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Exploring the Relationship Between Academic Achievement and ChatGPT Usage: A Survey of Higher Education Students in Malaysia

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Abstract - Students' academic achievement is caused by several factors which include cognitive capability, study habits, instructor effectiveness, family support, socio-economic status, and access to modern learning technologies like ChatGPT. Since its introduction, studies have suggested that ChatGPT has significantly impacted students' academic performance. This study aims to explore whether students who perform well academically in higher education are more likely to use ChatGPT to enhance their studies and to gather their opinions on this learning tool. A survey was conducted with forty-one students with excellent academic performance. The results of this study show that most students with high academic achievement view ChatGPT as a valuable learning tool, with 82.9% states that it helps them understand complex topics and 73.2% find it useful for assignments. 51.2% use ChatGPT for academic purposes and 39% use it for both academic and non-academic tasks which indicate its broader utility. 80.5% of students indicate it is beneficial for their studies even though only 49.8% trust its accuracy. 73.4% of students acknowledge the risk of misuse such as cheating even though 53.7% still believe current protections are sufficient. Finally, students suggest improvements in ChatGPT such as the ability to provide more accurate responses and handle complex academic queries. In summary, the study suggests that students who perform well academically do use ChatGPT to improve their studies and appreciate its benefits. However, they also raise ethical concerns regarding its potential of misuse. For educators, the outcomes of this study will be of great benefit to them as the results highlight the need for them to allow students to use ChatGPT to improve their academic performance and at the same time tackling potential unethical issues such as misuse and cheating.

Keywords— Higher Education, Academic Achievement, ChatGPT, Artificial Intelligence Tools, Student Perception

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1. INTRODUCTION

For students, especially in higher education, academic achievement is important because it is the determinant of their future opportunities, career paths, and personal growth. It also acts as a measure of performance to indicate how good

students meet the educational objectives that are designed by schools, colleges, and universities [1]. Indicators that determine students' academic achievement are like grades, standardized test scores, GPA [2], and academic awards and honours [3].

In the 1900s, textbooks were the main source of knowledge in schools and universities. Educators used blackboards and chalk to explain ideas and students used paper and pen or pencil to take notes and to complete assignments. For visual presentation, overhead projectors were used while flashcards were used for memorization. Students printed hardcopies for easy references and went to libraries to do more research. Furthermore, some students preferred to have study groups and hired tutors for one-on-one sessions [4].

By the late 20th century, the learning process started to change. Modern technologies like learning management systems (LMS), online collaboration tools such as Zoom and Microsoft Teams, and educational apps were integrated in the academic learning setting. And, in the early 21st century, the integration of artificial intelligence (AI) technologies, such as ChatGPT, has significantly enhanced students' learning experiences and contributed to academic achievement positively [5].

ChatGPT has been widely discussed in research papers [6] and in brief, it is an AI-powered chatbot developed by OpenAI, a research organization founded in 2015 and released in November 2022 [7]. ChatGPT is a virtual entity powered by AI and machine learning, enabling interaction with users through text or voice [8]. It has been recognized as an effective educational tool that enhances student engagement and provides personalized support in various learning environments [9].

Much research has proven that ChatGPT has positively influences student learning outcomes but there are still gaps in understanding whether academically successful students are more likely to use ChatGPT to further enhance their achievements, particularly in higher education in Malaysia.

This study aims to address this gap by investigating whether high-performing students in higher education are more inclined to use ChatGPT to enhance their academic performance, and by exploring their perceptions of the platform's effectiveness in supporting their learning. The research problem centres on evaluating the relationship between academic success and the use of ChatGPT in influencing academic achievement.

The study is organized as follows: Section 1 introduces the background information, defines the research problem, explains the study's aim, and outlines the paper's structure. Section 2 presents a literature review, examining research on the use of ChatGPT in education and other fields. Section 3 outlines the research methodology. Section 4 presents the results and discussion. Finally, Section 5 concludes the paper and reveals the limitations of the study.

2. LITERATURE REVIEW

In a broad context, language models, of which ChatGPT is a product, are designed to help computers understand and generate human language, making interactions with computers more natural and fluid while also supporting tasks such as problem-solving and critical thinking. Additionally, they can be utilized to generate teaching and assessment materials and evaluate student responses. However, their role should remain focused on specific, well-defined tasks, as excessive reliance on language models without critical evaluation could hinder student learning, unless both students and educators actively verify the validity, reliability, and accuracy of the generated content [10].

Chatbots and ChatGPT are closely related, as both rely on language models to facilitate intelligent and meaningful conversations [10]. Chatbots were initially used in system development prior to the introduction of ChatGPT, which brought more advanced AI-driven conversational capabilities. For example, chatbots have been employed in campus-based systems, utilizing Natural Language Processing (NLP), machine learning, and deep learning algorithms to help students quickly and easily access information [11]. Furthermore, a chatbot powered by OpenAI functions as a virtual healthcare assistant, engaging users in natural language conversations and offering interactive assistance and information based on their queries [12].

Well, in the educational context, research on ChatGPT's use has shown both benefits and concerns [13]. The benefits were like support for research, automated grading, and enhanced human-computer interaction, while concerns were like online testing security, plagiarism, job displacement, digital literacy gaps, and AI-related anxiety [13]. Moreover, ChatGPT can also positively influence students' academic achievements, particularly in fostering higher-order thinking skills, enhance learning experiences and improve educational outcomes [14]. Nevertheless, improvements

are required to enhance ChatGPT's ability to recognize accents and dialects, incorporate more visual aids and animations, and reduce response times [14]. Google Bard AI, a chatbot developed by Google, and ChatGPT have significant applications in today's world but limitations that must be addressed [8].

Besides the benefits and concerns mentioned above, the use of ChatGPT in education demonstrates its potential to enhance educational experiences through interactive conversations and innovative teaching methods. However, its limitations and ethical implications require careful consideration [15]. Many studies indicate that ChatGPT usage among university students, along with their positive attitudes toward it, is also influenced by factors such as ease of use, social influence, perceived usefulness, and low anxiety [2]. Furthermore, students who interact with ChatGPT generally perform better academically than those who communicate solely with course instructors [16]. Studies with PhD students also show that their satisfaction with ChatGPT can enhance individual net benefits [17].

Although ChatGPT can be a valuable tool for teaching and learning, both educators and students must learn to use it responsibly [18]. Educators must also continue to teach fundamental concepts and motivate students to engage in essential exercises that emphasize the importance of early learning [19]. ChatGPT can assist students in quickly generating work, but they need to understand how to create effective prompts and validate the responses. Additionally, when combined with ChatGPT usage, self-efficacy positively impacts students' learning motivation, which in turn positively affects their academic achievement [20]. Additionally, studies on ChatGPT usage indicate a significant difference in academic performance between students who use ChatGPT and those who do not during independent learning [21].

Beyond the academic scope, ChatGPT has broad applicability across fields, ranging from the fundamental sciences to the social sciences. Its' capability to transform learning activities and research is clear, but its incorporation must be done carefully to sustain the academic integrity and reduce bias, though researchers have identified potential dangers and barriers that need to be addressed [7], [22]. Some studies revealed that many students have expressed a desire to learn more how to use ChatGPT to support their education, and they believe ChatGPT training should be included in their curriculum [23]. Not only students, ChatGPT can also support lecturers in enhancing the quality of their courses. For example, ChatGPT has been explored for its potential in improving the analysis of learning objectives (LOs) within curricula. A study on cybersecurity education assessed the curriculum using Bloom's Taxonomy and found that many of the LOs were focused on "low order" thinking skills. The researchers suggested that AI-driven tools like ChatGPT could help accelerate certain LOs by assisting in content generation and processing natural language quickly [19].

Indeed, ChatGPT can be a valuable tool for improving academic performance. Yet, it is important to recognize the role of students' well-being such as physical, mental and workplace in achieving academic success. Research shows that students tend to perform better when their well-being is prioritized, and it must be as early as elementary school to guarantee long-term success [24]. Therefore, academic achievement is influenced not only by external tools like ChatGPT but also by internal factors and overall well-being. Moreover, research also revealed that social support for students can affect their well-being, sense of belonging, loneliness, and retention rates. On the other hand, students who feel more socially supported by AI tools may experience less support from others, the people [6].

3. RESEARCH METHODOLOGY

This study employs an exploratory quantitative approach to explore the relationship between excellent academic achievement and ChatGPT utilization. The aim is to determine whether students' excellent academic results are attributed to their use of ChatGPT and to gather their opinions about the tool. The study includes 41 students who excelled in the overall continuous and final assessment of a course titled *Problem Solving and Programming*.

3.1 The Course and Assessment Components

Problem Solving and Programming is a 3-credit core course, one of ten core courses and five university courses required to complete the one-year foundation programme in Information Technology offered by Multimedia University, a private institution in Malaysia. In this course, students will learn problem-solving techniques and apply them to programming problems. The course consists of 2 hours of lectures and 1 hour of lab sessions each week, spanning 14 weeks. Students will be presented with programming problems, primarily cantered around typical

mathematical tasks, and will apply the six steps of problem-solving [25]. Figure 1 illustrates the six steps that students use in the course. The six steps are identifying the problem, understanding the problem, listing all the alternative solutions, choosing the best solution, listing all the steps of the selected solution and evaluating the steps of the selected solution.

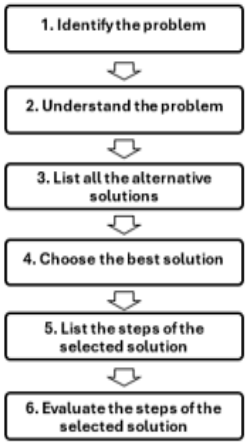

Figure 1. Six Steps of Effective Problem Solving

Effective solving problems requires following all steps sequentially [25]. In addition, when solving problems that involve programming, step 5 specifically involves using design tools such as algorithms, pseudocode, and flowcharts to plan and design solutions before the actual coding begins. This step helps prevent errors and inefficiencies, ensuring that the coding process is structured and effective.

To monitor student performance throughout the course, students receive continuous assessment, followed by a final assessment, the details of which are shown in Table 1. The continuous assessment, which comprises of class discussion, assignment, practical test and project, is an educational evaluation that provides ongoing feedback to students, helps identify areas for improvement, and supports their learning process. The final assessment, which is the final exam, is a comprehensive evaluation administered after the completion of the 14-week course. The assessments are designed to align with the Malaysian Qualifications Framework [26], established by the Malaysian Qualifications Agency (MQA), to ensure quality and academic standards. After completing both assessments, the student's grade is determined using the standard scheme of marks and grades, as shown in Table 2, which can be found on Multimedia University's website [27].

Table 1. The Assessment Components

Assessment Type	Weight (%)
Continuous Assessment	
a. Class Discussion	10
b. Assignment	10
c. Practical Test	10
d. Project	20
Final Assessment	
Final Exam	50
a. Total	100

Table 2. The Standard Scheme of Marks and Grades

Grade	Marks	Points
A+	90 - 100	4.00
A	80 - 89	4.00
A-	75 – 79	3.67
B+	70 – 74	3.33
B	65 – 69	3.00
B-	60 – 64	2.67
C+	55 – 59	2.33
C	50 – 54	2.00
C-	47 – 49	1.67
D+	44 – 46	1.33
D	40 – 43	1.00
Fail	0 - 39	0.00

3.2 Respondents

The respondents in this study were foundational students enrolled in the Foundation in Information Technology programme at Multimedia University. These students were selected using a convenience sampling technique, as the researcher was also the lecturer for the course. A total of 182 students from two different cohorts registered for the course, with 60 students in their second semester and 122 students in their third semester. However, only 181 students completed the course through to the final assessment, as one student did not attempt the final exam for an unknown reason.

After completing the grading process for all assessment components, the results showed that 76 out of the 181 students, approximately 41.9%, received a grade of A, which includes grades from A+ to A-. The detailed distribution of A+ to A- is shown in Table 3. Of these, 17 were second-semester students and 59 were third-semester students. In higher education institutions, students who receive grades of A- or higher are usually recognized as academically excellent, as they demonstrate a high level of performance in their studies. Therefore, this study aims to investigate whether the academic excellence achieved by these students is associated with their use of ChatGPT as a learning tool, while also exploring their perceptions of this tool. To achieve the objective of this study, a survey was conducted among these 76 students.

Table 3. Detailed Distribution of Grade A- to A+

Grade	No. of Student
A+	6
A	45
A-	25
Total	76

3.3 Survey

This study used Microsoft Forms to design and administer the online survey for data collection. ChatGPT was also employed to generate and refine the survey questions through multiple iterations, ensuring that the most relevant inquiries were included to align with the study's objectives. The survey consisted of 23 questions: the first 5 gathered demographic information, the next 6 were closed-ended questions focusing on students' experiences with educational technology tools in general, and the remaining questions, which included 5-point Likert scale questions and some closed-ended questions, explored students' experiences with ChatGPT, the focus of this study.

The survey was conducted from August 23, 2024, to September 30, 2024, spanning just over one month. At the time the survey was conducted, the 59 students who had previously been in their third semester had already progressed to the degree programmes, while the 17 students were already in their third semester of the foundation programme. An invitation email was sent via Microsoft Outlook from the university email address, containing a link to the survey. The students were informed about the purpose of the study and were asked for their permission to use the data collected for research purposes. They were also informed that they would receive a small token of appreciation, which they could collect upon completing the survey. However, only 41 out of the 76 targeted students participated, approximately 54% of the targeted group. Possible reasons for the lack of participation could include a lack of awareness or students transferring to other universities.

In the results and discussion sections, Microsoft Word was used solely for creating the tables, while Microsoft Excel was used to generate the charts for analysis, allowing for a clear and organized presentation of the data.

4. RESULTS AND DISCUSSIONS

The following presents the results of the survey, which aimed to determine whether students who perform well academically in higher education are more likely to use ChatGPT as a tool to enhance their academic achievement, as well as to gather their opinions on ChatGPT. The results are organized into three areas: demographic information, experiences with technological tools in their studies, and the use of ChatGPT in their academic work, along with the opinions of the respondents on this tool.

4.1 Respondents' Demographic Information

A total of 41 respondents (n = 41) took part in the study, and their demographic characteristics, including gender, age, and academic level, are outlined below. Table 4 presents the gender distribution of the respondents, with 28 females (68.3%) and 13 males (31.7%). Many respondents were female, making up more than half of the sample.

Table 4. Gender Distribution of Respondents

Gender	Frequency	Percentage (%)
Male	13	31.7
Female	28	68.3
Total	41	100

Table 5 shows the respondents' age distribution, with all of them being between 18 and 20 years old. At the time the survey was conducted, about a quarter of the respondents were still in the third semester of foundation programme, while the remaining respondents were in their first semester of the bachelor's in degree programme.

Table 6 presents the distribution of respondents' race/ethnicity, with 30 respondents (73.2%) identifying as Chinese, 7 respondents (17.1%) as Malay, and the remaining respondents identifying as Indian or from other ethnic groups in Malaysia. As Malaysia is known for its multiracial composition, the three largest ethnic groups are Malay, Chinese, and Indian.

Table 5. Age Distribution of Respondents

Age Group	Frequency	Percentage (%)
18 - 20	41	100
21- 23	0	0
Total	41	100

Table 6. Race/Ethnicity Distribution of Respondents

Race/Ethnicity	Frequency	Percentage (%)
Malay	7	17.1
Chinese	30	73.2
Indian	3	7.3
Others	1	2.4
Total	41	100

As outlined in Table 7, the data presents the respondents' major or field of study at the time the survey was conducted. Nineteen respondents (46.4%) were in the Foundation programme, followed by 16 respondents (39.0%) studying AI. Three respondents (7.3%) were in Security Technology, two respondents (4.9%) were in Business Intelligence Analytics, and the field of Data Communication Network (DCN) had the least representation, with only 1 respondent (2.4%).

Table 7. Major or Field of Study

Major or Field of Study	Frequency	Percentage (%)
Data Communication Network (DCN)	1	2.4
Security Technology (ST)	3	7.3
Artificial Intelligence (AI)	16	39.0
Business Intelligence Analytic	2	4.9
Foundation	19	46.4
Total	41	100

Table 8 shows the cumulative grade point average (CGPA), a numerical representation of a student's academic performance, calculated by averaging the grade points earned in all courses taken over a specified period, of the respondents when they were at the foundation level. Most respondents (38, or 92.7%) had a CGPA between 3.0 and 3.9. A small portion (2, or 4.9%) reported a CGPA of 4.0, while 1 respondent (2.4%) chose not to answer. No respondents had a CGPA below 2.0 or between 2.0 and 2.9. Respondents who progress to a degree program will have their CGPA reset to zero.

Table 8. Foundation's CGPA Classification

Foundation's CGPA Classification	Frequency	Percentage (%)
Below 2.0	0	0.0
2.0 – 2.9	0	0.0
3.0 – 3.9	38	92.7
4.0	2	4.9
Prefer not to answer	1	2.4
Total	41	100

4.2 Respondents' Experience with Educational Technology

The following data presents the second area of the results, exploring the respondents' experience with educational technology tools. As shown in Table 9, the most widely used tool was Microsoft Teams, used by 37 respondents (90.2%), followed by Canvas, used by 25 respondents (61.0%). Other popular tools included Kahoot! (23 respondents, 56.1%) and Google Classroom (20 respondents, 48.8%). Tools like Quizlet (11 respondents, 26.8%), Duolingo (11 respondents, 26.8%), and Khan Academy (8 respondents, 19.5%) were also used by a smaller proportion of respondents. Less frequently used tools included Moodle and Power BI, both used by 2 respondents (4.9%). Additionally, 13 respondents (31.7%) reported using other tools. This data also shows that every respondent used at least one of the listed tools, with some using multiple tools.

Table 9. Types of Educational Technology Tools Used During Studies

Types of Educational Technology Tools Used During Studies	Frequency	Percentage (%)
Canvas	25	61.0
Moodle	2	4.9
Google Classroom	20	48.8
Microsoft Teams	37	90.2
Kahoot!	23	56.1
Quizlet	11	26.8
Khan Academy	8	19.5
Jamboard	3	7.3
Duolingo	11	26.8
Power BI	2	4.9
Others	13	31.7

The data in Table 10 presents the frequency with which respondents use educational technology tools, but only 40 respondents responded to this question. The data shows that 23 respondents (57.5%) used educational technology tools several times a week, while 14 respondents (35.0%) used them daily. Only 1 respondent (2.5%) used them once

a week, and 2 respondents (5.0%) used them several times a month. No respondents reported using educational technology tools once a month or rarely.

Table 10. Frequency of Using Educational Technology Tools

Frequency of Using Educational Technology Tools	Frequency	Percentage (%)
Daily	14	35.0
Several times a week	23	57.5
Once a week	1	2.5
Several times a month	2	5.0
Once a month!	0	0.0
Rarely	0	0.0
Total	40	100

The data in Table 11 shows how comfortable the respondents are with educational technology tools. As indicated in the table, out of 40 respondents, 18 (45.0%) reported being "Very comfortable" with technology, while 22 (55.0%) were "Comfortable". No respondents reported being "Neutral", "Uncomfortable", or "Very uncomfortable".

Table 11. Comfort with Technology

Comfort with Technology	Frequency	Percentage (%)
Very comfortable	18	45.0
Comfortable	22	55.0
Neutral	0	0.0
Uncomfortable	0	0.0
Very uncomfortable	0	0.0
Total	40	100

Table 12 shows the primary modes used by respondents to access educational tools. Of the respondents, 28 (70.0%) used computers/laptops, 8 (20.0%) used smartphones, and 5 (12.5%) used tablets. No participants used e-readers.

Table 13 highlights the various AI tools and chatbots utilized by the respondents during their studies. According to the information presented in the table, ChatGPT being the most frequently mentioned, used by 40 respondents (97.6%). Other tools include Google Bard (4 participants, 9.8%), Google Assistant (6 respondents, 14.6%), Apple Siri (2 respondents, 4.9%), Microsoft Cortana (1 respondents, 2.4%), and a range of other tools employed by 11 respondents (26.8%). Additionally, the findings indicate that many respondents engaged with multiple AI tools or chatbots.

In Table 14, the levels of experience of respondents with AI tools and chatbots are compiled. The data reveals that 30 respondents (73.2%) had a moderate level of experience with AI tools and chatbots. Additionally, 6 respondents (14.6%) reported having extensive experience, 4 respondents (9.8%) indicated limited experience, and 1 respondent (2.4%) expressed uncertainty about whether their tools are AI-based.

Table 12. Primary Mode of Accessing Educational Tools

Primary Mode of Accessing Educational Tools	Frequency	Percentage (%)
Computer/Laptop	28	70.0
Smartphone	8	20.0
Tablet	5	12.5
E-reader	0	0.0
Total	41	100

Table 13. Types of AI Tools & Chatbots Used During Studies

Types of AI Tools and Chatbots Used During Studies	Frequency	Percentage (%)
ChatGPT	40	97.6
Google Bard	4	9.8
Google Assistant	6	14.6
Apple Siri	2	4.9
Microsoft Cortona	1	2.4
Others	11	26.8

Table 14. Experience with AI Tools and Chatbots

Experience with AI Tools and Chatbots	Frequency	Percentage (%)
Extensive experience	6	14.6
Moderate experience	30	73.2
Limited experience	4	9.8
No experience – I have never use it	0	0.0
Not sure – I'm not sure if the tools I use are AI-based or not	1	2.4
Others	41	100

4.3 Respondents' Use of ChatGPT

The remaining results focus on the third area, which is the use of ChatGPT in the respondents' academic work, along with their opinions on this tool. The first question asked of the respondents was about the version of ChatGPT they were currently using or had used. As illustrated in Table 15, 13 respondents (31.7%) used ChatGPT-3.5, 9 respondents

(22.0%) used ChatGPT-4, and 2 respondents (4.9%) used ChatGPT-3. Additionally, 6 respondents (14.6%) used multiple versions, while 11 respondents (26.8%) were unsure which version they used.

Table 15. ChatGPT Version in Use or Have Used

The version of ChatGPT is currently using or have used	Frequency	Percentage (%)
ChatGPT-3 (released June 2020)	2	4.9
ChatGPT-3.5 (released November 2022)	13	31.7
ChatGPT- 4 (released March 2023)	9	22.0
I use multiple versions	6	14.6
I'm not sure which version I use	11	26.8
Total	41	100

Next, the respondents were asked how often they used ChatGPT. The data in Table 16 shows that 22 respondents (55.0%) used ChatGPT several times a week, 6 respondents (15.0%) used it daily, and 7 respondents (17.5%) used it once a week. Additionally, 4 respondents (10.0%) used it rarely, and 1 respondent (2.5%) used it several times a month. No respondent reported never using ChatGPT.

Table 16. Frequency of ChatGPT Use

How often do you use ChatGPT?	Frequency	Percentage (%)
Daily	6	15.0
Several times a week	22	55.0
Once a week	7	17.5
Several times a month	1	2.5
Rarely	4	10.0
Never	0	0.0
Total	40	100

As illustrated in Table 17, the data highlights the primary uses of ChatGPT. The most common uses were homework help (22.0%) and educational support (22.0%), each reported by 9 respondents. Research followed closely with 8 respondents (19.5%), while content creation, such as writing and brainstorming, accounted for 6 respondents (14.6%). Answering questions was the next most common use, with 5 respondents (12.2%), and personal assistance was used by 3 respondents (7.3%). Entertainment was the least common use, with just 1 respondent (2.4%). Notably, no one reported not using ChatGPT, indicating that all respondents had utilized the tool to some extent.

The subsequent question posed to the respondents was the most feature of ChatGPT that they find the most useful to them. As shown in Table 18, the most frequently cited feature is educational support, with 12 respondents (29.3%) finding it most useful. This is closely followed by real-time responses, responded by 11 respondents (26.8%). Contextual understanding was the third most useful feature, mentioned by 6 respondents (14.6%), while content generation was identified by 5 respondents (12.2%). Versatility was noted by 4 respondents (9.8%), and language

assistance was the least mentioned, with 3 respondents (7.3%). Notably, no respondents reported that they had not used ChatGPT.

Table 17. Primary Use of ChatGPT

What is your primary use for ChatGPT?	Frequency	Percentage (%)
Homework help	9	22.0
Answering questions	5	12.2
Educational support	9	22.0
Content creation (e.g., writing, brainstorming)	6	14.6
Research	8	19.5
Personal assistance	3	7.3
Entertainment	1	2.4
I have not used ChatGPT	0	0.0
Total	41	100

Table 18. Most Useful ChatGPT Features

Which feature of ChatGPT do you find most useful?	Frequency	Percentage (%)
Real-time responses	11	26.8
Contextual understanding	6	14.6
Content generation	5	12.2
Educational support	12	29.3
Language assistance	3	7.3
Versatility	4	9.8
I have not used ChatGPT	0	0.0
Total	41	100

The next question the respondents were asked regarding their usage of ChatGPT was whether it was used for academic or non-academic purposes. According to Table 19, 21 respondents (51.2%) preferred using ChatGPT for academic purposes, while 4 respondents (9.8%) preferred using it for non-academic purposes. Also, 39% of respondents utilize ChatGPT equally for both academic and non-academic purposes. There were no reports of participants not using ChatGPT.

Table 19. ChatGPT Usage: Academic vs. Non-Academic

Do you use ChatGPT more for academic or non-academic purposes?	Frequency	Percentage (%)
More for academic purposes	21	51.2
More for non-academic purposes	4	9.8
Equally for both academic and non-academic purpose	16	39.0
I have not used ChatGPT	0	0
Total	41	100

Data in Table 20 shows how the respondents access the ChatGPT. Thirty-three participants (80.5%) accessed ChatGPT via the web application, while 8 respondents (19.5%) used the mobile app. No respondent reported using the API integration, third-party applications, or not using ChatGPT at all.

Table 20. ChatGPT Access Method

How do you access ChatGPT?	Frequency	Percentage (%)
Web application	33	80.5
Mobile app	8	19.5
API integration	0	0
Third-party application	0	0
I have not used ChatGPT	0	0
Total	41	100

The survey responses on the 5-point Likert scales in Table 21 highlight how ChatGPT has supported respondents' academic achievement. In general, the survey results show that respondents agreed that ChatGPT had positively impacted their academic achievement. Most respondents strongly agreed or agreed that ChatGPT has improved their understanding of complex topics (82.9%), been useful for assignments (73.2%), and helped with managing study time (51.2%). Additionally, many found it helpful for academic studies (85.4%), programming performance (68.3%), and achieving academic results (62.9%). ChatGPT was also seen as enhancing creativity (78.1%), communication (75.6%), and productivity (68.3%). While there were some neutral responses, especially regarding specific features like satisfaction with responses or access to information, the overall feedback reflects a positive view of ChatGPT's role in supporting academic success.

Table 21. Responses on ChatGPT's Impact on Academic Achievement

Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Mean
ChatGPT has improved my understanding of complex lecture topics.	0 (0.0%)	2 (4.9%)	5 (12.2%)	21 (51.2%)	13 (31.7%)	4.10
ChatGPT has been a useful tool for completing assignments.	0 (0.0%)	2 (4.9%)	9 (22.0%)	21 (51.2%)	9 (22.0%)	3.90

ChatGPT has helped me manage my study time more effectively.	1 (2.4%)	2 (4.9%)	17 (41.5%)	14 (34.1%)	7 (17.1%)	3.59
ChatGPT has provided responses that meet my satisfaction.	0 (0.0%)	0 (0.0%)	10 (24.4%)	23 (56.1%)	8 (19.5%	3.95
ChatGPT has provided responses with accurate information.	1 (2.4%)	2 (4.9%)	19 (46.3%)	14 (34.1%)	5 (12.2%)	3.49
ChatGPT has been helpful in my academic studies.	0 (0.0%)	2 (4.9%)	4 (9.8%)	27 (65.9%)	8 (19.5%)	4
ChatGPT has improved my performance in programming.	1 (2.4%	4 (9.8%)	8 (19.5%)	19 (46.3%)	9 (22.0%)	3.76
ChatGPT has helped me achieve excellent academic results.	0 (0.0%)	3 (7.3%)	13 (31.7%)	17 (41.5%)	8 (19.5%)	3.73
ChatGPT has contributed to a positive overall experience for me.	0 (0.0%)	0 (0.0%)	11 (26.8%)	22 (53.7%	8 (19.5%	3.93
ChatGPT has improved my efficiency in completing academic tasks.	0 (0.0%)	1 (2.4%)	7 (17.1%)	25 (61.0%)	8 (19.5%)	3.98
ChatGPT has enhanced my creativity and idea generation.	0 (0.0%)	0 (0.0%	9 (22.0%)	20 (48.8%)	12 (29.3%)	4.07
ChatGPT has provided me with better access to information and answers.	0 (0.0%)	1 (2.4%)	8 (19.5%)	24 (58.5%)	8 (19.5%)	3.95
ChatGPT has increased the convenience of my study activities.	0 (0.0%	1 (2.4%)	8 (19.5%)	23 (56.1%)	9 (22.0%)	3.98
ChatGPT has improved my learning and educational support.	1 (2.4%)	1 (2.4%)	6 (14.6%)	23 (56.1%)	10 (24.4%)	3.98
ChatGPT has enhanced my communication and writing skills.	0 (0.0%)	2 (4.9%)	8 (19.5%)	24 (58.5%)	7 (17.1%)	3.88
ChatGPT has positively impacted my productivity.	0 (0.0%)	0 (0.0%)	13 (31.7%)	21 (51.2%)	7 (17.1%)	3.85
ChatGPT has provided benefits that I am satisfied with.	0 (0.0%)	2 (4.9%)	7 (17.1%)	24 (58.5%)	8 (19.5%)	3.93
ChatGPT has been valuable for addressing my specific needs.	0 (0.0%)	1 (2.4%)	7 (17.1%)	28 (68.3%)	5 (12.2%)	3.90

The following survey responses in Table 22, based on the 5-point Likert scales, are meant to assess how respondents feel about ChatGPT in general. Based on the responses, most respondents agreed or strongly agreed that ChatGPT had been helpful in their studies (80.5%) and had positively influenced their overall perception (65.9%). Its usability showed a similar upward trend, with 73.2% of respondents thinking that it was highly usable. With 49.8% of respondents agreeing or strongly agreeing, there was also a high level of trust in ChatGPT's correctness and dependability. 48.3% of respondents stated they were confident with the information given by ChatGPT and 78.1% of them said the tool's speed and efficiency were good. Overall, the comments show that the ChatGPT is effective and can be trusted for academic purposes.

Table 22. Respondents' Overall Perception and Experiences with ChatGPT

Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Mean
ChatGPT has shaped my overall perception positively.	0 (0.0%)	2 (4.9%)	12 (29.3%)	22 (53.7%)	5 (12.2%)	3.73
ChatGPT has been valuable in my studies.	0 (0.0%)	1 (2.4%)	7 (17.1%)	27 (65.9%)	6 (14.6%)	3.93
ChatGPT has demonstrated high level of usability.	0 (0.0%)	2 (4.9%)	9 (22.0%)	22 (53.7%)	8 (19.5%)	3.88
ChatGPT has earned my trust in providing accurate and reliable information.	1 (2.4%)	2 (4.9%)	18 (43.9%)	17 (41.5%)	3 (7.3%)	3.46
ChatGPT has made me feel confident in the information it provides.	0 (0.0%)	3 (7.3%)	18 (43.9%)	16 (39.0%)	4 (9.8%)	3.51
ChatGPT has demonstrated satisfactory performance in terms of speed and efficiency.	0 (0.0%)	0 (0.0%)	9 (22.0%)	23 (56.1%)	9 (22.0%)	4.0

Table 23 presents the survey's outcomes on ethical concerns and potential issues related to cheating and misuse in academic environments. The data shows various opinions on these issues whereby 73.4% of the respondents believed that ChatGPT can be used as a tool for cheating, and 53.6% reported that they thought it had already been used for cheating on assignments or exams. Still, 73.2% agreed that there is always a risk of misuse the ChatGPT in academic environment and steps must be taken to prevent them.

The respondents believed that there is still room for improvement in ChatGPT even though 53.7% of them felt that ChatGPT already had sufficient safeguards to prevent misuse. Still, 92.7% of the respondents recognized the serious ethical issues that arise from using ChatGPT for academic purposes. When considering the impact on students, 82.9% of respondents agreed that ChatGPT had influenced the way students approached their studies, while 87.8% believed it had a harmful effect on educational institutions when used for dishonest purposes. Moreover, 70.7% of respondents felt that educators should play an active role in addressing the challenges of AI-assisted cheating.

Table 23. Ethical Concerns and Potential Issues Related to Cheating and Misuse

Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Mean
ChatGPT has the potential to be used for cheating in academic settings.	2 (4.9%)	5 (12.2%)	4 (9.8%)	21 (51.2%)	9 (22.0%)	3.73
ChatGPT has been used to cheat on assignments or exams.	6 (14.6%)	5 (12.2%)	8 (19.5%)	19 (46.3%)	3 (7.3%)	3.20
ChatGPT has the potential to be misused in academic settings, and measures should be implemented to prevent this.	0 (0.0%)	5 (12.2%)	6 (14.6%)	23 (56.1%)	7 (17.1%)	3.78
ChatGPT has effective measures in place to prevent cheating, but there is room for improvement.	0 (0.0%)	1 (2.4%)	15 (36.6%)	22 (53.7%)	3 (7.3%)	3.66
ChatGPT has significant ethical implications when used to complete academic work.	0 (0.0%)	1 (2.4%)	20 (48.8%)	18 (43.9%)	2 (4.9%)	3.51
ChatGPT has changed the way students approach their studies.	1 (2.4%)	0 (0.0%)	6 (14.6%)	27 (65.9%)	7 (17.1%)	3.95
ChatGPT has a significant negative impact on educational institutions when used for cheating.	0 (0.0%)	1 (2.4%)	14 (34.1%)	22 (53.7%)	4 (9.8%)	3.71
ChatGPT has required educators to take an active role in addressing AI-assisted cheating.	0 (0.0%)	1 (2.4%)	11 (26.8%)	21 (51.2%)	8 (19.5%)	3.88

Table 24 displays the areas where respondents would like to see improvements in ChatGPT. Most respondents indicated a desire for more accurate responses (35 respondents, or 85.4%), followed by a greater understanding of context (24 respondents, or 58.5%). There was also considerable support for better handling of complex queries (20 respondents, or 48.8%). Fewer respondents expressed interest in additional conversational topics (12 respondents, or 29.3%), enhanced personalization (9 respondents, or 22.0%), and faster response times (6 respondents, or 14.6%). Only a small number (1 respondent, or 2.4%) suggested other potential improvements.

Table 24. Suggested Improvements for ChatGPT

What improvements would you like to see in ChatGPT?	Frequency	Percentage (%)
Better understanding of context	24	58.5
More accurate responses	35	85.4
Improved handling of complex queries	20	48.8
More diverse conversational topics	12	29.3
Faster response times	6	14.6
Enhanced personalization	9	22.0
Other	1	2.4

Table 25 shows that a significant number of respondents expressed a willingness to recommend ChatGPT to others. Specifically, 18 participants (43.9%) indicated they would recommend it, while 17 respondents (41.5%) said they would probably recommend it. In contrast, 5 respondents (12.2%) were uncertain about recommending ChatGPT, and only 1 participant (2.4%) stated they would probably not recommend it. Not a single respondent chose "Definitely not" as their response.

Table 25. Recommendation of ChatGPT to Others

Would you recommend ChatGPT to others?	Frequency	Percentage (%)
Definitely	18	43.9
Probably	17	41.5
Not sure	5	12.2
Probably not	1	2.4
Definitely not	0	0
Total	41	100

Table 26 shows that most respondents are inclined to keep using ChatGPT in the future. Specifically, 20 participants (48.8%) stated they are likely to continue, while 15 respondents (36.6%) indicated they are very likely to do so. A smaller group, 5 respondents (12.2%), remained neutral on the matter, and only 1 participant (2.4%) expressed that they are unlikely to continue using ChatGPT. No respondents selected "Very unlikely" as their response.

A more detailed discussion, analysis and suggestions for future studies will follow in the rest of this section. As an exploratory study, the focus is not on answering specific research questions but on investigating how ChatGPT may relate to academic achievement and how students perceive its value. Specifically, the study seeks to investigate whether students who perform well academically in higher education are more likely to use ChatGPT to enhance their academic achievement. Additionally, it aims to understand students' opinions and perceptions regarding the use of ChatGPT as a learning tool.

Reemphasizing the method of this study, a survey was conducted with 76 academically excellent students although only 41 students responded. The results will be discussed in three sections to offer a clearer analysis: a) Demographic Data Analysis, b) Analysis of Educational Technology Tool Usage, and 3) Analysis of Respondents' Use of ChatGPT. Note that all charts presented below highlight the key aspects of this study and are derived from the data in the tables above for better illustration.

Table 26. Likelihood of Continued Use of ChatGPT in the Future

How likely are you to continue using ChatGPT in the future?	Frequency	Percentage (%)
Very likely	15	36.6
Likely	20	48.8
Neutral	5	12.2
Unlikely	1	2.4
Very unlikely	0	0
Total	41	100

4.4 Demographic Data Analysis

Most respondents were female, representing 68.3% of the sample, compared to 31.7% who were male, as shown in Table 4. This gender imbalance may reflect the general enrolment trends in higher education institutions, where female students are often more prevalent. This imbalance may justify further investigation in future studies to understand the underlying factors influencing this gender distribution. Furthermore, all respondents were between the ages of 18 and 20, as indicated in Table 5. This age group is typical for students in foundation-level programmes and those transitioning into bachelor's degree programmes. As such, the study's results reflect the views and usage patterns of this specific demographic, rather than those of schoolchildren or working professionals. Being in the early stages of their academic journey and possibly still adjusting to university life, this age group is likely to benefit most from tools like ChatGPT.

Moreover, the respondents were predominantly Chinese (73.2%), followed by Malay (17.1%), Indian (7.3%), and other ethnic groups (2.4%), as shown in Table 6. This ethnic distribution differs significantly from Malaysia's national demographic in the third quarter of 2024, where the population stands at 34.1 million, with the Malay population making up 58.1%, Chinese 22.4%, Indian 6.5%, and other ethnic groups accounting for the remaining portion [28]. The higher proportion of Chinese respondents in this sample may indicate that the student population at this university does not fully reflect the broader ethnic distribution seen across the country, and this distribution could vary in other regions or educational settings.

Additionally, as shown in Table 7, at the time the survey was conducted, 46.3% of respondents were still enrolled in the Foundation programme, while 39% were studying Artificial Intelligence (AI). Students in other fields, such as Security Technology (ST) (7.3%), Business Intelligence Analytics (BIA) (4.9%), and DCN (2.4%), were less represented. This distribution suggests a strong interest in AI, likely reflecting its growing prominence in both educational pathways and the job market. Regarding academic performance, as illustrated in Figure 2, 92.7% of respondents had a CGPA between 3.0 and 3.9 at the foundation level, while 4.9% achieved the highest CGPA of 4.0. No respondents had a CGPA below 2.0 or between 2.0 and 2.9, suggesting that the respondents performed well in the foundation programme, and this is the key point of this study. However, it is important to note that the CGPA will be reset for those who progress to a degree programme.

In summary, the demographic data indicates that most respondents are female, Chinese, academically successful, and pursuing a degree in Artificial Intelligence. These findings provide useful context for understanding the sample composition. The data also suggests areas for further investigation in future studies, particularly in relation to the ethnic and programmatic distribution of students and how these factors might influence the applicability of the results to a wider population.

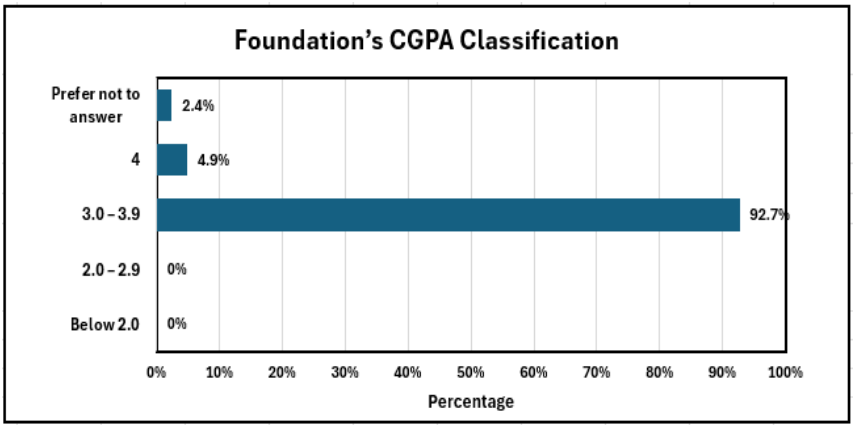

Figure 2. Foundation's CGPA Classification

4.5 Analysis of Educational Technological Usage

This section analysed the respondents' interactions with educational technology tools, presenting an overview of the tools most used, their frequency of usage, and the respondents' comfort levels and experiences with these technologies.

As suggested in Table 9, the most widely used tool was Microsoft Teams, with 90.2% respondents reporting its use. This suggests that Microsoft Teams is the primary platform for communication and collaboration among students, which aligns with its common use in academic settings. This is likely due to MS Teams being the official platform of Multimedia University for online and hybrid classes. Other popular tools included Canvas (61%), Kahoot! (56.1%), and Google Classroom (48.8%). These tools are likely being utilized for online course management, engagement, and assessment purposes. On the other hand, tools like Moodle and Power BI had limited usage, with only 4.9% of respondents using them. The use of multiple tools by some respondents indicates a flexible approach to utilizing educational technology to support their learning.

Moreover, regarding the frequency of usage, Table 10 shows that 57.5% of respondents used educational tools several times a week, while 35% used them daily. This high frequency highlights the central role these tools play in students' academic activities, suggesting that educational technology is regularly integrated into their learning routines. The lack of respondents who use these tools rarely or only once a month further emphasizes that these tools are considered essential for learning. Meanwhile, as shown in Table 11, 45% of respondents felt "Very comfortable" with educational technology, while 55% felt "Comfortable". This indicates that most respondents are confident in using these tools, which is essential for effective engagement with technology in an educational context. The absence of respondents who felt "Neutral", "Uncomfortable", or "Very uncomfortable" further supports the idea that the respondents have a positive attitude toward these tools, which may contribute to their successful integration into academic settings.

As shown in Table 12, the most common mode of access for educational tools was through computers or laptops, used by 68.3% of respondents. This aligns with the need for more complex tools that require larger screens or more powerful devices. A smaller proportion used smartphones (19.5%) or tablets (12.2%), suggesting that while mobile devices are accessible, they may not be the preferred or most effective tools for engaging with educational technology in this context. The most significant finding, as illustrated in Figure 3, is that AI tools, particularly ChatGPT, were the most widely used, with 97.6% of respondents reporting their use. Other AI tools, such as Google Assistant (14.6%), Google Bard (9.8%), and Apple Siri (4.9%), were used by smaller proportions of respondents. Overall, this finding indicates a growing trend of incorporating AI technologies into education. Most importantly, it aligns with the objective of this study which is to investigate whether students with academic excellence use ChatGPT in their studies and clearly demonstrates this goal.

Nevertheless, according to Table 14, 73.2% of the respondents had moderate experience with AI tools and chatbots, while 14.6% reported having extensive experience. This suggests that while many students are familiar with AI tools, particularly ChatGPT, there may be room for further training or integration of these tools to deepen their usage. Only a small percentage of respondents had limited experience or were unsure whether the tools they used were AI-based,

indicating that AI tools and chatbots are becoming more common, but there may still be a knowledge gap for some students regarding the full capabilities of these tools.

In summary, the results show that respondents are highly engaged with educational technology, with Microsoft Teams being the most widely used tool, followed by Canvas, Kahoot! and Google Classroom, all of which demonstrate high usage frequencies. Additionally, most respondents are using ChatGPT in their studies, though their levels of experience vary. Generally, the high contentment and frequency of use suggest that respondents are adjusting well to these technologies. Nonetheless, the variation in experience with AI tools highlights potential areas for further exploration and training. Future research could explore how training students to use AI tools like ChatGPT more effectively affects their academic performance and engagement.

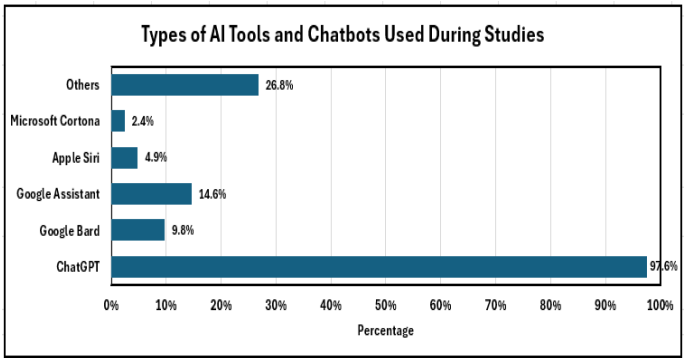

Figure 3. Types of AI Tools and Chatbots Used During Studies

4.6 Analysis of Respondents' Use of ChatGPT

This section discusses the usage of ChatGPT in general, its impact on academic achievement, students' overall perceptions and experiences, ethical concerns, and potential future applications, based on the findings.

Firstly, the analysis begins with the version of ChatGPT used by the respondents. As represented in Table 15, the majority (53.7%) reported using the newer versions, specifically versions 3.5 and 4. Regarding the frequency of use, the data shows that most respondents (55%) engaged with ChatGPT several times a week, while 17.5% use it on a weekly basis. A smaller percentage (15%) use it daily, with no respondents reporting that they never use the platform, as shown in Table 16. These findings suggest that ChatGPT has become an essential tool for most respondents, with many utilizing its advanced versions for academic tasks.

Next, as illustrated in Figure 4, which the data is derived from Table 17, ChatGPT has been used commonly for homework assistance and educational support, followed by research and content creation. In contrast, its use of entertainment and personal assistance is less frequent. These findings suggest that ChatGPT is primarily viewed as a valuable tool for academic support. Continuing with the most useful features of ChatGPT, as shown in Figure 5, the feature most frequently cited by respondents is educational support, followed by real-time responses. Interestingly, none of the respondents indicated that they have not used ChatGPT, highlighting that all participants have engaged with the tool to some extent. This suggests that ChatGPT is primarily perceived as a tool for academic support, particularly for real-time interactions, which aligns with its usage in educational settings. Based on these findings, a potential future study could explore feature preferences across different academic disciplines.

The data from Table 17 and Table 18 also revealed insightful ideas that require further study, specifically in the areas of prompt engineering and contextual understanding. These concepts reflect the respondents' capabilities to refine their prompts when interacting with ChatGPT and to adapt their responses to the specific requirements of their tasks. Although these capabilities are important to analyse in this study, specific examples were not collected, as the research primarily focuses on high-achieving students and their overall utilization of ChatGPT.

Nevertheless, verbal responses from some respondents regarding their use of ChatGPT indicated that they experienced no difficulty in obtaining the answers they looked for. This observation, combined with findings from the survey and classroom activities during the *Problem Solving and Programming* class, suggests that these students were good at adapting ChatGPT's outputs to align with their needs. This demonstrates their contextual understanding, which can

enhance their problem-solving skills through effective utilization of ChatGPT. Nonetheless, prompt engineering and contextual understanding should be explored in future research.

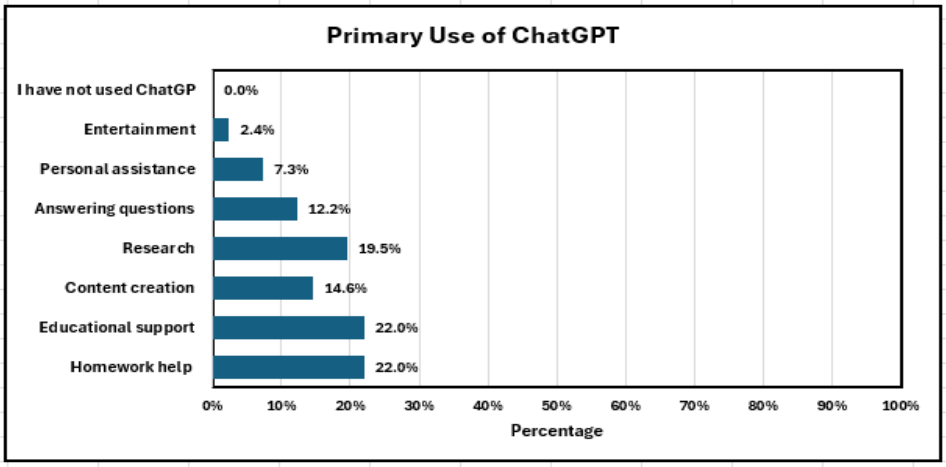

Figure 4. Primary Use of ChatGPT

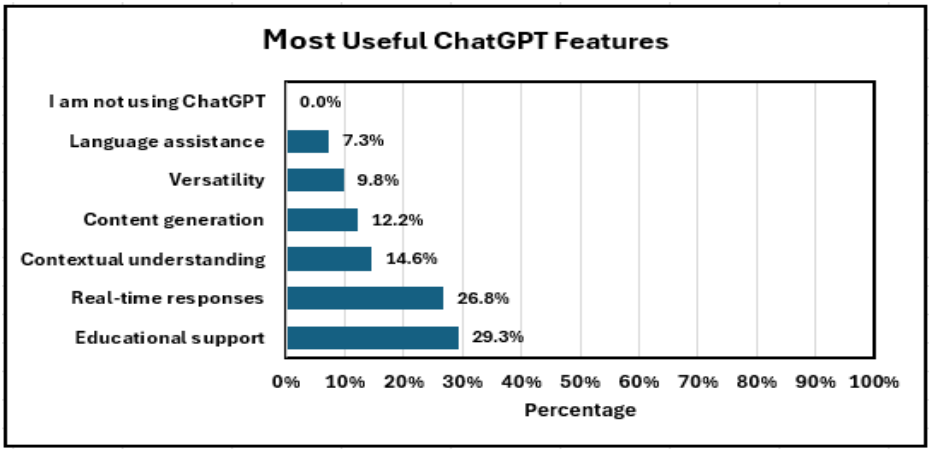

Figure 5. Most Useful ChatGPT Features

Moreover, the findings also reveal that 51.2% of respondents use ChatGPT primarily for academic purposes, while 39% report using it equally for both academic and non-academic purposes, as shown in Table 19. This trend reflects the increasing integration of AI tools like ChatGPT in various aspects of students' lives, ranging from academic support to personal assistance. Additionally, 80.5% of respondents access ChatGPT via the web application, while the remaining users access it through the mobile app. The data presented in Table 20 suggests that web access is more prevalent than mobile access, likely due to factors such as convenience, screen size, or device preference.

Most significantly, the finding, as depicted in Table 21, aims to determine whether ChatGPT impacts respondents' overall academic performance. There are 18 statements using a 5-point Likert scale, ranging from Strongly Disagree (1) to Strongly Agree (5), to investigate this issue. In general, the mean scores for the 18 statements range from 3.49 to 4.10, showing that respondents' opinions generally fall between “Neutral” (3) and “Agree” (4). This suggests that, collectively, the respondents perceive ChatGPT positively, although some opinions remain more neutral or mixed. For example, three statements received mean scores of 4 and above, reflecting strong agreement: 1. “ChatGPT has improved my understanding of complex lecture topics” (mean = 4.10), 2. “ChatGPT has improved my performance

in programming" (mean = 4.07), and 3. "ChatGPT has been helpful in my academic studies" (mean = 4). These results reveal that respondents largely agree that ChatGPT positively impacts academic achievement, particularly in enhancing the understanding of complex topics, improving programming skills, and supporting overall academic performance. The findings are consistent with studies showing that ChatGPT enhances student academic achievement [14], [20].

Furthermore, statements with mean scores around 3.9 – 3.95 include: 1. "ChatGPT has been a useful tool for completing assignments" (mean = 3.90), 2. "ChatGPT has enhanced my communication and writing skills" (mean = 3.88), and 3. "ChatGPT has provided responses that meet my satisfaction" (mean = 3.95). These scores suggest that the respondents recognize the usefulness of the tool but look at the impact in these areas as either limited or neutral. In contrast, statements with mean scores around 3.5, such as 1. "ChatGPT has provided responses with accurate information" (mean = 3.49) and 2. "ChatGPT has helped me manage my study time more effectively" (mean = 3.59), reflect more moderate agreement. This suggests that respondents may have doubts about ChatGPT's accuracy or its direct impact on time management. This indicates the area where the where ChatGPT could be improved.

Moving on, the next aim of the study is to assess respondents' overall perception and experience with ChatGPT. Figure 6 presents the findings from six questions using a 5-point Likert scale, where 1 denotes Strongly Disagree and 5 denotes Strongly Agree. The results demonstrate that respondents generally have a positive perception of ChatGPT, with a mean score of 3.73. It is considered valuable for academic studies where the mean score is 3.93, has good usability where the mean is 3.88, and performs well in terms of speed and efficiency and the mean is 4.0. However, opinions on its accuracy and reliability are more mixed, as shown by the lower mean scores for trust (3.46) and confidence in the information it provides (3.51). In summary, although respondents find ChatGPT useful and easy to use, improving its reliability and the accuracy of its responses could further enhance its effectiveness in academic settings.

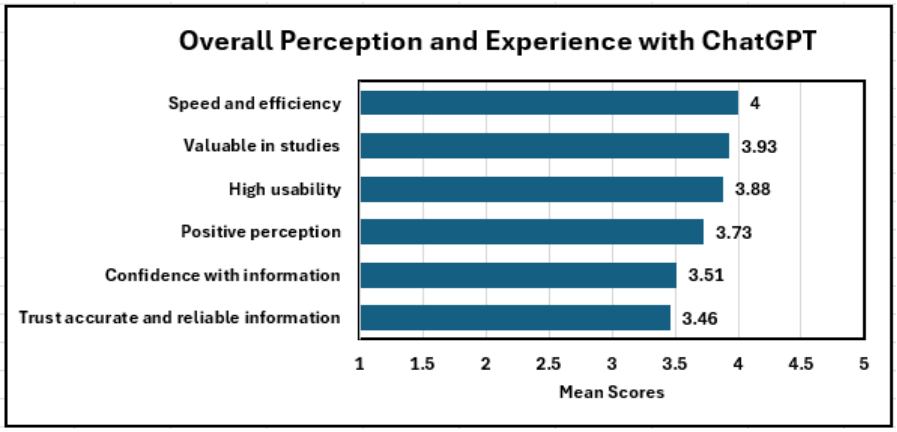

Figure 6. Overall Perception and Experience with ChatGPT

The respondents' perspectives on ethical concerns and potential issues related to cheating and the misuse of ChatGPT are also explored in this study. In this context, eight questions using a 5-point Likert scale, ranging from Strongly Disagree (1) to Strongly Agree (5), were used to gather responses. Based on the findings as illustrated in Figure 7, the mean scores indicate that while ChatGPT is acknowledged for its potential to be misused in academic settings (mean = 3.73), there is strong support for the implementation of preventive measures (mean = 3.78). Ethical concerns regarding its use in academic work are also notable (mean = 3.51). At the same time, respondents recognize its influence on their study habits (mean = 3.95). Furthermore, there is widespread agreement that educators must actively address AI-assisted cheating (mean = 3.88). Overall, the results highlight the need to balance the benefits of ChatGPT with appropriate safeguards to maintain academic integrity. These findings are consistent with another research [13].

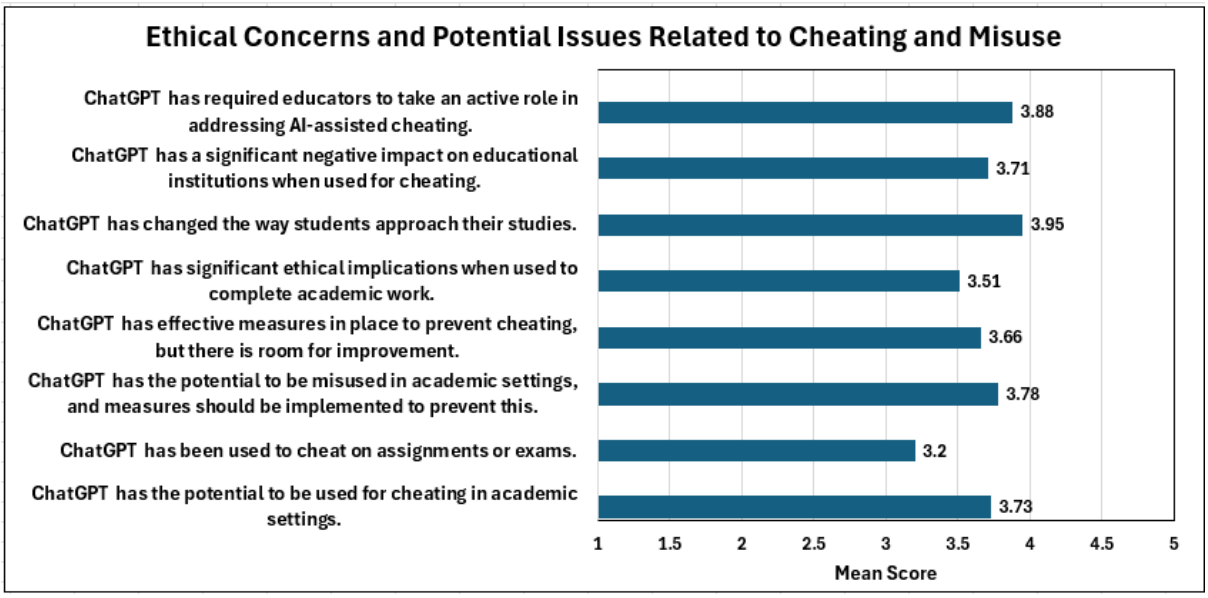

Figure 7. Ethical Concerns and Potential Issues Related to Cheating and Misuse

Moreover, the study also highlights the improvements that respondents expect in future updates of ChatGPT. Figure 8 presents the key findings regarding these desired improvements. The most frequently cited improvements include more accurate responses (85.4%) and a better understanding of context (58.5%). Other notable suggestions include improved handling of complex queries (48.8%) and a broader range of conversational topics (29.3%). Additionally, there were fewer requests for faster response times (14.6%), enhanced personalization (22%), and other unspecified improvements (2.4%). These findings suggest that while ChatGPT is generally well-received by users, there are clear areas where further refinement is needed [14].

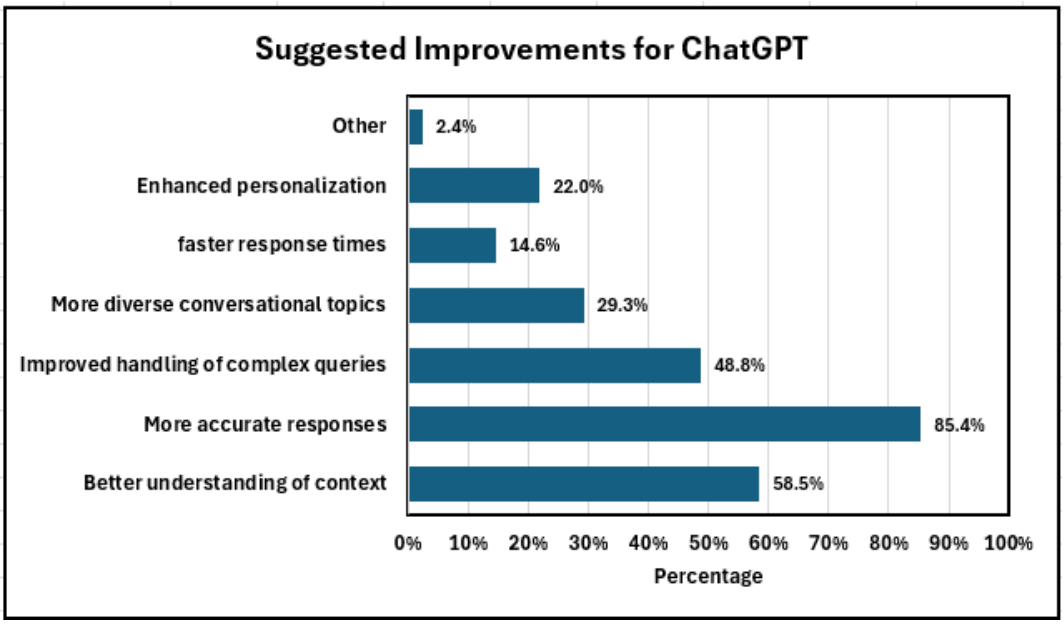

Figure 8. Suggested Improvements for ChatGPT

Another key point that is important to highlight in this study is how likely respondents are to recommend ChatGPT to others. Table 25 presents the finding on how likely respondents are to recommend ChatGPT to others. Of the respondents, 43.9% indicated they would "Definitely" recommend it, while 41.5% said they would "Probably" recommend it. A smaller proportion, 12.2%, were "Not sure", and only 2.4% would "Probably not" recommend it. Notably, no respondents chose "Definitely not". This study reveals that ChatGPT is generally viewed positively, with a significant majority (85.4%) expressing a willingness to recommend it, either "Definitely" (43.9%) or "Probably" (41.5%). These findings suggest that users find value in the tool and are likely satisfied with its performance. The small percentage of respondents who are "Not sure" (12.2%) or would "Probably not" recommend it (2.4%) indicates that while some doubts exist, they are not common. No respondents chose "Definitely not" recommend ChatGPT further supports the strong overall user endorsement.

Finally, Table 26 displays the probability of the respondents continuing using the ChatGPT in the future. 48.8% indicated they are "Likely" to continue using it, and 36.6% said they are "Very likely" to continue. 12.2%, are "Neutral", while only 2.4% feel "Unlikely" to continue using it, and none expressed itself being "Very unlikely" to use it again. This finding demonstrates strong user retention, with 85.4% of respondents indicating they are likely to continue using ChatGPT in the future, either "Very likely" (36.6%) or "Likely" (48.8%). These results imply that respondents find the tool beneficial and intend to keep using it, highlighting its perceived value and effectiveness. The small group of "Neutral" responses (12.2%) and the very low percentage of those who feel "Unlikely" (2.4%) to continue using it indicate that the majority are committed to using ChatGPT while there may be some uncertainties or limitations for a few users.

4.7 Implications of Findings for Education and Future Research

The findings of this study, which explore the role of ChatGPT among high-achieving academic university students, offer implications for both educational practices and future research directions. The first implication pertains to academic support and learning for university students. Universities and educators can explore and systematically integrate ChatGPT into classrooms and academic curricula, particularly in subjects like programming. Students can use it as an enhanced learning tool to receive immediate feedback and supplement traditional learning processes, thereby deepening their understanding. Additionally, ChatGPT could support personalized learning by tailoring the learning experience to individual students' needs, which can enhance student engagement and improve outcomes. This could also shape future educational models. Moreover, ChatGPT can promote self-directed learning by encouraging independent study habits, helping students become more proactive in their academic development. The second implication is in teaching and instructional design. Educators could use ChatGPT as a virtual teaching assistant to answer questions and provide additional explanations, not only in programming subjects but also across various fields. The implications for future research also require significant attention. Further exploration of prompt engineering and contextual understanding skills is needed, not only within a single academic field but across various academic fields. Additionally, research should investigate how these skills impact the quality of students' academic achievement. Beyond that, the long-term impact of ChatGPT usage on students' academic performance, cognitive skills, and attitudes toward learning presents an insightful avenue for future research. This research could explore whether the integration of ChatGPT in academia sustains benefits or introduces new challenges. The final and most challenging implication is the growing trend of using ChatGPT, and AI tools in general, in both academic and non-academic contexts. Moreover, as AI continues to evolve, it may play an increasingly significant role in shaping how students learn in the future.

In summary, the findings clearly show that ChatGPT is widely used and appreciated by respondents for academic support, particularly in enhancing understanding and performance. Even though some concerns regarding its accuracy, reliability, ethical concerns, and potential misuse are highlighted, the respondents generally view the tool positively. The study further suggests that ChatGPT possess significant potential for academic applications, but improvements are needed to enhance its accuracy and contextual understanding.

5. CONCLUSION

In conclusion, this study reveals that there is a relationship between students with high academic achievement and ChatGPT usage. It suggests that students who perform well academically in higher education not only actively use

ChatGPT to support and enhance their studies but also believe in its potential and the benefits it can contribute to student's learning experiences.

In addition, the students also view ChatGPT as a valuable educational tool to help them deepen their understanding of complex topics, complete assignments, and manage their study time. Nevertheless, concerns about academic cheating and the potential for misuse persist, and action must be taken to ensure its ethical use.

Yet, this study has several limitations regardless of its significant findings. First, the sample size was relatively small, which may not fully represent the broader student population. Additionally, the study relied on self-reported data, which could be liable to biases. Another limitation is the focus on a single educational context, which may not capture variations in how ChatGPT is used across different disciplines or institutions. Moreover, some students left questions unanswered, potentially affecting the accuracy of the data. Moreover, prompt engineering and contextual understanding were not explored, even though they appear to be important aspects of the study. Finally, the rapid development of AI tools means that the findings may quickly become outdated as new features and safeguards are introduced.

Ultimately, higher education needs to take proactive measures in monitoring the use of ChatGPT. This is to ensure it is used responsibly while optimizing its benefits for student learning. As AI tools like ChatGPT become more integrated into education, it will be crucial to ensure a balance between promoting its use for academic support and lessening the risks of misuse.

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Mawar binti Madiah: Conceptualization, Data Curation, Methodology, Validation, Writing – Original Draft Preparation; Supervison,
A'tiqah Rasyidah Abu Samah: Project Administration, Writing – Review & Editing;

CONFLICT OF INTERESTS

No conflict of interests were disclosed.

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Our publication ethics follow The Committee of Publication Ethics (COPE) guideline. https://publicationethics.org/

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