Research Question 1: How can AI be harnessed to enhance pedagogical practices in higher education?

Research Question 2: How can AI assist university tutors and students?

RESEARCH METHODOLOGY

Technique Utilized

The research employed a qualitative methodology through interviews conducted with ChatGPT. This method is groundbreaking, as few studies have utilized ChatGPT as an interviewee rather than human subjects (Iskender, 2023; Uludag, 2023). Iskender (2023) focused on questions about the tourism industry and education, showcasing the innovative use of ChatGPT as an interviewee. Uludag (2023) similarly examined ChatGPT's creativity in psychology and found its outputs to be on par with those generated by human experts in specific domains. These findings are supported by GPT-3.5, one of the most advanced large language models (Trust et al., 2023). According to GPT-3.5 (July 7, 2024), "ChatGPT is a conversational artificial intelligence (AI) model developed by OpenAI designed for natural language understanding and generation in conversational contexts. It can be used for various natural language processing tasks, including answering questions, generating creative content, assisting with language-based tasks, and engaging in interactive conversations with users" (output of query "What is ChatGPT?" on 07-07-2024).

Several studies have shown that ChatGPT has been employed as a tool to aid in idea and content generation (Zhu et al., 2023; Hsu, 2023; Sallam, 2023), paragraph rephrasing, and reference finding (Abdelhafiz et al., 2024), as well as to assist in qualitative (Nguyen-Trung, 2024) and technological research (Rice et al., 2024). Despite its benefits, all studies stress the importance of using ChatGPT ethically, cautiously, and responsibly. For instance, Hsu (2023) utilized ChatGPT in generating and conceptualizing research ideas, recognizing their utility while emphasizing the need for critical evaluation of ChatGPT's outputs. Leveraging ChatGPT as a research assistant represents an innovative approach that could pave the way for new avenues of research.

To investigate the primary ways AI can enhance pedagogical practices in higher education, ChatGPT was interviewed with specific prompts on July 07, 2024. The questions included:

Question 1: How can AI be harnessed to enhance pedagogical practices in higher education?

Question 2: How can AI assist university tutors and students?

The authors reviewed and categorized the responses generated by ChatGPT to identify the main ways AI can enhance pedagogical practices in higher education. Each category was then explored for recent studies (from 2023) using Google Scholar, combining the category's main keywords with "artificial intelligence" and "higher education."

RESEARCH FINDINGS

Research Question 1: How can AI be harnessed to enhance pedagogical practices in higher education?

Tailored Learning Experiences

Artificial intelligence-powered adaptive learning platforms can analyse students' learning patterns and tailor course content to meet their needs. This customisation supports students in learning at their own pace, according to their interests and learning styles, and receiving tailored support that enhances engagement (Zhou, 2023; Pratama et al., 2023; Baidoo-Anu & Ansah, 2023). By addressing students' strengths and weaknesses, AI can optimise learning experiences. Teachers can guide students to utilise AI models like ChatGPT for additional assistance, as ChatGPT can provide personalised help by adjusting explanations and feedback to match students' progress and preferences. AI can also offer customised recommendations for improvement, suggesting additional resources or study materials tailored to each student's needs. Recent reviews underscore the necessity for future research on how to support personalised learning with AI and the pedagogical roles of teachers (Li & Wong, 2023). Intelligent tutoring systems are some of the most effective tools for personalising instruction, and the expansion of this personalisation is ongoing as education researchers explore new learning models (Rudolph et al., 2023). AI's potential to enhance educators' ability to provide personalised learning and improve student outcomes is an active area of research. There is a need for empirical evidence to substantiate claims about AI's potential benefits in education.

Automated Evaluation and Feedback Systems

AI-powered systems can automate grading assignments, quizzes, and tests, saving educators time and ensuring consistent grading. For instance, ChatGPT can automate test grading, providing quick feedback to students and allowing tutors to concentrate on more detailed and personalized assessments. AI can create adaptive assessments that adjust their difficulty based on student responses and offer instant feedback highlighting strengths and areas for improvement. Additionally, AI can analyze student feedback to enhance course content continuously. A systematic review by Crompton and Burke (2023) found that AI is commonly used for assessment and evaluation, with automatic grading being the most prevalent application. Automated assessments promote self-regulated learning in traditional and blended learning environments (Nikolopoulou, 2023). A recent review (Moorhouse et al., 2023) suggests that higher education institutions might increasingly adopt AI tools in their assessment processes. Implementing AI in assessments has been linked to more robust evaluation methods and higher educator engagement (Rahiman & Kodikal, 2024). Evaluating AI's impact on teaching and learning outcomes requires careful consideration of various metrics and methodologies, such as changes in student performance

metrics, engagement levels in AI-assisted activities, and learner satisfaction. Future research should explore these issues further.

Content Development, Resource Suggestions, and Time Optimization

AI can assist educators in developing educational content, such as creating test questions, summarising texts, generating quizzes, and recommending relevant resources, potentially enhancing student engagement. AI chatbots can generate real-time conversational content and assist in creating images and videos. This content generation saves educators time and provides additional resources for students. For example, ChatGPT can generate practice questions and mock exams to help students prepare for assessments. Advanced AI models that generate coherent and grammatically correct text revolutionise human-machine interaction, providing practical applications such as drafting emails and serving as personal assistants (Walczak & Cellary, 2023). AI can recommend pertinent research papers, textbooks, and online resources to support students' and tutors' learning and teaching efforts. Additionally, AI can analyse students' schedules, workloads, and learning habits to provide personalised recommendations for effective study plans and time management, helping students balance their academic responsibilities and avoid burnout. The use of AI in managing student learning includes identifying learning patterns, curriculum sequencing, instructional design, and student management (Crompton & Burke, 2023).

Research Facilitation

AI-powered tools assist tutors and students in conducting literature reviews, analyzing data, summarizing readings, and identifying relevant research trends and patterns, which are particularly beneficial for academic research. The advantages of using AI in research include saving time and effort in text generation, quickly processing large amounts of data for literature reviews, and assisting in data analysis and interpretation (Alqahtani et al., 2023). AI technologies can efficiently handle large datasets, helping researchers stay current with the latest trends (Chan & Hu, 2023). For instance, ChatGPT can enrich research activities by summarizing texts or papers, suggesting language improvements, generating outlines and ideas, refining research questions, and finding relevant academic sources. Bibi and Atta (2024) explored ChatGPT's role as a writing assistant, suggesting that future research should investigate students' ability to use it for writing and research support.

Support for Teaching and Learning

Integrating generative AI into higher education practices can enhance teaching efficiency, save time in preparation and feedback, and support teachers in generating course materials, answering student questions, and managing administrative tasks. AI can assist educators by generating course materials and offering suggestions (Lo, 2023). Virtual teaching assistants and ChatGPT can help with routine tasks such as course scheduling, resource allocation, and managing student records, allowing teachers to focus more on pedagogy. For students, AI-powered tutoring systems provide instant feedback, recommend relevant courses, and support distance learning by tracking progress. Learning analytics and predictive analytics are potential areas for enhancing educational practices, involving the analysis of large data sets to identify patterns and trends for improving teaching methods (Ouyang et al., 2023). Predictive analytics can also help identify at-risk students, enabling timely interventions.

Question 2: How can AI assist university tutors and students?

Virtual Assistants and Conversational AI

AI-driven virtual assistants aid students and faculty with routine administrative tasks, answer questions, and provide information about courses, schedules, and campus services. These

virtual assistants, also known as virtual agents or intelligent helpers, can provide technical support such as information retrieval and citation assistance (Crompton & Burke, 2023; Chan & Hu, 2023). Intelligent conversational chatbots enable online interactions, helping tutors manage courses using generative AI tools (Ilieva et al., 2023). Chatbots can address students' questions, provide information about courses and programs, and support institutional services and resources, enhancing student support and engagement. AI-driven chatbots are available 24/7, offering immediate access to information and assistance. For example, ChatGPT can serve as a virtual instructor, aiding collaboration and answering questions (Lo, 2023).

Multilingual Support and Translation Services

AI-powered chatbots assist students in practising language skills and overcoming language barriers. Language learning apps and translation tools powered by AI can make education more accessible to a diverse student body, including international students (Adiguzel et al., 2023). Chatbots can offer vocabulary, grammar, pronunciation guidance, and conversation practice exercises, enhancing language learning. These tools support language-related tasks such as proofreading and translation, which are valuable in multilingual educational settings (Wang et al., 2023; Liang et al., 2023). AI's role in addressing language obstacles helps create a more inclusive learning environment for students from various linguistic backgrounds.

Simulation Tools and Virtual Laboratories

AI can create interactive simulations and virtual reality experiences that make learning more engaging and immersive. These personalized experiences are tailored to individual learning styles and provide customized feedback and support to enhance student learning outcomes. Universities can use virtual reality and simulation technologies to engage students in real-world scenarios, deepening their understanding and involvement (George & Wooden, 2023). AI-powered virtual labs allow students to gain practical experience in science and engineering without physical resources, promoting problem-solving skills in a controlled environment. For example, ChatGPT can simulate laboratory experiments, enabling students to practice scientific concepts virtually.

Collaborative Tools and Communication Platforms

AI tools facilitate collaboration among students and faculty through chat, video conferencing, and collaborative document editing, making teamwork on projects and assignments easier. AI tools enhance academic research by enabling researchers to collaborate with colleagues and pursue common goals, thus improving research quality (George & Wooden, 2023). Students can use ChatGPT to facilitate discussions, brainstorming sessions, and group projects. A review highlighted AI's potential in face-to-face and online collaborative learning and emphasized developing communicative, collaborative, and cognitive skills (Mena-Guacas et al., 2023). AI also provides communication training and supports human-AI collaboration, especially in online education contexts, which gained prominence during the pandemic (Järvelä et al., 2023; Bearman et al., 2023).

Inclusive and Accessible Education

AI has the potential to enhance inclusivity and equity in education through personalized learning and accessible online courses. AI tools support students with disabilities by providing alternative content formats, such as text-to-speech and speech-to-text functions (Chakraborty et al., 2023). These tools benefit non-native speakers and students with learning disabilities by making educational content more accessible. Inclusive learning environments facilitated by AI can lead to academic success for students with disabilities, although ethical concerns such as data privacy and algorithmic bias need to be addressed (Baidoo-Anu & Owusu Ansah, 2023; Almufareh et al., 2024).

Addressing these issues is crucial to harnessing AI's full potential to create equitable educational opportunities for all students.

The Role and Potential of ChatGPT in Education

ChatGPT aims to explore new educational opportunities by providing detailed information on the benefits, ethical issues, and evolving landscape of AI in academia. ChatGPT enhances teaching and learning as a transformative tool by acting as an intelligent conversational agent, facilitating meaningful interactions, personalized learning, real-time support, and insights across various subjects. It creates an engaging educational environment by responding to inquiries and explaining topics through realistic conversations. Its versatility allows for customized training, aligning with the use of AI to improve pedagogical techniques and learning experiences (Sain, Z. H. 2024).

Large language models like ChatGPT significantly impact education by streamlining lesson planning, assisting with language learning, facilitating research and writing tasks, supporting professional development, and enhancing assessment processes. They can create course materials, analyze student work for targeted feedback, and provide translations and grammatical explanations. Despite their advantages, the effective use of large language models in education requires careful consideration of biases and human oversight. These models are invaluable for educators aiming to enhance student engagement and learning outcomes. However, inaccurate or offensive responses, including discriminatory content or misleading advice, highlight the importance of using ChatGPT judiciously and not as a replacement for human judgment (Sain, Z. H. 2024).

DISCUSSION

This paper examined various ways AI can enhance pedagogical practices in higher education, with ChatGPT being employed as a research assistant tool in the investigation. The responses generated by ChatGPT based on the posed questions served as a foundation for the subsequent research, thereby streamlining the research process. The content produced by ChatGPT was reliable, although there was some redundancy in the generated outputs. The output was evaluated and compared with recent studies before being finalized by the authors. Consistent with contemporary research, it was demonstrated that AI could enhance higher education pedagogical practices through personalized learning (Zhou, 2023; Pratama et al., 2023; Li & Wong, 2023), automated assessment and feedback generation (Rahiman & Kodikal, 2024; Crompton & Burke, 2023), virtual assistants and chatbots (Crompton & Burke, 2023; Chan & Hu, 2023), content creation (Walczak & Cellary, 2023), language translation and support (Adiguzel et al., 2023), research assistance, and simulations and virtual labs (George & Wooden, 2023).

Furthermore, AI presents educational opportunities that can enrich teaching and learning experiences for both educators and students. These include collaboration and communication, resource recommendation, time management, and accessibility. It is crucial to recognize the potential interplay among these elements. For instance, resource recommendation is tied to AI's role in supporting students and teachers in the educational process. AI tools have the potential to empower educators and enable informed decisions about student learning. However, given the multitude of studies touting the potential benefits of AI, there is a critical need for more evidence-based research to substantiate these claims and measure the actual effectiveness of AI tools in enhancing pedagogical practices.

In this study, we utilized ChatGPT as a research assistant to bolster our research process. The output of ChatGPT was thoroughly validated and reviewed by the authors. ChatGPT has the potential to revolutionize the educational process in higher education, paving the way for future

research. However, it is essential to note that ChatGPT should be used in conjunction with human guidance, and its output should be subject to human evaluation. AI tools like ChatGPT are not designed to replace human educators, but rather to complement their work. The output from ChatGPT requires the researcher's evaluation and personal judgment to prevent potential inaccuracies or misleading information. Researchers, teachers, and students should not rely solely on AI-generated content, especially when the material is beyond their expertise.

Ethical Issues

In implementing generative AI tools like ChatGPT in higher educational settings, addressing ethical issues, potential misuses, concerns, and risks is essential. Ethical considerations include data privacy, bias in AI algorithms, transparency, accessibility, cultural sensitivity, and the potential impact on students' critical thinking and creativity. Limitations are linked to biases or misleading information based on training data, false results, and a lack of transparency regarding data selection and analysis (Ding et al., 2023). For example, Cao et al. (2023) found that ChatGPT aligns strongly with American culture and adapts less effectively to other cultural contexts. Using ChatGPT as a research aid in this study revealed certain limitations. It needs access to the broader internet and thus misses the most recent scientific publications and developments. Access to the latest studies is crucial for conducting scientific research. While ChatGPT can be a valuable tool, it should complement rather than replace the researcher's role and expertise. Educational risks associated with using ChatGPT include generating unreliable, inaccurate, or inappropriate content, privileging AI-generated text over human-generated text, potentially exposing personal data and sensitive information, and widening the digital divide (Trust et al., 2023). Concerns about academic integrity, cheating, and plagiarism have also been reported (Moorhouse et al., 2023; Crawford et al., 2023). The ease of access to automatically generated content may pose a threat (Walczak & Cellary, 2023), and a significant issue in the current debate about AI in education is the concern over its potential misuse (Grassini, 2023). A systematic review of large language models in education by Yan et al. (2024) identified practical and ethical challenges, including low technological readiness, lack of transparency, and inadequate privacy protections.

Future research needs to urgently explore ethical and educational approaches (Zawacki-Richter et al., 2019; George & Wooden, 2023), as well as the influence of emerging AI technologies on blended and online higher education post-pandemic (Rangel-de Lázaro & Duart, 2023). For instance, Hutson et al. (2024) emphasize the potential of AI tools like ChatGPT to support the writing process within blended pedagogical practices, underscoring the critical need for further research in this area.

Consequences and Impact

Integrating ChatGPT and other generative AI tools in the educational process has significant implications for educators, students, curriculum design, and university policies. Effective implementation of AI tools in pedagogical practices requires adequate training and support. Recent studies emphasize students' need to understand generative AI as a crucial aspect of digital literacy (Bender, 2024). Appropriate training and support will empower students and educators to overcome technological barriers, comprehend the functionalities of AI tools, interpret generated responses, utilize AI's capabilities, and ensure ethical use. Training programs and workshops should enhance AI literacy among students and educators, enabling them to use AI tools confidently. AI literacy includes critical thinking (e.g., understanding limitations and biases), problem-solving (e.g., applying AI techniques to real-world problems), and communication skills. Professional development for educators, covering both pedagogical and technical aspects, is essential to fully harnessing the power of generative AI tools like ChatGPT. Educators can serve as guides,

integrating AI into their teaching practices and guiding students on responsible and ethical AI use (Else, 2023). They need to address issues such as data privacy, plagiarism, and transparency. Educators can motivate students to use ChatGPT while emphasizing the critical analysis of AI-generated content to understand its strengths and limitations. Although AI tools can enhance efficiency, they cannot replace human expertise, particularly in tasks like scientific writing, where ethical considerations are paramount (Alqahtani et al., 2023).

Training students in ChatGPT literacy can support their academic writing. ChatGPT offers significant opportunities for enhancing educational quality and accessibility, but its use should be approached cautiously, considering its potential and challenges (Rawas, 2023). Researchers like Tlili et al. (2023) have discussed the transformative potential of ChatGPT and other AI chatbots in education, highlighting the need for their safe and responsible adoption. Technological literacy and student training are essential significantly, as advancements have improved the realism of AI-generated photos, videos, and voice cloning (Göring et al., 2023). Students must be aware of these new AI capabilities. Curricula should be designed to foster higher-order cognitive skills such as critical thinking, creativity, and problem-solving. Integrating AI tools like ChatGPT into curricula can be beneficial, but overreliance on these tools should be avoided. A balance between utilizing AI as aids and preserving the integrity of human learning experiences is crucial (Gordijn & Have, 2023). Ethical concerns might necessitate redesigning curricula in various academic fields to address ethics and bias associated with AI tools.

Universities should provide guidelines and regulations to ensure the ethical and responsible use of AI tools, taking advantage of their affordances while aligning with educational goals and values and minimizing limitations. Collaboration among administrators, policymakers, and educators is necessary to develop ethical guidelines. Assessment methods in higher education could be revised to avoid plagiarism by evaluating higher-order skills rather than technical knowledge alone. Ongoing training is crucial as technology evolves rapidly, requiring constant updates to skills and knowledge. Training staff and students on ethical issues and potential risks, such as privacy issues, plagiarism, and generating unreliable or inaccurate information, will increase awareness of AI limitations. Higher education institutions are encouraged to collaborate with AI designers to create systems that align with pedagogical principles and educational goals. Policy implications include flexible and adaptable curricula, professional development opportunities for educators, integration of AI ethics courses into the curriculum, continuous learning for students, and support for their self-directed learning (Abulibdeh et al., 2024).

The latest phase of digital transformation in higher education, marked by the 2020s, involves the integration of AI, which can revolutionize higher education by providing personalized feedback to students, automating administrative tasks, and improving educational quality (George & Wooden, 2023). AI integration and mobile learning practices can strengthen university digitalization, leading toward more sustainable education (Nikolopoulou, 2022). Future research should investigate the most effective and sustainable methods implemented by higher education institutions to harness the full potential of AI tools. Chiu (2024) suggests that the future of higher education should transform to ensure students and educators are trained in learning and teaching with generative AI, thereby developing and enhancing AI literacy skills.

CONCLUSION

This research demonstrates that AI can be utilized in numerous ways to improve teaching practices in higher education, with ChatGPT being a significant tool for generating content ideas and facilitating further research. ChatGPT supports educators and students throughout the research

process as a practical research assistant. However, human oversight, expertise, and involvement remain crucial. This study contributes to the current discourse on ChatGPT's role as a research assistant in higher education, highlighting its potential benefits for researchers, students, and teachers. While ChatGPT is a valuable resource, it should be used to complement and enhance human educators rather than replace them. It is essential to explore its limitations to balance the experiences of researchers, tutors, and students. Addressing potential risks, misuses, and concerns, such as inaccurate output, ethical considerations, bias, academic integrity, and the digital divide, is essential. The introduction of generative AI tools like ChatGPT in higher education impacts educators, students, curriculum design, and university policies. Providing appropriate training can facilitate the thoughtful integration of AI in educational settings. As AI technology evolves rapidly, it is necessary to understand its potential benefits and risks for responsible implementation. AI's influence on higher education continues to emerge, potentially transforming teaching and learning. AI integration should be done thoughtfully, collaborating with human educators who bring unique qualities such as understanding student needs, empathy, and mentorship. This approach will maximize AI's advantages while addressing ethical issues and concerns.

Further exploration of ethical and educational strategies is essential to maintain a balance between technology and human interaction, fostering an engaging learning environment. Identifying ways AI can be harnessed to support and enhance educational practices in higher education remains an open research question. However, continuous research and exploration are underway to understand the integration of AI in pedagogical practices, the evolving roles of teachers, and the nature of AI implementation in formal educational settings. This ongoing research should reassure the audience about the continuous improvement in AI integration.

RESEARCH LIMITATIONS

One limitation of this study is that the queries submitted to ChatGPT did not specify the context of AI usage in educational modes (e.g., face-to-face, online, blended) or academic disciplines. Given the acceleration of higher education digitalization due to the pandemic and the increasing prevalence of blended and online learning (Nikolopoulou, 2022), it is recommended to investigate AI's capabilities across various education modes. For example, Dogan et al. (2023) reviewed AI applications and their uses in online educational environments. Additionally, exploring AI's potential, opportunities, and constraints within specific academic fields is crucial. Liang et al. (2023) analyzed AI's potential in language education, while other studies have identified engineering, computer sciences, and language education as critical areas for AI application in higher education (Rangel-de Lázaro & Duart, 2023; Bahroun et al., 2023; Crompton & Burke, 2023).

Another limitation is that ChatGPT can only provide information up to a specific date, as it lacks access to real-time and the latest data. Furthermore, the output generated by ChatGPT was reviewed and evaluated solely by the author, potentially leading to a biased evaluation influenced by the author's prior knowledge. This means that some recent significant studies have been overlooked. Involving specialists in the review process could provide valuable insights and enhance future research. Additionally, this study did not examine specific case studies or examples of ChatGPT's application in higher education settings, which should be considered for future research.

FUTURE RESEARCH

Future research should investigate the long-term implications of integrating AI into higher education practices. Since many studies highlight AI's potential, future investigations should be

predominantly evidence-based. Generative AI has rapidly evolved and is now a vital part of digital literacy, especially with the convergence of emerging technologies. Integrating new AI technologies with existing educational technologies is crucial (Rudolph et al., 2023; Zhou, 2023), and this should be a primary focus of future research. Additionally, exploring AI's impact on student learning outcomes, the evolving roles of educators, and the ethical considerations associated with AI implementation in higher education will provide valuable insights. This research can maximize the benefits of AI while addressing potential challenges, ensuring a balanced and ethical approach to AI integration in educational settings.

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AUTHORS' CONTRIBUTION

Zohaib Hassan Sain: Formal Analysis; Methodology; Writing – original draft. Investigation.
Hasan Baharun: Writing – review and editing
Nurulannisa Binti Abdullah: Investigation

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