

Research Paper

Use of Generative Artificial Intelligence among Selected Pre-University Business Students at a Private University in Malaysia

Andrew Lee Hock Cheong
Global College, Heriot-Watt University Malaysia

© The Author(s) 2025. This article is published with open access by Taylor's Press.

Abstract: The education field has been abuzz since the introduction of ChatGPT in late 2022. Notwithstanding its current limitations, we certainly cannot put a stop to this disruptive technology as it is now prevalent worldwide. With the right guidance on its use, incorporating generative artificial intelligence (GenAI) tools in lessons will make learning more personalised and accessible. More importantly, engaging correctly with these large language models will enable students to sharpen their critical thinking, writing and language skills. This action research explores selected students' use of ChatGPT and other GenAI tools in a pre-university business related course at a private higher learning institution in Malaysia. Adopting a basic qualitative approach, a focus group discussion was undertaken to gather and understand the students' views when using these technological tools. Three major themes, namely GenAI tools aid students' learning, awareness of the tools' limitations and heightened awareness on academic integrity, emerged from the focus group discussion. This research contributes to understanding the application of GenAI tools in the teaching and learning of business courses from these students' perspective.

Keywords: ChatGPT, generative artificial intelligence, pre-university, business course

Suggested citation: Lee, A. H. C. (2025). Use of generative artificial intelligence among selected pre-university business students at a private university in Malaysia. *Asia-Pacific Journal of Futures in Education and Society*, 4(1), 1–20. <https://doi.org/10.58946/apjfes-4.1.P1>

*Correspondence: Andrew Lee Hock Cheong, Global College, Heriot-Watt University Malaysia.
Email: andrew.lee@hw.ac.uk

Introduction

ChatGPT's launch over two years ago continues to cause huge ripple effects across multiple industries. It has changed drastically how people work and learn. Unlike its predecessors, ChatGPT's ubiquitous nature has made it a major technological disruptor both in the business and academic world. As an intelligent chatbot created by OpenAI, it garnered over a million users within 5 days after its launch, according to Leggatt (2023). ChatGPT has had more than 400 million weekly active users as at February 2025 ("OpenAI's weekly active users surpass 400 million," 2025). Rospigliosi (2023) explained that ChatGPT is an application that uses Generative Pre-trained Transformer (GPT-3), a powerful machine learning software. GPTs which are trained on a huge compilation of texts and images then determine patterns and suggest suitable words or phrases or generate images in response to a user's query (Rospigliosi, 2023). A distinct feature of ChatGPT as compared to search engines is its human-like conversational nature with its users.

The education sector certainly has not been left unscathed with its prowess. Today, ChatGPT and a plethora of other generative artificial intelligence (GenAI) tools have changed the way students learn and how teaching takes place. Utilising powerful machine learning tools and software, these GenAI tools can, among others, generate text and images in response to a user's enquiry within seconds. Through a sustained dialogue, ChatGPT can play the role of a virtual tutor inside and outside of the classroom. Most importantly, learners can continuously engage with these digital tools without being deemed to be asking silly questions. Educators on the other hand, can deploy GenAI tools to generate teaching materials and other resources, thus enabling them to use that saved time for more engaging sessions with their students.

This study aims to contribute towards the understanding of the use of GenAI tools from students' perspective in line with calls by numerous scholars (e. g., Albadarin et al., 2024; Firat, 2023; Huo & Siau, 2024; Rahman & Watanobe, 2023) for further exploration of this technology's impact on education. Bell and Bell (2023) highlighted that there is still much needed understanding on how students view artificial intelligence, how comfortable they are using it and their response to this technology. Additionally, researchers like Francis et al. (2025) and Shoufan (2023) suggested for more studies on the benefits and challenges of using GenAI tools like ChatGPT across various disciplines and in subject-specific areas. From the business-related course standpoint, there seems to be a limited number of studies on how students use GenAI (Raman et al., 2024; Strzelecki, 2024), more so at the pre-university level.

This study aims to examine the use of GenAI tools among a selected group of pre-university business students at a private university in Malaysia and how it impacts their learning. Understanding these aspects is timely and necessary in extending the

knowledge on the use of GenAI tools among pre-university students. Ultimately, it will benefit lecturers when preparing their teaching and learning activities.

Literature Review

Given the rise in the use of GenAI in the higher education field, scholars have been actively exploring its adoption in a variety of courses and studying its pedagogical effectiveness. Various studies have addressed its benefits and highlighted the shortcomings when GenAI is incorporated in classrooms. Among the studies in science-related courses, is a thematic study by Shoufan (2023) focusing on undergraduate systems engineering students' perception on the use of ChatGPT. The findings from his study were rather mixed. Although students found the use of ChatGPT interesting, motivating and helpful in their studies, they also questioned the accuracy of ChatGPT's response.

The issue of accuracy was also identified in Amoozadeh et al.'s (2024) study among computer science students. About half of the students in their study doubted the quality of output from GenAI. Similarly, Zheng (2023) explored the application of ChatGPT in a data science course, emphasising its ability to assist students with coding tasks, problem-solving, and conceptual understanding. Like Shoufan (2023) and Amoozadeh et al. (2024), he also raised concerns on the challenges and limitations when working with ChatGPT. For students who may be overly dependent on GenAI, this can result in misinformation, especially if they are still new to a particular subject or topic.

From a language learning perspective, the understanding on the use of GenAI was extended when Ali et al. (2023) explored the impact of ChatGPT on students of the English language. They observed that ChatGPT generally was beneficial in terms of motivating learners to develop reading and writing skills. However, the respondents displayed neutral attitudes towards the effect of ChatGPT on developing their listening and speaking skills. Unlike studies by Monika and Suganthan (2024) as well as Shaikh et al. (2024) that espoused the benefits of ChatGPT in English language courses, this difference could be attributed to those students specifically utilising ChatGPT's text-based response to improve on their writing and reading. Its ability to support the writing process among non-native English speakers was also evident in Warschasuer et al.'s (2023) study.

Among the few studies that specifically looked at incorporating GenAI in business and economics subjects was a study by Trent (2023). His research among upper-level International Economics students discovered that AI technology improved students' learning, engagement and critical thinking. GenAI supported them in connecting theory to real-world applications and made them more aware of current events impacting the international economic environment. Improvements in critical thinking and problem-solving skills were also reported by Zhang et al. (2023), Habib

et al. (2024) and Liu et al. (2023). In a similar vein, Habib et al. (2024) reported that students were more creative and had more ideas when completing a task using GenAI. On the other hand, researchers like Draxler et al. (2023) as well as Jafari and Keykha (2024) cautioned that students' overreliance on ChatGPT could diminish their creativity and critical thinking skills.

Adding to the discourse, Abdalla et al. (2024) investigated the adoption of ChatGPT among business and management students through the lens of the diffusion of innovation theory. Students had an overwhelmingly positive attitude when ChatGPT was integrated in their studies. The study identified key factors influencing adoption, including perceived usefulness, ease of use, and compatibility with existing learning practices. Similar like the other studies reviewed, they acknowledged that ChatGPT is not without errors and has its limitations. They stressed the opportunity cost involved when depending on these GenAI tools versus using regular teaching and learning pedagogies. Among the limitations include GenAI being bound by the set of data that it was trained on, generating inaccurate answers and coming up with fictitious articles (Baidoo-Anu & Ansah, 2023). Likewise, Resnick (2024) opined that although GenAI tools can provide advice and information, these tools are currently unable to develop a learning community like human teachers that could relate and empathise with students. The human teachers have a pivotal role as the ultimate regulator when students engage with GenAI tools as asserted by Łodzikowski et al. (2023).

As interest in ChatGPT continues to rise in the past two years, Albadarin et al. (2024) reviewed 14 empirical studies on the use of ChatGPT in various educational settings. They concluded that ChatGPT has been used as a virtual intelligent assistant, enhancing students' writing and language skills as well as facilitating their personalised learning. However, the researchers advised that the overuse of ChatGPT may negatively impact innovation and collaborative learning competencies. These according to Francis et al. (2025) could occur if the thinking and heavy lifting are offloaded to the GenAI. Nonetheless, Francis et al. (2025) is of the view that with proper usage, the GenAI tools can, in fact, promote collaborative learning among students with different language and cultural backgrounds.

The concerns raised by Albadarin et al. (2024) and Abdalla et al. (2024) are also shared by Rasul et al. (2023). In their perspective style research, the latter argued that ChatGPT has the potential to facilitate adaptive learning, provide individualised feedback and support research, writing and data analytics for students. Despite these advantages, they warned that wrongful use of ChatGPT could lead to superficial learning. They advised lecturers and students to exercise caution when using such tools and evaluate learning processes, rather than the final output of an assessment. Francis et al. (2025) also recommended that focusing on the learning processes when designing assessments allows for feedback and student development. This is also

supported by Foltynnek et al. (2023) who argued that educators must be mindful of GenAI's impact on academic integrity when designing assessments.

The study on the use of GenAI in higher education tend to focus on undergraduate and postgraduate students. Studies on its usage among pre-university students are rather limited at this juncture. The rapid emergence and wide usage of GenAI tools necessitates a study on the use of such tools among pre-university business students within a Malaysian private university context. As they embark on their university journey alongside these tools, it is crucial to gain insights into their concerns, challenges and perceptions when using GenAI. This in turn will shape the effectiveness of pre-university teaching practices in the era of GenAI.

Background On the Use of GenAI

This study was undertaken in January 2024 among the final semester students pursuing a pre-university Business Management course. As part of this course, students will need to be familiar in writing short essays for their examination and argue their points succinctly in the written assignments. For most of these students, it is their maiden attempt in writing subject-specific essays. This action research explores how ChatGPT can be used to spur students to start writing their tutorial essays and build their confidence as they embark on writing essays for a subject-specific course, namely Business Management.

Apart from the presence of the lecturer, ChatGPT was incorporated into the teaching and learning sessions to support students in these areas. The students undertook 2 guided writing activities that required them to use ChatGPT. The writing activities were not graded and formed part of their practice exercises.

The first writing activity was held in Week 2 of the semester and focused on the topic of corporate social responsibility. For this in-class activity, they had to write their answers based on their understanding of the topic learnt without any assistance from ChatGPT or other GenAI tools. The lecturer observed the activity to ensure that students adhered to this requirement. Thereafter, they each submitted their answers to ChatGPT for review. Students were guided on the appropriate prompt to use. All students submitted a similar prompt i.e. 'How do we determine if a company is socially responsible?' simultaneously to ChatGPT. They then compared their own answers with that of ChatGPT. Students were informed to analyse their main ideas with that of ChatGPT and the way each idea or point was developed and written.

The second writing activity was a take-home essay on the challenges of doing business in China and was due later in the semester. Like the first activity, they submitted their written essay to ChatGPT and learned on how to improve on their answers. However, unlike the first writing activity, for this activity they determined their own prompts. This encourages an active learning environment. They could

submit as many prompts as possible and seek clarifications till they were satisfied with the final write-up from ChatGPT.

Following the completion of each activity, a classroom discussion was conducted to discuss the questions and students' answers. Students provided their feedback on the responses they received from the submission of their work to ChatGPT. They then critiqued whether the responses were justified and recommended if more discussions and/or citations were required. According to Bell and Bell (2023), reviewing, interrogating and reflecting on GenAI's output will hone students' critical thought and skills. Similarly, Zheng (2023) shared that when students read ChatGPT's answer and compare with theirs, this improves their critical thinking and problem-solving skills. The students evaluated their own work vis-à-vis that of ChatGPT, built upon their existing knowledge and engaged actively with the tasks. These aligns with the constructivist theory of learning. Baser and Mutlu (2011) argued that constructivist educators who incorporated technology in their teaching acknowledge its positive impact on student learning. According to Makewa (2019), integrating technology like ChatGPT and other GenAI tools allow for students' exploration and experimentation, thus making learning more engaging and interactive.

Methodology

Research Design

This study undertook a basic qualitative approach, in line with Merriam's (2009) suggestion as it highlights effective practices and techniques used by teachers. Worthington (2013) asserted that this research design is suitable for obtaining in-depth understanding of the participants' experiences as well as what those experiences mean and their transformative nature.

Participants

For this study, primary data was obtained through a focus group discussion with five students who were studying the Business Management course at the author's institution. They experienced the two writing activities as mentioned earlier. The five participants were chosen using purposive sampling. They were familiar with using GenAI, namely ChatGPT in their studies and were introduced to this tool at the beginning of their final semester of studies.

The participants were selected based on the following criteria:

- a) They were considered as above average students.
- b) They were willing to share their experiences with using ChatGPT in a focus group discussion.

All the participants were females between the ages of 18–20. Each participant, for confidentiality purposes, is identified with a pseudonym. They are identified as Alicia, Claire, Amber, Lorraine and Irene.

A semi-structured interview approach was taken for this exploratory study to gain insights of the participants' views on the topic under study. The interview questions were derived from other related literature on the use of GenAI in classrooms and the context in which ChatGPT was used by these participants. The focus group discussion, led by the author, was held in March 2024 at the university itself.

During the interview, each participant had access to the two writing activity questions that were posted on the learning management system earlier in the semester. They were advised to read the questions to freshen their memory and elicit a detailed discussion. The discussion lasted from 45 minutes to an hour and was recorded with the participants' consent. The participants were asked about their experiences using ChatGPT in completing these activities. The discussion questions among others also required them to share how they used ChatGPT and other GenAI tools whilst studying. Probing questions were used whenever possible to acquire a deeper understanding of the participants' experiences.

The author then transcribed the discussion contents. The participants subsequently reviewed the interview transcript to ensure the credibility of the author's interpretation and understanding. Following feedback from the participants, errors and omissions in the transcript were reviewed. Based on Lincoln and Guba's (1985) advice, the textual data was analysed and arranged into similar categories from which major themes were determined. The analysis was also guided by Braun and Clarke's (2006) six phases of conducting a thematic analysis and their 15-point checklist for good thematic analysis.

Findings

The main themes uncovered following the analysis of the focus group discussion transcripts were: 1) aids students learning, 2) awareness of the limitations of ChatGPT and other GenAI tools, and 3) heightens academic integrity awareness. A selected sample of the participants' views which supports each theme is provided here.

Theme 1: Aids Students' Learning

All five participants acknowledged that they engaged with GenAI tools to support their learning. Although the interview questions were primarily focused on the use of ChatGPT for the written essays in their Business Management course, they also shared their use of ChatGPT and other GenAI tools in their other business courses. The participants not only used ChatGPT, but also other tools such as Gemini and Perplexity in their studies.

Alicia shared the following:

I asked ChatGPT to improve on my answers and it managed to rephrase each paragraph to make it sound better and easier to read. It uses better choice of words that could explain the concept a lot clearer.

She added:

When learning a complicated topic in Economics, I used Gemini a lot to help me summarise the important points and uncover the biggest takeaways from each lesson. I learned better as it provides a very neatly summarised response. It is like a side resource for my studies.

Irene mentioned the following:

I used ChatGPT when I want to improve on my sentences. ChatGPT will rephrase my sentences. I can see how it uses the more appropriate vocabulary and structured my sentences. From here I can learn and improve on my own work.

Amber said the following:

ChatGPT provided a more in-depth and better explanation than what I've written. But it just didn't give us examples for us to relate it back to the real world.

It depends on the topic and the subject. I used it more for Economics as it helps me understand a particular topic. You can ask questions and basically make it explain in a way that you understand.

These respondents' views align with Rasul et al.'s (2023) perspective. Based on the constructivist theory of learning, the researchers opined that ChatGPT allows students to explore and experiment with ideas, raise questions and gain prompt feedback which in turn enables them to construct their own understanding of knowledge. For Irene, ChatGPT assisted in improving her written work whilst Amber learnt that it lacked real-world examples.

Lorraine summed her thoughts as follows:

I use GenAI like Gemini for inspiration. It explains terms and concepts in a very simplistic manner and makes it easier for my understanding. I only use it to give myself general ideas on how I can go about for my assignments.

When I wanted to search for more specific data for example the wealth class gap between 2012 to 2020, I used Perplexity. It provided me suggestions and references on where to search.

In a constructivist learning environment, studies by Adar and Kandemir (as cited in Rasul et al., 2023) demonstrated that technologies like GenAI tools enable students to manage their own skills and knowledge and subsequently, determine interventions they require to bridge the knowledge gap. This was evident from Claire's explanation:

When revising for my Economics examination, I asked ChatGPT to generate some multiple-choice questions. I attempted those questions and submitted the answers to ChatGPT for its feedback and explanation on answers which I got them wrong.

The participants were aware of the benefits of the GenAI tools and harnessed these to their benefit. When faced with a complicated topic, some participants relied on these tools to deepen their understanding. According to Zheng (2023), to obtain useful answers, students can submit multiple prompts to ChatGPT and choose the answer that best clarifies their understanding. For participants who found it a challenge to write their essays, these tools showed them how to improvise their sentence structure and accorded better choice of words.

Fraiwan and Khasawneh (2023) explained that ChatGPT is not only able to scrutinise the grammar, punctuation and spelling errors but most importantly, can suggest improvements to the overall flow and structure of the writing. In addition, these tools have been used to generate revision exercises and provided useful feedback before the participants sat for their examination. It is evident that these GenAI tools not only support students in taking ownership of their learning but most importantly, provide an impetus for them to produce high-quality work. Further, integrating modern technologies such as this into lessons make students more motivated, engaged and interested in learning (Shuima et al., 2024).

Theme 2: Awareness of the Limitations of ChatGPT and other GenAI Tools

Nonetheless, the participants were unanimous regarding the limitations of ChatGPT and other GenAI tools. Despite the hype surrounding the various GenAI tools, they realised that these tools currently still have their limitations. Baidoo-Anu and Ansah (2023) explained that these tools may, among others, be constrained by the data that it was trained, generate wrong answers or worst, fabricate articles and references.

Lorraine made the following claim:

For the essay on the challenges of doing business in China, I submitted 3 rounds to ChatGPT. I tend to write quite lengthy as I don't know how to edit my essay. ChatGPT shortened my paragraph from 4 sentences to between 2 and 3 sentences. I noticed that if I were to submit more than once, it gave me the same thing. It just simplified my answer. Although it helped in summarising my essay, it didn't suggest a better way to answer the essay.

Amber said the following:

The information is not usually updated. When you ask ChatGPT to give you a more in-depth explanation to what it's already given you, it just adds more words but not value.

Irene stated as follows:

The information was too general. ChatGPT provided a better choice of words for my essay, however there are some 'big' words that I sometimes don't understand.

Agreeing with Irene on the choice of words used by ChatGPT, Claire shared similar views:

I think these 'big' words makes it more complicated for me.

For Alicia who felt that she had a more concise writing style, she observed that ChatGPT did the opposite. Alicia explained the following:

The response from ChatGPT had fancier words and made my sentences a little lengthier. It was more aesthetically pleasing to read. It does add some value, but the main idea is technically exactly the same.

For Irene and Claire who may not be as proficient in the English language compared to the other participants, using ChatGPT in their studies at times made it more challenging. The words used in the text generated by ChatGPT are not their commonly used words and this complicated their understanding. Acknowledging this and the other limitations of these tools, the participants mentioned that they will usually reflect on the responses. They will compare and clarify these responses

with other sources, for example, their family members, lecture notes and other web sources.

Amber highlighted this:

I think normally what I do is I try to corroborate what's given on ChatGPT. So sometimes if a Google search isn't helping, I try to put it into Gemini and to see if it checks out.

Lorraine expressed the following:

I clarify the information provided with my peers and sometimes with my family members.

It is heartening to note that the participants did not just take the responses from these tools as the gospel truth. They critically assessed and verified these responses. This is in line with Abdalla et al. (2024) who stated that students should be geared towards asking questions, as well as verifying and critically evaluating responses if they are to leverage ChatGPT. A participant checked the references provided by Perplexity for instance, when other tools like ChatGPT did not include references. Another participant mentioned that she compared ChatGPT's response with her lecture notes. Ramasamy and Lee (2022) stressed that in response to Industrial Revolution 4.0, students cannot be passive learners but instead, must take ownership of their learning and be able to assess their work and their peers.

All the participants agreed the importance of a lecturer's presence in providing feedback. This is backed by Palmer et al.'s (2023) study whereby students indicated trusting their lecturers more for feedback on assessments rather than GenAI. Alicia succinctly summed it up as follows:

The lecturers who are marking our work give us more authentic feedback compared to the GenAI tools. These tools do not know the requirements of the marking rubric. We definitely do prefer the face-to-face feedback with the lecturer. We understand the feedback better. To use GenAI as the main point of feedback is not something that I would go for.

The limitations of GenAI resulted in the participants having a lack of trust on such tools. This finding corroborates with that of Amoozadeh et al. (2024). About half of the participants in their studies expressed a lack of trust on the GenAI's output and stressed the need for human intervention and checking of answers generated by GenAI. Thus, the lecturer's presence is important to not only guide these pre-

university students who are new to using GenAI tools, but also to ensure that the AI generated answers are correct and reliable.

Theme 3: Heightens Academic Integrity Awareness

The participants were aware that by using the GenAI tools, it may raise doubts about the integrity of their work. This is true when it concerns students' written essays and assignments. In their study, Baek et al. (2024) found that their respondents also expressed similar concerns, fearing unintentional plagiarism and being accused of cheating when using GenAI tools. These artificial intelligence tools can produce essays which can pass off as human-written unless they are scrutinised in detail. Cotton et al. (2023) highlighted that it remains challenging to maintain academic integrity when ChatGPT is used to write academic papers, essays and dissertations. For novice GenAI users and in particular, students who may be new to such tools, its misuse or unintentional misuse could lead to an academic misconduct.

Lorraine shared the following:

I always get worried that I may be teetering too much into using GenAI ideas. I've to be sure that I don't. That's why my usage of GenAI tools is not too high. I get really worried sometimes.

Amber admitted the following:

I think it does make us aware about academic integrity because it's all about not plagiarising. We don't know where they're getting the information from. So, the best we can do is to just take inspiration.

Irene commented:

I need to firstly understand the responses that ChatGPT provided. I will then try to write it out in my own sentences.

Alicia said the following:

I'll ask my mum, other family members, friends or my lecturers when I faced difficulties in understanding the assignment questions and not resort to GenAI immediately.

The participants' concern regarding academic integrity aligns with the findings of Firat (2023) and Petricini et al. (2023) whereby their students perceived improper use of ChatGPT can be misconstrued as cheating by their university administration.

All participants in this study affirmed that they would not resort to GenAI tools when undertaking take-home academic tasks. This could be attributed to these participants' awareness regarding academic integrity. At the participants' university, they have access to guidance on the use of artificial intelligence content creation tools. They are also regularly reminded on the pitfalls of depending too heavily on such tools.

Discussion

The business course that this group of students is undertaking has authentic assessment components that requires them, among others, to manage online businesses and thereafter submit a report, applying real-world economic data to a particular context and proposing business strategies for a real business. These assessments reduce the possibility of students relying on GenAI tools for solutions. Nonetheless, for in-person examinations, essay questions are still required of students to build their critical argument skills. For this reason, ChatGPT was introduced as a learning tool in their Business Management course. It was also timely to expose students to GenAI tools and guide them in their proper usage as these tools are here to stay and widely used at the workplace. Building artificial intelligence literacy among pre-university students certainly cannot be delayed.

In examining the participants' use of ChatGPT, it is evident that ChatGPT and other GenAI tools supported their learning, raised their awareness regarding academic integrity and made them aware of its limitations. These GenAI tools with its human-like communication feature acts like a peer support. Students have a 24/7 access to these tools and they could ask any questions. They need not be concerned whether their questions sound unintelligent or repetitive, something which some students may be reluctant to engage in the presence of their peers and lecturers while in class. Acting like a virtual tutor, ChatGPT willingly provides answers to the most rudimentary questions and could re-explain a concept in "baby words" as how one participant termed it when she prompted the tool.

For participants who find it challenging when it comes to writing, they learnt how to better structure their sentences and use a more suitable vocabulary as they engage with the GenAI. This is beneficial as it develops confidence among these students who are embarking on subject-related essays for their first time. Most importantly, the GenAI tools offer support that tailors to an individual student's needs. Shihab et al. (2023) commended that ChatGPT's individualised learning technique can cater to different learning preferences and styles leading to better conceptual understanding. Due to its personalised learning approach, Shihab et al. (2023) added that students can receive immediate feedback, pose questions and engage in in-depth topic exploration hence raising their motivation and engagement. This type of support is important, especially for pre-university business students who

will be taking on more academic writing as they progress into their undergraduate business studies. On the other hand, this may not be the case for students in an advanced course. Only around a quarter of the respondents from the advanced Computer Science courses in Amoozadeh et al.'s (2024) study found GenAI to be helpful, yet expressed lack of trust in the AI-generated answers.

When using Gen AI tools such as ChatGPT, the participants were conscious of its limitations. The GenAI tools lack examples and do not provide sufficient evidence to support its explanation. For some participants, the responses from ChatGPT further complicated their understanding and only made their write-up lengthier. This finding supports Amoozadeh et al.'s (2024) study, where about half of the participants acknowledged that GenAI is not infallible and hence, resulted in their distrust of its ability and output. They highlighted the need for human intervention to ensure accuracy and reliability of answers generated from GenAI tools.

In this study, it was found that although each student simultaneously submitted a similar prompt to ChatGPT, some received responses which were not detailed. Hence, it is necessary for lecturers to guide students especially younger group of students who may not have adequate background knowledge of the topic under study. In allowing students to use ChatGPT and other GenAI tools, it is imperative that educational institutions highlight its shortcomings to avoid students from accepting the responses without much critical thought.

When using ChatGPT in their studies, the participants were aware that improper usage could lead towards academic dishonesty. The participants in this study acknowledged that it is their duty to use ChatGPT and other GenAI tools responsibly. Although it is tempting to seek assistance from these tools, the participants knew that this may jeopardise the integrity of their work. Currently, plagiarism software like Turnitin and GenAI detectors are unable to accurately detect and differentiate a human-written piece of work with that of a chatbot. The preservation of academic integrity is also a concern amongst academics as highlighted by Albadarin et al. (2024). Hence, take-home assessments requiring the application of business students' knowledge and skills with output produced through presentations and reports should take precedence over written essays on a specific topic. In order to maintain academic integrity, Rasul et al. (2023) suggested that a culture of academic integrity should be developed and the implications of not meeting learning outcomes should be emphasised to students. Further, any input derived by students from GenAI tools needs to be acknowledged with adequate citations in place.

Recommendations for Future Research

This research was conducted amongst a selected group of pre-university business students at a private higher learning institution. More insights could be drawn from pre-university students at other private and public higher learning institutions. It

would also be interesting to investigate whether undergraduate and postgraduate students in Malaysia share similar views regarding the use of these GenAI tools.

Only female participants' views were sought in this study. Coincidentally, females made up the majority in this course, and they were considered the above average students. They were also chosen as they showed keenness to share their experiences using ChatGPT. The views of male participants and academically weaker students could be sought in future studies to provide a better understanding of the topic under study.

In this study, only the participants' perspectives on their usage of ChatGPT and other GenAI tools were sought. The study did not consider students' performance in their business courses after the use of these digital tools. Future research could study this aspect to deepen our understanding on the impact of these tools on these pre-university students' academic performance. A study from the lecturers' perspective on their use of these innovative tools could also be undertaken.

The participants in this study recalled their experiences using ChatGPT and other GenAI tools using their memories. Thus, the perspectives could have been influenced by their own biases and memory errors. As such, a longitudinal study would further enrich our understanding of the long-term implications of using such tools among students.

Future studies could also require participants to keep a log on their use of such tools and transcripts of their conversations with ChatGPT. These would provide a deeper understanding on how students engage with artificial intelligence language models and subsequently, improve their critical thinking and writing skills. In addition, students can also submit their original written piece of work before and after receiving the GenAI response and include their learning reflections.

Findings from this research are limited in its ability to be generalised as it focuses on a specific business course and students from a single university. Nonetheless, the understanding of the participants' experiences when using these GenAI tools has extended our knowledge in this area. Additionally, the themes derived from this study can be researched further using a quantitative approach.

Conclusion

This study contributes to the literature on the use of GenAI tools in business courses from the perspective of a selected group of pre-university students at a private higher education institution in Malaysia. Findings from this qualitative study can be considered when incorporating the use of GenAI tools in the teaching and learning of business courses at the pre-university level. ChatGPT and its equivalent support a variety of students' learning styles and is in line with the constructivist learning paradigm. Despite their current shortcomings, with appropriate use, these technological tools will add another dimension to the way students learn. Coupled

with guidance on using such tools, this will spur them to be better equipped learners' and in control of their own learning.

With proper policies in place, incorporating GenAI tools in teaching and learning at the higher education level is necessary given its positive impact on student's learning. Policies issued by universities on the use of ChatGPT and other GenAI tools must emphasise the importance of proper citations if students were to use the responses and resources from these tools responsibly. These policies should continuously be updated in line with the evolving and powerful nature of GenAI. On the contrary, banning the use of ChatGPT and other similar tools will only lead to a Streisand effect, a phenomenon according to Jansen and Martin (2015) in which attempts of censorship only results in counterproductive and opposite effects.

Although these tools are currently not entirely perfect, their potential should not be underestimated, and instead, be harnessed. Early exposure of students to these tools will provide a strong foundation and understanding on how they can benefit from such tools. With an expected influx of more and better GenAI tools and usage across multiple industries in the coming years, it is timely for educators to reimagine their teaching and learning approaches by tapping on these dynamic GenAI tools.

According to Huo and Siau (2024), for students to be successful, they need to be taught how to think. Apart from possessing self-regulation and the right motivation to learn, teaching metacognition enables students to actively think, analyse, question, reflect and make meaningful connection from the GenAI's responses. They argued that a metacognitive teaching approach will mould independent and lifelong learners that are fit for the present and future AI-driven business world. The 21st century graduates will be working alongside other artificial intelligence tools, robots and engage with machine learning. Hence, it is imperative that not only are they exposed to the correct usage of such tools today, but also become conscious of their potential and limitations.

Open Access: This article is distributed under the terms of the Creative Commons Attribution License (CC-BY 4.0) which permits any use, distribution and reproduction in any medium, provided the original author(s) and the source are credited.

References

- Abdalla, A., Bhat, A., Tiwari, C., Khan, S., & Wedajo, A. (2024). Exploring ChatGPT adoption among business and management students through the lens of diffusion of innovation theory. *Computers and Education: Artificial Intelligence*, 7, article 100257. <https://doi.org/10.1016/j.caeai.2024.100257>
- Albadarin, Y., Saqr, M., Pope, N., & Tukiainen, M. (2024). A systematic literature review of empirical research on ChatGPT in education. *Discover Education*, 3, 60. <https://doi.org/10.1007/s44217-024-00138-2>

- Ali, J. K. M., Shamsan, M. A. A., Hezam, T. A., & Mohammed, A. A. Q. (2023). Impact of ChatGPT on learning motivation: Teachers and students' voices. *Journal of English Studies in Arabia Felix*, 2(1), 41–49. <https://doi.org/10.56540/jesaf.v2i1.51>
- Amoozadeh, M., Daniels, D., Nam, D., Chen, S., Hilton, M., Ragavan, S. S., & Alipour, M. A. (2024, July). *Trust in generative AI among students: An exploratory study* [Conference presentation]. ACM Conference (Conference'17), ACM, New York, USA. <https://doi.org/10.48550/arXiv.2310.04631>
- Baek, C., Tate, T., & Warschauer, M. (2024). "ChatGPT seems too good to be true": College students' use and perceptions of generative AI. *Computers and Education: Artificial intelligence*, 7, article 100294. <https://doi.org/10.1016/j.caeai.2024.100294>
- Baidoo-Anu, D., & Ansah, L. O. (2023). Education in the era of generative artificial intelligence (AI): Understanding the potential benefits of ChatGPT in promoting teaching and learning. *Journal of AI*, 7(1), 52–62. <https://doi.org/10.61969/jai.1337500>
- Baser, V. G., & Mutlu, N. (2011, April 27–29). *An investigation of relationship between pre-service elementary teachers' pedagogical beliefs and their technology integration perception* [Conference presentation]. Second International Conference on New Trends in Education and their Implications, Antalya, Turkey.
- Bell, R., & Bell, H. (2023). Entrepreneurship education in the era of generative artificial intelligence. *Entrepreneurship Education*, 6, 229–244. <https://doi.org/10.1007/s41959-023-00099-x>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Cotton, D. R. E., Cotton, P. A., & Shipway, J. R. (2023). Chatting and cheating: Ensuring academic integrity in the era of ChatGPT. *Innovations in Education and Teaching International*, 61(2), 228–239. <https://doi.org/10.1080/14703297.2023.2190148>
- Draxler, F., Buschek, D., Tavast, M., H`am`al`ainen, P., Schmidt, A., Kulshrestha, J., & Welsch, R. (2023). Gender, age, and technology education influence the adoption and appropriation of LLMs. [arXiv:2310.06556](https://arxiv.org/abs/2310.06556). <https://doi.org/10.48550/arXiv.2310.06556>
- Firat, M. (2023). What ChatGPT means for universities: Perceptions of scholars and students. *Journal of Applied Learning and Teaching*, 6(1), 57–63. <https://doi.org/10.37074/jalt.2023.6.1.22>
- Foltynek, T., Bjelobaba, S., Glendinning, I., Khan, Z. R., Santos, R., Pavletic, P., & Kravjar, J. (2023). ENAI recommendations on the ethical use of artificial intelligence in education. *International Journal for Educational Integrity*, 19(1), article 12. <https://doi.org/10.1007/s40979-023-00133-4>
- Fraiwan, M., & Khasawneh, N. (2023). A review of ChatGPT applications in education, marketing, software engineering, and healthcare: Benefits, drawbacks, and research directions. [arXiv:2305.00237](https://arxiv.org/abs/2305.00237). <https://doi.org/10.48550/arxiv.2305.00237>
- Francis, N. J., Jones, S. & Smith, D. P. (2025). Generative AI in higher education: Balancing innovation and integrity. *British Journal of Biomedical Science*, 81. <https://doi.org/10.3389/bjbs.2024.14048>

- Habib, S., Vogel, T., Anli, X., & Thorne, E. (2024). How does generative artificial intelligence impact student creativity? *Journal of Creativity*, 34(1), article 100072. <https://doi.org/10.1016/j.joc.2023.100072>
- Huo, X., & Siau, K. L. (2024). Generative artificial intelligence in business higher education: A focus group study. *Journal of Global Information Management*, 32(1), 1–21. <https://doi.org/10.4018/JGIM.364093>
- Jafari, F., & Keykha, A. (2024). Identifying the opportunities and challenges of artificial intelligence in higher education: A qualitative study. *Journal of Applied Research in Higher Education*, 16(4), 1228–1245. <https://doi.org/10.1108/JARHE-09-2023-0426>
- Jansen, S. C., & Martin, B. (2015). The Streisand effect and censorship backfire. *International Journal of Communication*, 9, 656–671. <https://ijoc.org/index.php/ijoc/article/view/2498>
- Leggatt, J. (2023, March 22). What is ChatGPT? A review of the AI in its own words. *Forbes*. <https://www.forbes.com/advisor/business/software/what-is-chatgpt/>
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage.
- Liu, Z., Vobolevich, A., & Oparin, A. (2023). The influence of AI ChatGPT on improving teachers' creative thinking. *International Journal of Learning, Teaching and Educational Research*, 22(12), 124–139. <https://doi.org/10.26803/ijlter.22.12.7>
- Łodzikowski, K., Foltz, P. W., & Behrens, J. T. (2023). Generative AI and its educational implications. arXiv:2401.08659. <https://doi.org/10.48550/arXiv.2401.08659>
- Makewa, L. N. (2019). Constructivism theory in technology-based learning. In L. Makewa, B. Ngussa, & J. Kuboja (Eds.), *Technology-supported teaching and research methods for educators* (pp. 268–287). IGI Global Scientific Publishing. <https://doi.org/10.4018/978-1-5225-5915-3.ch015>
- Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. Jossey Bass.
- Monika, M., & Suganthan, C. (2024). A study on analysing the role of ChatGPT in English acquisition among ESL learners during English language classroom. *Bodhi International Journal of Research in Humanities, Arts and Science*, 8(2), 75–84. <http://dx.doi.org/10.13140/RG.2.2.28252.56961>
- OpenAI's weekly active users surpass 400 million. (2025, February 25). *Reuters*. <https://www.reuters.com/technology/artificial-intelligence/openais-weekly-active-users-surpass-400-million-2025-02-20/>
- Palmer, E., Lee, D., Arnold, M., Lekkas, D., Plastow, K., Ploekl, F., Srivastav, A. & Strelan, P. (2023). Findings from a survey looking at attitudes towards AI and its use in teaching, learning and research. In T. Cochrane, V. Narayan, C. Brown, K. MacCallum, E. Bone, C. Deneen, R. Vanderburg, & B. Hurren (Eds.), *Proceedings ASCILITE 2023: People, partnerships and pedagogies*. ASCILITE <https://doi.org/10.14742/apubs.2023.537>
- Petricini, T., Wu, C., & Zipf, S. T. (2023). Perceptions about artificial intelligence and ChatGPT use by faculty and students. *Transformative Dialogues: Teaching and Learning Journal*, 17(2), 63–87. <https://journals.psu.edu/td/article/view/1825>
- Rahman, M. M., & Watanobe, Y. (2023). ChatGPT for education and research: Opportunities, threats, and strategies. *Applied Sciences (Basel, Switzerland)*, 13(9), 5783. <https://doi.org/10.3390/app13095783>

- Raman, R., Mandal, S., Das, P., Kaur, T., Sanjanasri, J. P., & Nedungadi, P. (2024). Exploring university students' adoption of ChatGPT using the Diffusion of Innovation Theory and sentiment analysis with gender dimension. *Human Behaviour and Emerging Technologies*, 1–21. <https://doi.org/10.1155/2024/3085910>
- Ramasamy, T. & Lee, Y. L. (2022). Impact of IR 4.0 on assessment at higher education institutes. *Asia-Pacific Journal of Futures in Education and Society*, 1(1), 1–16.
- Rasul, T., Nair, S., Kalendra, D., Robin, M., Santini, F., Ladeira, W.J., Sun, M., Day, I., Rather, R.A., & Heathcote, L. (2023). The role of ChatGPT in higher education: Benefits, challenges and future research directions. *Journal of Applied Learning and Teaching*, 6(1), 41–56. <https://doi.org/10.37074/jalt.2023.6.1.29>
- Resnick, M. (2024, Apr 24). Generative AI and creative learning: Concerns, opportunities, and choices. *Medium*. <https://mres.medium.com/ai-and-creative-learning-concerns-opportunities-and-choices-63b27f16d4d0>
- Rospigliosi, P. (2023) Artificial intelligence in teaching and learning: What questions should we ask of ChatGPT? *Interactive Learning Environments*, 31(1), 1–3. <https://doi.org/10.1080/10494820.2023.2180191>
- Shaikh, S., Yayilgan, S.Y., Klimova, B., & Pikhart, M. (2023). Assessing the usability of ChatGPT for formal English language learning. *European Journal of Investigation in Health, Psychology and Education*, 13, 1937–1960. <https://doi.org/10.3390/ejihpe13090140>
- Shihab, R., Sultana, N., & Samad, A. (2023). Revisiting the use of ChatGPT in business and educational fields: Possibilities and challenges. *BULLET: Jurnal Multidisiplin Ilmu*, 2(3), 534–545.
- Shoufan, A. (2023). Exploring students' perceptions of ChatGPT: Thematic analysis and follow-up survey. *IEEE Access*, 11, 38805–38818. <http://dx.doi.org/10.1109/ACCESS.2023.3268224>
- Shuima, M., Perinpasingam, T., & Aneela, M. (2024). Teachers' perceptions of the impacts of technology on Key Stage 2 students in Fuvahmulah City, Maldives. *Asia-Pacific Journal of Futures in Education and Society*, 3(3), 107–121. <https://doi.org/10.58946/apjfes-3.3.P6>
- Strzelecki, A. (2024). Students' acceptance of ChatGPT in higher education: An extended unified theory of acceptance and use of technology. *Innovative Higher Education*, 49, 223–245. <https://doi.org/10.1007/s10755-023-09686-1>
- Trent, C. (2023). ChatGPT and current events in the Economics classroom. *Business Education Innovation Journal*, 15(1), 177–186.
- Warschauer, M., Tseng, W., Yim, S., Webster, T., Jacob, S., Du, Q., & Tate, T. (2023). The affordances and contradictions of AI-generated text for writers of English as a second or foreign language. *Journal of Second Language Writing*, 62, 101071. <https://doi.org/10.1016/j.jslw.2023.101071>,
- Worthington, M. (2013). *Differences between phenomenological research and a basic qualitative research design*. <http://a1149861.sites.myregisteredsite.com/DifferencesBetweenPhenomenologicalResearchAndBasicQualitativeResearchDesign.pdf>

- Zhang, X., Li, D., Wang, C., Jiang, Z., Ngao, A.I., Liu, D., Peters, M.A., & Tian, H. (2023). From ChatGPT to China' sci-tech: Implications for Chinese higher education. *Beijing International Review of Education*, 5(3), 296–314. <https://doi.org/10.1163/25902539-05030007>
- Zheng, Y. (2023). ChatGPT for teaching and learning: An experience from data science education. In *Proceedings of the 24th Annual Conference on Information Technology Education* (pp. 66–72). Association for Computing Machinery. <https://doi.org/10.1145/3585059.3611431>