

Exploring the factors affecting the adoption AI techniques in higher education: insights from teachers' perspectives on ChatGPT

AI techniques
in higher
education

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Abstract

Purpose – ChatGPT, an artificial intelligence (AI)-powered chatbot, has gained substantial attention in the academic world for its potential to transform the education industry. While ChatGPT offers numerous benefits, concerns have also been raised regarding its impact on the quality of education. This study aims to bridge the gap in research by exploring teachers' perspectives on the adoption of ChatGPT, with a focus on identifying factors that motivate and inhibit them to adopt ChatGPT for educational purposes.

Design/methodology/approach – This research has employed a interpretative phenomenological analysis (IPA) qualitative approach. Through in-depth interviews among the teachers, data will be collected to identify the motivating and inhibiting factors that impact teachers' willingness to adopt ChatGPT. The data was collected from 34 teachers working across 10 branches of the University of Technology and Applied Sciences (UTAS) in Oman.

Findings – The analysis revealed four themes under motivating factors that encourage teachers to adopt ChatGPT for their educational purpose. These include Theme 1: Exploration of innovative education technologies, Theme 2: Personalization teaching and learning, Theme 3: Time-saving and Theme 4: Professional development. On the other hand, inhibiting factors includes five themes which includes Theme 1: Reliability and accuracy concerns, Theme 2: Reduced human interaction, Theme 3: Privacy and data security, Theme 4: lack of institutional support and Theme 5: Overreliance on ChatGPT.

Practical implications – This study contributes to the understanding of teachers' perspectives on the adoption of ChatGPT in education. By understanding teachers' perspectives, policymakers can design appropriate policies and service providers can customize their offerings to meet teachers' requirements. The study's findings will be valuable for higher education institutions (HEIs) in formulating policies to ensure the appropriate and effective utilization of ChatGPT. The study will provide suggestions to ChatGPT service providers, enabling them to focus on motivating factors and address inhibiting factors, thereby facilitating the seamless adoption of ChatGPT among teachers.

Originality/value – In comparison to previous studies, this study goes beyond merely discussing the possible benefits and limitations of ChatGPT in education. This research significantly contributes to the understanding of ChatGPT adoption among teachers by identifying specific motivating and inhibiting factors that influence teachers to adopt ChatGPT for educational purposes. The research enables to gain important new insights that were not previously found, giving a fresh dimension to the existing literature.

Keywords Artificial intelligence, ChatGPT, Educational technology adoption, Inhibiting factors, Motivating factors, Teachers' perspectives, Oman

Paper type Research paper

Introduction

A major transformation is taking place in the educational industry with the emergence of ChatGPT. It's changing the way teachers acquire knowledge for academic and research



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purposes (Tiili *et al.*, 2023; Alshater, 2022). ChatGPT aims at providing personalized support for teachers through a variety of education services including answering queries, creating assignments, generating question papers and designing class activities (Herft, 2023; Khan *et al.*, 2023; Baidoo-Anu and Owusu Ansah, 2023). ChatGPT has the potential to improve the overall quality of education (Zhai, 2022; Sun and Hoelscher, 2023). ChatGPT's versatility allows it to be applied across different academic disciplines whether it's in science, technology, engineering and mathematics (STEM) subjects, humanities, social sciences, or arts (Vasconcelos *et al.*, 2023; Milan-Ortiz *et al.*, 2023). ChatGPT acts as a virtual assistant, allowing teachers to engage in wide-ranging tasks in education and continuous learning. Teachers can ask questions, seek explanations and explore new topics or areas of interest. ChatGPT's interactive nature facilitates easy access of information (Sun and Hoelscher, 2023). ChatGPT can assist teachers in conducting research. It can generate research questions and methodologies and provide insights based on existing studies, supporting teachers in their research endeavors (Sok and Heng, 2023). Most authors have focused on the benefits of ChatGPT among teachers (Baidoo-Anu and Owusu Ansah, 2023). ChatGPT can be utilized for designing class assessments and examination papers (Sun and Hoelscher, 2023). ChatGPT can support teachers in their professional development by providing resources, answering questions and offering guidance on pedagogical strategies (Khan *et al.*, 2023). Teachers can use ChatGPT to generate lesson plans, gather relevant teaching materials and access instructional resources (Kasneji *et al.*, 2023). ChatGPT can aid in the creation of realistic case scenarios for teaching purposes, enhancing student engagement and problem-solving skills (Zhai (2022)). Teachers can leverage ChatGPT for generating research ideas and writing research papers (Sok and Heng, 2023).

While the emergence of ChatGPT brings numerous benefits to the education sector, it also poses potential disruptions to the existing education system. The use of ChatGPT as an educational tool might diminish the role of human interaction and personal connection between teachers and students (Neumann *et al.*, 2023; Qadir, 2023). This could result in reduced opportunities for meaningful discussions, mentorship and emotional support, which are crucial for holistic learning experiences. Integration of ChatGPT requires access to technology infrastructure, which may create disparities in educational opportunities based on resource availability (Herft, 2023; Khan *et al.*, 2023). Ethical considerations pertaining to assignments and examination papers may also arise as a significant challenge (Hosseini *et al.*, 2023; Qadir, 2023; Susnjak, 2022). ChatGPT has also been associated with certain specific drawbacks for teachers also. One concern is that teachers might become overly reliant on ChatGPT, which could have adverse effects on their problem-solving, critical thinking and interpersonal skills (Neumann *et al.*, 2023). Additionally, there is a concern that ChatGPT may diminish collaboration and teamwork among teachers (Arif *et al.*, 2023; Sallam *et al.*, 2023). Overreliance on ChatGPT for instruction and support may impact the teacher-student relationship and reduce the personal interaction and mentorship aspect of education (Ausat *et al.*, 2023; Sallam *et al.*, 2023; Qadir, 2023). These factors combined may result in an overall decline in the quality of education if teachers over rely on ChatGPT.

The aforementioned discussion shows two contrasting perspectives on the use of ChatGPT in education, raising questions about teachers' willingness to adopt ChatGPT considering its benefits and limitations. Hence, the purpose of this study is to investigate the factors that will inhibit or motivate teachers in adopting ChatGPT for educational purposes. By identifying motivating and inhibiting factors, policymakers and ChatGPT service providers can work collaboratively to maximize the benefits of ChatGPT while maintaining the quality of education.

Literature review

After COVID-19 pandemic, educational technologies become an integral part of the education system. With everyday technological developments in education sectors,

teachers need to adopt those technologies for personal and professional development. The existing literature review shows that researchers have mainly used the traditional technology adoption model, such as the technology acceptance (TAM) model (Davis, 1989), unified theory of acceptance and use of technology (UTAUT) (Venkatesh *et al.*, 2003), diffusion of innovations (DOI) (Rogers and Singhal, 2003), innovation diffusion theory (IDT) (Moore and Benbasat, 1991), social cognitive theory (SCT) (Bandura, 1986), theory of planned behavior (TPB) (Ajzen, 1991); model of personal computer utilization (Thompson *et al.*, 1991); self-efficacy theory (Bandura, 1977) and technology readiness index (TRI) (Parasuraman and Colby, 2015) to understand the behavioral intentions of teachers to adopt emerging educational technologies. The traditional technology adoption has been expanded by many researchers by the addition of new major factors, moderating factors and mediating factors in order to better fit the context of their research. For example, Mishra *et al.* (2023) added academic involvement for understanding the adoption of digital library system; Gupta and Bhaskar (2022) added personal characteristics for exploring teachers' intention to adopt virtual reality technology in management education; Tarhini *et al.* (2017) added individual-cultural dimensions as a moderating variable for examining users acceptance of e-learning; Sánchez-Mena *et al.* (2019) explored the moderating role of gender and age for teachers' intention to use educational video games; Kılınç *et al.* (2016) studied the mediating role of risk perceptions to probing teachers' intentions to use educational technologies; Singh *et al.* (2023) considered the mediating role of attitude for online learning adoption.

There is a strong interest in the ChatGPT among academicians and research communities worldwide. Numerous papers are discussing its benefits, limitations and future scope in the education sector (Baidoo-Anu and Owusu Ansah, 2023; Herft, 2023; Kasneci *et al.*, 2023; Hosseini *et al.*, 2023; Dwivedi *et al.*, 2023; Qadir, 2023; O'Connor, 2022; Sardana *et al.*, 2023; Arif *et al.*, 2023; Adiguzel *et al.*, 2023). A lack of literature exists on ChatGPT's adoption among teachers. However, few researchers have tried to investigate this phenomenon by employing several qualitative and quantitative research methods. Tili *et al.* (2023) conducted a case study to explore how early adopters in the education sector are effectively using chatbots. Haque *et al.* (2022) employed sentiment analysis to analyze the attitudes of early adopters towards ChatGPT and found positive sentiments. Conversely, Dwivedi *et al.* (2023) discovered negative sentiment towards ChatGPT. Iqbal *et al.* (2022) utilized the Technology Acceptance Model to examine faculty members' intentions to use ChatGPT and found a negative inclination. Similarly, Chocarro Eguaras *et al.* (2021) also employed the Technology Acceptance Model and highlighted the significance of perceived ease of use and usefulness as factors influencing the acceptance of chatbots among teachers. The aforementioned discussion from in the introduction and literature review section makes it clear that there are several research on ChatGPT benefits and limitations, but limited research on its adoption among the teachers.

There is a need for literature in the field of teachers' adoption of ChatGPT. Hence this research aims to fill this gap by adding literature for ChatGPT adoption from teacher's perspectives. Moreover, this study has also investigated the specific factors that inhibit and motivate teachers to adopt ChatGPT for educational purpose. The identified inhibiting and motivating factors will contribute the literature body as well as dimensions for conceptual model for teachers' adoption of ChatGPT for the future research.

Methodology

Interpretative phenomenological analysis (IPA) is a research method that aims to explore how individuals interpret and make sense of their subjective experiences (Smith and Nizza, 2022; Creswell and Poth, 2016; Eatough and Smith, 2017; Alase, 2017). It focuses on

understanding the meaning individuals assign to their thoughts, emotions, actions and lived experiences within specific contexts (Brocki and Wearden, 2006). While initially developed in psychology, IPA has been adopted and applied in various fields including sociology, health sciences, education, medical studies and organizational studies (Meades, 2022; Murphy *et al.*, 2023; Moody, 2022; Jedličková *et al.*, 2022; Joshi *et al.*, 2021). IPA analysis typically involves a small sample size of 2–25, emphasizing on understanding the unique perspectives and experiences of participants (Smith and Osborn, 2003; Chiu and Quayle, 2022). In this study, IPA is utilized to investigate the factors that inhibit and motivate teachers in adopting ChatGPT for educational purposes.

Sampling

The study is conducted at the University of Technology and Applied Sciences (UTAS). UTAS is the largest higher education institution (HEI) with thirteen (10) branches that are spread over 11 governorates around Oman. UTAS as sample for research helps in representing diverse perspective and opinion of the teachers working within Oman's higher education system.

To ensure diversity among the participants, we contacted 7 teachers from each branch for participating in the study. Teachers who were aware of ChatGPT or using ChatGPT for educational purposes were only selected as a participant. Initially, 76 teachers expressed their interest and agreed to get interviewed to reveal the experiences that inhibit and motivate them to adopt ChatGPT for educational purposes. The researcher(s) planned to conduct the study with all the agreed research participants, but after conducting interviews with 34 teachers, no new information emerged. The final size of the sample of any study is dependent on the saturation point of data after which no new information is revealed. Therefore, no further interviews were conducted, and the final sample was restricted to 34 research participants.

Data collection

To gather data from the teachers, semi-structured in-depth interviews were conducted. Throughout the process, the researchers prioritized respect, privacy and maintaining a non-judgmental approach towards the participants. The interview questions were designed to be open-ended and probing, aiming to encourage the teachers to express their personal experiences related to the selected research phenomenon. To initiate the discussion, the researchers used the following questions:

- (1) What factors motivated you to incorporate ChatGPT into your teaching approach?
- (2) Can you recall any specific instances or experiences that prompted you to integrate ChatGPT into your teaching practice?
- (3) Can you share any particular situations or examples where you found it beneficial to incorporate ChatGPT in your teaching?
- (4) How do you perceive ChatGPT's advantages in supporting your professional objectives?
- (5) What are your thoughts on the implementation of ChatGPT in educational settings?
- (6) Have you observed any potential benefits or advantages of implementing ChatGPT in the classroom?
- (7) Can you describe any specific scenarios or examples where you believe ChatGPT could be a valuable tool in the classroom?

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- (8) What specific educational challenges or limitations do you believe ChatGPT could help address?
 - (9) What kind of support or resources would you require from your institution to effectively adopt ChatGPT in your teaching?
 - (10) Do you have any concerns or reservations about using ChatGPT in your teaching practice?
 - (11) Are there any specific ethical or privacy issues that worry you when considering the implementation of ChatGPT in education?
 - (12) Do you foresee any institutional or policy-related obstacles that could impede the adoption of ChatGPT for educational purposes?
 - (13) What technical limitations or constraints do you anticipate when implementing ChatGPT in your teaching practice?
 - (14) How do you perceive the potential impact of ChatGPT on the role of teachers in the classroom? Do you have any concerns about traditional teaching methods being replaced?
 - (15) Are there any cultural or pedagogical factors that might present challenges or make the integration of ChatGPT unsuitable for your specific educational context?
 - (16) Have you encountered any resistance or negative perceptions from colleagues regarding the use of ChatGPT in education? If so, how have you addressed or taken these concerns into account?

To ensure the validity and reliability of the interview questions, they underwent testing and validation by 16 teachers. Feedback and suggestions from these teachers were used to make amendments to the questions. The revised drafts were then given to 8 different teachers, who were not involved in the initial validation process, to further confirm the validity of the constructs. The interviews were conducted in a manner that accommodated the convenience of the research participants, utilizing both face-to-face and online formats (using platforms such as MS Teams, Google Meet, or Zoom). On average, each research participant was interviewed for a duration ranging from 60 to 140 min.

Data analysis

IPA adopts an inductive approach to analyzing data, where researchers deeply engage with participants' narratives to identify recurring themes and construct an interpretative framework. The process of conducting an IPA study encompasses various stages, including sample selection, data collection through in-depth interviews, transcription of interview data and rigorous data analysis. Researchers undergo a process of coding, pattern identification and theme development to capture the essence of participants' experiences. The researchers followed the recommended four steps outlined by [Smith and Osborn \(2003\)](#) and [Moustakas \(1994\)](#) in preparing and analyzing the interview data ([Figure 1](#)).

Findings

After conducting the data analysis, the researchers have identified 4 main themes that emerged as motivating factors for teachers to adopt ChatGPT in their teaching practice. These themes capture the reasons and experiences that influenced teachers to adopt ChatGPT for educational purposes. Additionally, the analysis has also revealed 5 main themes under inhibiting factors. These themes highlight factors that inhibit the adoption of ChatGPT among teachers for educational purposes.

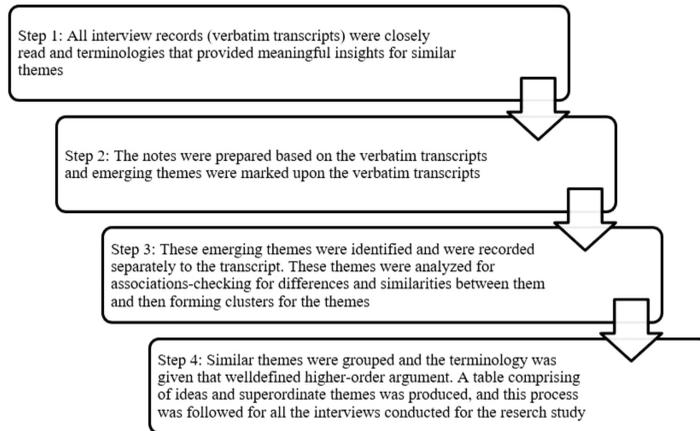


Figure 1.
Data analysis

Source(s): Figure by authors

Motivating factors for adopting ChatGPT among teachers

Theme 1: exploration of innovative education technologies. Teachers were intrigued by the potential of artificial intelligence (AI) technologies in education. They wanted to explore how ChatGPT could enhance their teaching methods. They recognized the need to adapt their teaching approach to the digital age and saw ChatGPT as an innovative solution.

I was intrigued by the potential of AI technologies in education and wanted to explore how ChatGPT could enhance my teaching methods (Respondent-16)

As an advocate for technology integration in education, I wanted to stay ahead of the curve and explore the educational potential of AI-driven tools like ChatGPT (Respondent-25)

I became interested in incorporating ChatGPT into my teaching practice after seeing how quickly it could produce answers to my questions and engage in exciting conversations (Respondent-30)

Theme 2: personalization teaching and learning. The potential of ChatGPT to personalize and customize teaching instructional materials was the motivating factor for teachers to its adoption into the classroom. ChatGPT opens up new possibilities for instructional design, assessment and feedback, making the teaching-learning process more engaging and effective.

I wanted to provide a case study to the students on marketing segmentation topics in the context of Oman. ChatGPT assisted in generating a case study along with the list of multiple-choice questions, short questions, discussion questions along with suggested answers (Respondent-6)

Incorporating ChatGPT into my economics lesson, I used it to create a case study on supply and demand dynamics in the smartphone market. ChatGPT generated thought-provoking questions, including multiple-choice and open-ended questions, and provided suggested answers to guide student analysis and discussion (Respondent-11)

Theme 3: time-saving. The potential of ChatGPT to automate administrative tasks and facilitate innovative teaching methods serves as a strong motivation for teachers to explore its integration into their teaching practice. By utilizing ChatGPT features, teachers are able to utilize their time for better delivery of lessons and creating a more effective and efficient learning environment.

I can't really explain how much time ChatGPT has saved me. From generating lesson materials, quizzes, assignments etc. My workflow has been streamlined, and my teaching has been more effective. I can now incorporate real-world examples, and provide personalized support to my students (Respondent-23)

In only a few seconds, I can now generate company data to teach accounting and finance concepts. Now I don't have to waste my time creating questions or financial data, I can directly start teaching the concepts and calculations (Respondent-31)

I have access to an enormous amount of real-world insights and accurate data that improve my class lessons. The convenience and precision of ChatGPT capabilities have truly transformed my teaching experience (Respondent-3)

Theme 4: professional development. Teachers recognized the value of integrating ChatGPT for educational purposes and this integration has made a significant impact on their professional development. Additionally, using ChatGPT gives teachers the chance to further develop their technical skills and keep up with new technological advances in education. By incorporating ChatGPT into their classrooms, teachers have gained access to a powerful tool that supports their instructional efforts and enhances their overall teaching effectiveness.

By exploring the use of ChatGPT, I have been able to enhance my technological skills and stay updated with emerging technologies, which has been invaluable for my professional development as a teacher. (Respondent-25)

The integration of ChatGPT for educational purposes has helped me in my professional development. I use ChatGPT mainly for teaching and research purpose. It is really helpful in exploring research ideas, suggesting research questions also giving impressive recommendations. (Respondent-17)

Inhibiting factors in the adoption of ChatGPT among teachers

Theme 1: reliability and accuracy concerns. Teachers have stated concerns regarding the reliability and accuracy of the information provided by ChatGPT. They emphasize that they need to check information generated by ChatGPT before incorporating it into their teaching practice. Teachers recognize that ChatGPT doesn't possess the necessary expertise or contextual understanding required for producing high-quality and accurate literature reviews.

I have concerns about the reliability and accurateness of the data provided by ChatGPT. I need to be cautious and critically evaluate the information generated by ChatGPT to ensure its accuracy and reliability before incorporating it into their teaching practice. (Respondent-7)

I am worried about the incorrect or misleading responses generated by ChatGPT. Many times I noticed that information generated by ChatGPT is inaccurate, especially when I am using it for writing a literature review for research. I have to still depend on traditional sources for writing literature reviews. (Respondent-24)

Theme 2: reduced human interaction. The integration of ChatGPT in the teaching process has led to a reduction in human interaction among teachers. Previously, they would seek assistance from colleagues for tasks such as designing assignments and presentations. However, with the availability of ChatGPT, they no longer rely on their colleagues' support and can quickly generate solutions on their own. This reduction in collaboration and reliance on colleagues has led to a decline in interpersonal engagement and collaboration opportunities.

I feel ChatGPT has resulted in a decrease human interaction. Earlier I would seek assistance from my colleagues help to design assignments, presentations, etc. Now I don't ask them, because ChatGPT do it for me within friction of a second. I no longer need to rely on my colleagues' support. (Respondent-14)

I have noticed that with the introduction of ChatGPT, my interactions with colleagues have become less frequent. Previously, we would brainstorm and collaborate on various tasks, but now I rely on ChatGPT to provide quick solutions. From my perspective, it has reduced the opportunities for interpersonal engagement and collaboration with my colleagues. (Respondent-8)

Theme 3: privacy and data security. Teachers have expressed concerns about privacy and data security when using ChatGPT. They worry about the collection and storage of sensitive information by the ChatGPT platform, as well as compliance with privacy regulations. Additionally, there are ethical concerns regarding the potential use of stored personal data for commercial purposes or targeted advertising by third-party entities. These concerns highlight the need for clear guidelines and policies regarding the ethical use of ChatGPT for educational purposes.

I have some privacy and data security concerns, particularly if the ChatGPT platform collects and stores sensitive information. ChatGPT is novel I am not sure whether it complies with privacy regulations or not. (Respondent-17)

I have some ethical concerns regarding ChatGPT. Maybe the stored personal data can be used for commercial purposes or targeted advertising by third-party entities. (Respondent-1)

Theme 4: lack of institutional support. Teachers face challenges related to the lack of institutional support for integrating ChatGPT into their classrooms. Limited access to technological resources hinders the implementation of ChatGPT. Additionally, universities may have restrictions on the use of ChatGPT, and there is a lack of clear guidelines or policies regarding its ethical use for educational purposes. Convincing top management about the benefits of ChatGPT can be challenging for teachers. Furthermore, teachers may require assistance and training in seamlessly integrating ChatGPT into their educational practices.

I have limited access to technological resources within my university which hinder the implementation of ChatGPT in the classroom. (Respondent-2)

My university restricts the use of ChatGPT. There is a lack of clear guidelines or policies regarding the ethical use of ChatGPT for educational purposes. Also, I face challenges in convincing top management about the benefit of ChatGPT in the classroom. (Respondent-18)

I need assistance in implementing ChatGPT. I haven't received any training on integrating ChatGPT seamlessly for educational purposes (Respondent-14)

Theme 5: overreliance on ChatGPT. Teachers express concerns about overreliance on ChatGPT, as it can reduce their thinking ability and lead to a dependence on the tool for even minor tasks. Some teachers admit to not verifying the information generated by ChatGPT, assuming it is correct, despite the possibility of inaccuracies. They recognize the need to view themselves as facilitators and mentors in the teaching process, rather than relying solely on ChatGPT as the source of knowledge for students. However, there are concerns about job displacement and security as ChatGPT's capabilities may overshadow the traditional role of teachers.

I noticed that ChatGPT was reducing my thinking ability. Instead of relying on my own mental abilities, I found myself consistently turning to ChatGPT for even minor tasks. Observing this phenomenon, I decided to discontinue using ChatGPT. (Respondent-22)

I become overreliance on ChatGPT. Sometimes I didn't even verify the information generated by ChatGPT, assuming that it is correct. Even though there may be a possibility that the information generated by ChatGPT is not accurate. (Respondent-5)

ChatGPT is new teacher. Now I see myself as a facilitator and mentor in the teaching process rather than the sole source of knowledge for the students. Sometimes, I am worried about job displacement or security as ChatGPT is overpowering the teacher role. (Respondent-31)

In summary, the data analysis of this study has resulted in the identification of four main themes under motivating factors and five themes under inhibiting factors that influence the adoption of ChatGPT among teachers. [Table 1](#) provides an overview of these themes.

Discussion

Motivating factors for adopting ChatGPT among teachers

Firstly, teachers were intrigued by the potential of ChatGPT for educational purposes. Many researchers have highlighted the benefits of ChatGPT in the education industry ([Elbanna and Armstrong, 2023](#); [Lund and Wang, 2023](#); [Baidoo-Anu and Owusu Ansah, 2023](#); [Adiguzel et al., 2023](#)). Teachers believed that ChatGPT is an innovative tool with unique features and are willing to explore to enhance their teaching. Previous research studies conducted by [Abdelfattah et al. \(2023\)](#) and [Gupta and Bhaskar \(2022\)](#) have indicated that teachers who demonstrate a huge interest in innovative educational technologies are more inclined to adopt these technologies. Moreover, the unique feature of ChatGPT is customization and personalization has also motivated teachers to adopt ChatGPT for education purposes. Teachers recognized the unique feature of ChatGPT which was not found in the previous educational technologies. ChatGPT could personalize and customize its teaching material and learning experiences. This personalization aspect has made the teaching-learning process more engaging and effective ([Biswas, 2023](#); [Adiguzel et al., 2023](#); [Opara et al., 2023](#); [Zhai, 2023](#)). Furthermore, the time-saving aspect of ChatGPT has also served as a strong motivator for teachers to adopt ChatGPT. By automating administrative tasks and facilitating innovative teaching methods, ChatGPT has optimized teachers' instructional time, enabling them to focus more on personalized instruction and creating an efficient learning environment. Previous research studies have yielded similar findings, suggesting teachers are more likely to adopt educational technologies that offer time-saving benefits and help reduce their workload ([Silva et al., 2023](#); [Gupta and Bhaskar, 2020](#); [Tiwari et al., 2023](#)). Lastly, teachers believed that ChatGPT contributes to their professional development. By integrating ChatGPT technology into their teaching and research practices, teachers have enhanced their technological skills and stayed updated with emerging AI educational technologies. This constant engagement with technology has enabled them to grow as teachers, adapt to new pedagogical approaches and meet the evolving needs of students in the digital age. Numerous studies have reported that embracing educational technologies are helpful professional development of teachers ([Basilotta-Gómez-Pablos et al., 2022](#); [Gupta and Bhaskar, 2020](#); [Joshi et al., 2021](#)).

Inhibiting factors in the adoption of ChatGPT among teachers

The inhibiting factors shed light on the challenges that teachers face in adopting ChatGPT. Firstly, the theme of reliability and accuracy concerns highlights the importance of verifying

Motivating factors for adopting ChatGPT among teachers

Theme 1: Exploration of innovative education technologies
Theme 2: Personalization teaching and learning
Theme 3: Time-saving
Theme 4: Professional development

Inhibiting factors in the adoption of ChatGPT among teachers

Theme 1: Reliability and accuracy concerns
Theme 2: Reduced human interaction
Theme 3: Privacy and data security
Theme 4: Lack of institutional support
Theme 5: Overreliance on ChatGPT

Source(s): Compiled by authors

Table 1.
Overview of master themes

the information generated by ChatGPT before incorporating it into educational materials. Teachers express concerns about the information generated by ChatGPT, as it lacks the necessary expertise for producing high-quality literature reviews. Secondly, the theme of reduced human interaction highlights the unintended consequence of integrating ChatGPT into the teaching process. ChatGPT has led to a reduction in human interaction, collaboration and interpersonal engagement among teachers. Thirdly, Privacy and data security concerns emerge as a crucial theme in the adoption of ChatGPT. Teachers express worries about the collection, storage and potential misuse of sensitive information by the ChatGPT. Previous studies have reported that teachers who have privacy and data security concerns are less likely to adopt innovative educational technologies (Nazaretsky *et al.*, 2022; Choi *et al.*, 2023; Adiguzel *et al.*, 2023; Baniyasi *et al.*, 2020). Teachers also reported that there is a lack of clear guidelines and policies regarding the ethical use of ChatGPT for educational purposes further compounding these concerns, emphasizing the need for transparent policy and regulations for ChatGPT. Fourthly, lack of institutional support is another challenge, including limited access to technological educational resources and restrictions on the use of ChatGPT. In the absence of clear guidelines and policies, teachers found it difficult to implement in the classroom. It has been pointed out in many studies that a lack of institutional support inhibits teachers to adopt innovative educational technologies (Lutfi, 2022; Joshi *et al.*, 2021). Teachers need support from institutions for integrating ChatGPT into educational practices (Chiu *et al.*, 2023). Lastly, teachers' concerns about overreliance on ChatGPT can reduce their thinking ability and overshadow their role as facilitators and mentors. The risk of job displacement and potential security implications further contribute to the apprehension surrounding the dominance of ChatGPT.

Conclusion

The adoption of ChatGPT among teachers is driven by several motivating factors. Teachers are motivated by the exploration of innovative education technologies, recognizing the potential of ChatGPT to enhance their teaching methods and adapt to the digital age. The personalization aspect of ChatGPT, allowing for customized instruction materials and design, appeals to teachers as it enhances the teaching-learning process. The time-saving feature of ChatGPT, automating administrative tasks and facilitating innovative teaching methods, is another strong motivator for teachers. Additionally, the use of ChatGPT contributes significantly to teachers' professional development, helping them enhance their technological skills and stay updated with emerging educational technologies. However, there are inhibiting factors that need to be considered when adopting ChatGPT. Teachers expressed concerns about the reliability and accuracy of the information generated by ChatGPT, highlighting the need for fact-checking and verification. The integration of ChatGPT has also led to a reduction in human interaction among teachers, potentially impacting collaboration and interpersonal engagement. Privacy and data security concerns arise, emphasizing the need for clear guidelines and policies to protect sensitive information. The lack of institutional support, including limited access to resources and restrictions on use, poses challenges to teachers. Lastly, concerns about overreliance on ChatGPT and potential job displacement raise apprehensions about the changing role of teachers.

Practical implications

Based on the findings of this study, practical implications can be drawn to promote the adoption of ChatGPT among teachers; Implications for HEIs: Implications for ChatGPT service providers:

Implications for teachers

- (1) Teachers need to attend training programs for implementing ChatGPT for educational purposes. They need to understand the capabilities and limitations of ChatGPT. Enhancing their educational technological skills will help build their confidence and competence in integrating ChatGPT into their teaching practices.
- (2) Teachers who successfully use ChatGPT can also share their experience through the workshop on “How to use ChatGPT for educational purposes” with their colleague’s examples of how it has been successfully incorporated into the classroom.
- (3) Teachers can conduct research on the impact of ChatGPT in educational settings and share research findings with education stakeholders. This will build confidence in the top management and teachers in understanding the benefits of using ChatGPT for educational purposes

Implications for higher education institutions

- (1) Higher education institutions need to ensure that teachers have the necessary technological infrastructure resources including robust Internet connectivity and appropriate hardware to effectively use ChatGPT for educational purposes.
- (2) Higher education institutions can conduct training programs, workshops and technical sessions for teachers to effectively incorporate ChatGPT into their instructional design and delivery. Also, they can establish mechanisms for continuous support to address the challenges faced by teachers in the implementation of ChatGPT in the classroom.
- (3) Higher education institutions need to develop clear institutional policies and guidelines to address ethical use and also ensure compliance with legal and ethical standards. Of ChatGPT in educational settings.

Implications for ChatGPT service providers

- (1) ChatGPT service providers need to address the concerns about the reliability and accuracy of the information generated by ChatGPT. They should provide teachers with information on the limitations of the ChatGPT and encourage fact-checking and verification.
- (2) ChatGPT service providers need to implement robust data security measures to protect the teacher’s data. They should clearly communicate the policies and practices regarding data collection, storage and usage of data to build trust and confidence among the teachers.
- (3) ChatGPT service providers can seek feedback from teachers about the issues encountered while using ChatGPT for educational purposes. They can suggest some best practices for integrating the ChatGPT into the teaching and learning process.
- (4) ChatGPT service providers can collaborate with teachers to meet the specific requirements and expectations of the education industry.
- (5) ChatGPT service providers can develop educational resources, tutorials and support materials for providing guidance on the effective use of ChatGPT for educational purposes.

Research implications

Significant research implications are presented by this work. By addressing a knowledge gap regarding teachers' adoption of ChatGPT, it adds to the body of existing literature. The study has identified specific motivating and inhibiting factors that influence teachers to adopt ChatGPT through qualitative analysis. Future researchers can use the identified factor to develop a comprehensive research model for investigating ChatGPT adoption among teachers.

Limitations and scope for future research

This study provides valuable insights into teachers' perspectives on the adoption of ChatGPT but there are some limitations that should be taken into consideration. The study sample was limited to the 36 teachers working in the 10 branches of the UTAS in Oman. It's possible that the results don't accurately reflect the opinions and experiences of teachers working in different cultural or educational settings. Therefore, caution should be exercised when generalizing the results to broader populations. Explore the perspectives and experiences of teachers from different cultural backgrounds and educational systems. This will enable comparative analysis and identification of culturally specific factors that influence the adoption and implementation of ChatGPT in education. This study has used an Interpretative Phenomenological Analysis (IPA) as a qualitative approach to explore teachers' perspectives on ChatGPT adoption. Although this method offers deep and insightful insights, it might not capture the full range of perspectives and experiences. To get more valid and reliable results, future research can integrate qualitative and quantitative methods. To gain a deeper understanding of ChatGPT's contributions, comparative studies with other AI technologies can also be conducted.

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