Adoption and Usage of Generative Artificial Intelligence (GenAI) Tools Among Bandar Penawar MARA Professional College Students

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ABSTRACT

Students' experiences with generative artificial intelligence (GenAI) tools such as ChatGPT, Canva AI, and Google Gemini vary widely. While some students at Bandar Penawar MARA Professional College (MPC) find these tools helpful for completing assignments and improving academic performance, others remain cautious, particularly regarding data privacy issues, ethics, and over-reliance. This study aims (i) to explore the adoption of GenAI tools among Bandar Penawar MPC students, (ii) to examine how these tools influence learning engagement and academic outcomes, and (iii) to assess students' concerns and satisfaction regarding GenAI usage in education. Using a quantitative approach with a structured questionnaire, data were collected from 140 diploma students across various semesters. The results show that 97.9% of students are familiar with GenAI tools and 95% actively use them for academic tasks. Most students agree that these tools enhance understanding (82%), save time (52.6%), and make studying enjoyable (77.4%). However, 74.4% of respondents express privacy concerns, and 81.2% agree that GenAI should be used cautiously in academic settings. In conclusion, while GenAI tools are becoming integral to students' learning routines, there is a clear need for institutional policies and guidelines to ensure responsible and ethical usage.

Keywords
Generative AI; Academic engagement; Learning impact; Privacy concerns; Ethical use; MARA Professional College

Introduction

The emergence of generative artificial intelligence (GenAI) tools such as ChatGPT, Google Gemini, and Canva AI has introduced new dynamics in educational environments, particularly in higher education. Students increasingly use these tools to support academic tasks such as writing, idea generation, summarisation, and content design. Their integration has reshaped learning experiences by streamlining assignment completion and promoting self-directed learning. At Bandar Penawar MARA Professional College (MPC), the influence of GenAI is visible in how students engage with their studies, showing enthusiasm and concern. Based on a quantitative survey involving 140 diploma students, this study finds that 97.9% are familiar with GenAI tools, and 133 students actively use them for academic purposes. Most students were introduced to these tools through informal channels like peer discussions and social media, rather than academic institutions.

Students use GenAI mainly for writing assistance (Denny et al., 2024), problem-solving (BaiDoo-Anu & Owusu Ansah, 2023), research (Chan & Hu, 2023), and examination preparation (Mittal et al., 2024). ChatGPT is the most frequently used tool, followed by Canva AI and Google Gemini. While many students find these tools helpful for improving productivity and understanding complex concepts, many express caution regarding over-reliance on AI-generated content. Concerns over ethical usage, privacy, and academic integrity are common, with some students unsure about disclosing their use of AI tools in assignments. These concerns reflect a growing awareness of the risks associated with AI adoption, especially in academic contexts where originality and independent thought are important. Despite these concerns, the overall perception of GenAI tools remains positive. Students report improved engagement and time efficiency, with many recommending these tools to peers. However, this study also highlights the importance of balancing convenience with responsibility. As AI tools become more embedded in academic routines, proper

guidance and ethical frameworks become crucial. This study aims to explore how MPC students adopt and use GenAI tools, assess their impact on academic engagement and performance, and examine students' attitudes toward ethical considerations. The findings provide insight for educators and policymakers to better support responsible and effective AI use in higher education settings.

Literature Review

GenAI is increasingly recognized for its potential to enhance education by providing personalized learning, adaptive tutoring, and interactive experiences. However, its use also raises concerns about ethical issues such as data privacy, bias, and over-reliance. The integration of GenAI in educational settings requires careful consideration of these challenges to ensure fairness and transparency in AI systems. Moreover, responsible AI use in education necessitates policy frameworks that promote critical thinking while mitigating risks. Ethical design is critical to avoiding manipulation and ensuring AI tools align with broader societal values. The IDEE framework has been proposed as a structured approach to integrating AI in education, focusing on ethical and practical use. The adoption and usage of Generative AI tools among MPC students builds on these themes, exploring how students at MPC engage with and perceive GenAI's educational potential and ethical implications. A summary of key studies on the role of Generative AI in education is presented in **Table 1**, which provides an overview of each study's conclusions.

Table 1. Summary of Studies on the Role of Generative AI in Education

Title	Author, Year	Method	Conclusion
Education in the Era of Generative Artificial Intelligence (AI): Understanding the Potential Benefits of ChatGPT in Promoting Teaching and Learning	(BaiDoo-Anu & Owusu Ansah, 2023)	*Exploratory*	ChatGPT can enhance education by providing personalized and interactive learning but requires caution due to biases and data privacy concerns.
Generative Artificial Intelligence	(Banh & Strobel, 2023)	*Conceptual Overview*	Generative AI offers transformative potential across sectors but faces challenges that must be addressed to ensure ethical and responsible use.
Students' Voices on Generative AI: Perceptions, Benefits, and Challenges in Higher Education	(Chan & Hu, 2023)	*Survey-based*	Students generally see value in GenAI for learning support but express concerns about ethical issues, accuracy, privacy, and over-reliance.
The Impact of Generative AI (GenAI) on Practices, Policies, and Research Direction in Education: A Case of ChatGPT and Midjourney	(Chiu, 2023)	*Qualitative*	GenAI reshapes education through interdisciplinary teaching, AI literacy, and ethical considerations, suggesting new assessment and AI training frameworks.
Generative AI and ChatGPT: Applications, Challenges, and AI-Human Collaboration	(Fui-Hoon Nah et al., 2023)	*Conceptual Analysis*	Generative AI offers significant transformative potential in information systems but requires careful consideration of biases, fairness, and ethical concerns to maximize benefits responsibly.
Generative AI Meets Responsible AI: Practical Challenges and Opportunities	(Kenthapadi et al., 2023)	*Workshop Overview*	Responsible AI practices are essential to ensure generative AI systems are trustworthy, fair, secure, and socially responsible.
Generative Artificial Intelligence (ChatGPT): Implications for Management Educators	(Ratten & Jones, 2023)	*Conceptual Discussion*	Emphasizes the need for innovative, context-specific assessments to maintain academic integrity and provide students with relevant, responsible AI usage frameworks in management education.
Generative AI: Here to Stay, but for Good?	(Sætra, 2023)	*Commentary*	Advocates for strict regulation to align generative AI's development with societal

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			values such as democracy, sustainability, and social justice to mitigate its risks and promote a "good society".
Unlocking the Power of ChatGPT: A Framework for Applying Generative AI in Education	(Su & Yang, 2023)	*Framework Development*	The IDEE framework provides a structured approach for integrating ChatGPT into education, balancing benefits like personalization with ethics and data quality challenges.
Promoting Ethical Use of Generative AI in Education	(Deng & Joshi, 2024)	*Editorial*	A classroom AI use policy is recommended to guide ethical AI integration, focusing on balancing academic integrity, critical thinking, and task relevance.
Generative AI for Education (GAIED): Advances, Opportunities, and Challenges	(Denny et al., 2024)	*Workshop Overview*	Generative AI is transformative for education, but its integration needs a multidisciplinary approach to address emerging challenges and build supportive communities.
Generative AI	(Feuerriegel et al., 2024)	*Conceptual Overview*	Generative AI offers significant transformative potential in information systems but requires careful consideration of biases, fairness, and ethical concerns to maximize benefits responsibly.
The Promise and Challenges of Generative AI in Education	(Giannakos et al., 2024)	*Expert Commentary*	Emphasizes the need for human-centric GenAI applications in education, cautioning against rapid adoption without consideration of pedagogical soundness and ethics.
Ethics of Generative AI and Manipulation: A Design-Oriented Research Agenda	(Klenk, 2024)	*Design-Oriented Research*	Emphasizes the need for careful conceptualization and design to prevent manipulation, advocating for a values-based approach to AI ethics that balances influence and autonomy.
Generative Artificial Intelligence in Education and Its Implications for Assessment	(Mao et al., 2024)	*Conceptual Analysis*	AI reshapes assessment; ethical usage, literacy, and system-wide awareness are essential to empower learners in an AI-driven world.
A Comprehensive Review on Generative AI for Education	(Mittal et al., 2024)	*Literature Review*	Highlights generative AI's potential to personalize education but cautions against its limitations, calling for further research into ethical integration and enhancement of GAI in education.
Assessing the Nexus of Generative AI Adoption, Ethical Considerations, and Organizational Performance	(Rana et al., 2024)	*Survey-based*	Finds that institutional pressures and ethical principles significantly influence GenAI adoption, with organizational innovativeness moderating the relationship between GenAI use and performance.
The Ethics of ChatGPT – Exploring the Ethical Issues of an Emerging Technology	(Stahl & Eke, 2024)	*Systematic Ethical Review*	Suggests broad stakeholder engagement and policy interventions to balance ChatGPT's benefits and risks, emphasizing a comprehensive approach to address social justice and environmental impacts.

Methods

This study employed a quantitative research design using a structured online survey to investigate the adoption and use of generative AI tools among Bandar Penawar MARA Professional College (MPC) students. This methodology aims to gain an overview of students' usage patterns, perceptions, and concerns regarding tools such as ChatGPT, Google Gemini, and Canva AI within academic contexts. A cross-sectional survey was conducted to collect data from MPC students aged between 19 and 23 years, who were enrolled in various semesters across two academic programs: Diploma in Accounting and Diploma in Integrated Logistics Management. This demographic was selected to reflect the diverse stages of academic progression and varying levels of familiarity with AI tools. Using a structured

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questionnaire enabled the researchers to obtain quantifiable data regarding students' engagement with generative AI in academic settings.

The questionnaire items were developed based on themes and constructs identified in recent literature on GenAI in education, ensuring fundamental content validity by aligning the items with the study's objectives. While no formal pilot test or expert review was conducted, the structure was informed by validated instruments used in similar survey-based research. To assess the reliability, Cronbach's Alpha was calculated for the Likert-scale items related to engagement, satisfaction, learning impact, and ethical concerns. The result, $\alpha = 0.72$, indicates an acceptable level of internal consistency among the measured items. The survey instrument was developed to align with the study's objectives and was divided into six core sections:

- Section A gathered demographic and academic background information
- Section B assessed general awareness of generative AI tools
- Section C explored specific usage experiences
- Section D examined the perceived impact of AI on engagement and learning
- Section E measured overall satisfaction and time-saving effects
- Section F addressed ethical and privacy considerations

An alternative section was also included to understand the students' perspectives who had chosen not to use AI tools in their studies. Most items in the questionnaire used closed-ended formats, including binary choices, multiple selections, and Likert scales. Most items were measured using a 5-point Likert scale (ranging from "Strongly Disagree" to "Strongly Agree" or "Very Difficult" to "Very Easy"), along with multiple-choice and yes/no options. This structure facilitated efficient data analysis and ensured consistency across responses. The survey was distributed digitally using Google Forms, ensuring ease of access and timely collection of responses. Participants were informed of the study's objectives, and anonymity was assured to encourage honest and reflective responses. The data collection period spanned two weeks to allow sufficient participation from students in different academic sessions.

Data Analysis

Quantitative data were analysed using descriptive statistical techniques via Microsoft Excel. The main tools used were frequency counts, percentages, and visualizations including bar charts, pie charts, and word clouds to identify patterns and trends in the responses. Findings revealed that 97.9% of students were familiar with GenAI tools, and 95% actively used them for academic purposes. ChatGPT, Canva AI, and Google Gemini were commonly used for brainstorming, assignment assistance, and presentation preparation. Smartphones (92.5%) and laptops (75.9%) were the dominant access devices. Students reported positive learning experiences, with 82% agreeing that GenAI tools improved their understanding of academic topics and 77.4% stating that AI made studying more enjoyable. 86.4% of respondents reported weekly or daily usage, and 69.2% believed that AI positively impacted their academic performance. Although students acknowledged the benefits, 74.4% expressed concerns over data privacy and called for cautious usage. 94.7% were aware of ethical guidelines, yet 43.6% remained neutral on whether AI usage should be disclosed in assignments. Overall, 91.8% of students were either satisfied or delighted with GenAI tools, and 51.9% said they would recommend them to peers. However, non-users cited concerns about reliability and ethical misuse.

Results

This section presents the study's findings based on data collected from 140 students at Bandar Penawar MARA Professional College (MPC). The results are organized into four key themes: general awareness and accessibility of GenAI tools, usage patterns and student experiences, engagement and learning outcomes, and ethical considerations. Where relevant, findings are discussed alongside existing literature to provide context and interpretation.

Table 2. Respondent Demographic

Item	Category	Frequency (N)	Percentage (%)

Gender	Male	61	43.6
	Female	78	55.7
	Prefer Not to Say	1	0.7
Semester	1	67	47.9
	2	8	5.7
	3	11	7.9
	4	31	22.1
	5	1	0.7
	6+	12	8.6
Age	18 – 19	106	75.7
	20 – 23	34	24.3
Program	Accounting	98	70.0
	Integrated Logistics Management	42	30.0
GPA Range	Below 3.0	18	12.9
	3.0 – 3.5	45	32.1
	3.5 – 4.0	77	55.0
Preferred mode of learning	In-person	80	57.1
	Online	0	0.0
	Hybrid	55	39.3
	Self-study	5	3.6
Reliable Internet	Yes	135	96.4
	No	5	3.6

Awareness and Accessibility of Generative AI Tools

The data reveals a high level of familiarity with GenAI tools among MPC students, with 97.9% of respondents indicating they were aware of such tools. However, only 133 out of 137 students reported actual usage for academic purposes, suggesting that while exposure is widespread, integration into learning routines is slightly more selective. Most students reported discovering these tools through informal networks, such as friends or social media, rather than institutional recommendations. This aligns with studies by (Chan & Hu, 2023) and (Chiu, 2023), who noted that GenAI adoption in education is often student-driven rather than systematically introduced by academic staff. Smartphones emerged as the most commonly used device for accessing GenAI tools (92.5%), followed by laptops or PCs (75.9%). This preference reflects the importance of convenience and mobility in student learning, echoing findings regarding the shift towards mobile-first learning experiences.

Table 3. Familiarity, Sources of Exposure, and Perceptions of Generative AI Tool Usage

Item	Category	Frequency (N)	Percentage (%)
Are you familiar with generative AI tools for academic assistance?	Yes	137	97.9
	No	3	2.1
	Peer Influence	92	31.3

How did you first hear about generative AI tools? *Multiple responses are allowed based on total selections (n = 294).*	Academic Guidance	89	30.3
	Social Media Platform	61	20.7
	Self-Directed Search	52	17.7
Do you feel that generative AI tools are reliable sources of academic information?	Agree	124	88.6
	Neutral	16	11.4
	Disagree	0	0.0
Do you use generative AI tools specifically for academic purposes?	Yes	133	95
	No	7	5

Patterns of Use and Student Experience

Regarding duration of use, 52.6% of students reported using GenAI tools for more than six months, indicating growing familiarity and possibly routine integration into study habits. Usage was most frequent for brainstorming, research support, and problem-solving, with ChatGPT emerging as the dominant tool of choice. The frequency of usage further supports this trend, with 58.6% using GenAI weekly and 27.8% using it daily. These results suggest that while GenAI is not necessarily replacing traditional learning methods, it has become an established part of academic routines for many students. (Denny et al., 2024) highlighted that this hybrid engagement model, which combines traditional instruction with AI tools, can enhance flexibility and personalization in student learning. Students also rated their ease of interaction with GenAI tools positively. Approximately 87.2% rated ease of use at 4 or 5 on a 5-point scale. Similarly, 76.7% reported that AI responses were usually or always easy to understand. These responses suggest that GenAI tools are perceived as accessible and helpful in facilitating comprehension, which supports (Mittal et al., 2024) view that GenAI can serve as a low-friction support system for students.

Table 4. Usage Patterns, Academic Applications, and Access Preferences for Generative AI Tools

Item	Category	Frequency (N)	Percentage (%)
How long have you been using generative AI tools for academic assistance?	< 1 month	4	3.0
	1 – 3 months	39	29.3
	3 – 6 months	20	15.0
	> 6 months	70	52.6
For what type of academic tasks do you use generative AI tools? *Multiple responses are allowed based on total selections (n = 714).*	Brainstorming ideas	94	13.2
	Completing assignments	77	10.8
	Presentation creation	80	11.2
	Writing assistance	56	7.8
	Research	97	13.6
	Problem-solving	90	12.6
	Exam preparation	68	9.5
	Concept clarification	47	6.6
	Language translation	63	8.8

	Data analysis	39	5.5
	Other	3	0.4
What device do you typically use to access generative AI tools?	Smartphone	124	88.6
	Tablet	16	11.4
	Laptop/PC	0	0.0
What generative AI tools have you used for academic purposes?	ChatGPT	131	37.1
	Google Geminie	29	8.2
Multiple responses are allowed based on total selections (n = 353).	Microsoft CoPilot	35	9.9
	Canva AI	79	22.4
	Grammarly	62	17.6
	Other	17	4.8
How often do you use generative AI tools for academic support?	Daily	37	27.88
	Weekly	78	58.6
	Monthly	9	6.8
	Rarely	9	6.8
Do you feel that generative AI tools are reliable sources of academic information?	Yes	130	97.7
	No	3	2.3

Engagement, Understanding, and Learning Impact

A large majority of students reported that GenAI tools made their learning experience more enjoyable (77.4%) and increased their engagement (77.5%). More importantly, 82% of respondents felt that these tools enhanced their understanding of academic topics, and 69.2% believed GenAI positively affected their academic performance. These findings reinforce the potential of GenAI to support student motivation and deepen engagement. However, they also suggest that the effectiveness of these tools may depend on the nature of tasks and the student's ability to apply AI-generated content appropriately. (Ratten & Jones, 2023) caution that students may over-rely on AI output without guidance rather than develop independent critical thinking skills.

Satisfaction, Recommendation, and Time Efficiency

Overall satisfaction with GenAI tools was high, with 63.2% reporting that they were satisfied, and 28.6% stating they were delighted with the tools' performance. Additionally, 52.6% noted that GenAI saved them significant time when completing assignments, while 51.9% said they would recommend such tools to their peers. This level of satisfaction suggests that GenAI is not only seen as effective but also adds value in academic efficiency.

Table 5. Student Experience, Perceived Usefulness, and Learning Impact of Generative AI Tools

Item	Category	Frequency (N)	Percentage (%)
How easy is it to use generative AI tools for your academic work?	Easy	116	87.2
	Not Easy	17	12.8

Do you find generative AI tool responses easy to understand?	Easy to Understand	102	76.7
	Sometimes/Unclear	31	23.3
How often do generative AI tools help you find solutions to academic problems?	Frequently Helpful	106	79.7
	Sometimes Helpful	27	20.3
How easy do you find it to interact with generative AI tools?	Easy	131	78.9
	Neutral	29	20.3
	Not Easy	35	0.8
How satisfied are you with the answers provided by generative AI tools?	Satisfied	94	70.6
	Neutral	39	29.3
	Not Satisfied	0	0%
How confident are you in the accuracy of generative AI tool responses?	Confident	79	60.9
	Neutral	45	33.8
	Not Confident	9	6.8
Do you feel comfortable relying on generative AI tools for assignments or projects?	Comfortable	91	67.6
	Neutral	40	30.1
	Not Comfortable	2	1.5
Do generative AI tools make studying more enjoyable for you?	Agree	103	77.4
	Neutral	29	21.8
	Disagree	1	0.8
Do you feel more engaged with your studies using generative AI tools?	Agree	103	77.5
	Neutral	28	21.1
	Disagree	2	1.5
Do generative AI tools help you understand your academic topics better?	Agree	109	82.0
	Neutral	23	17.3
	Disagree	1	0.7
Do you feel that generative AI tools improve your academic performance?	Agree	92	69.2
	Neutral	40	30.1
	Disagree	1	0.7

Ethical Concerns and Responsible Use

While perceptions of usefulness were overwhelmingly positive, the findings also revealed meaningful concerns. About 74.4% of respondents expressed concern about data privacy, and 81.2% agreed that caution is necessary when using GenAI in academic work. These concerns reflect global discourse on the ethical implications of AI in education, as noted by (Stahl & Eke, 2024), who emphasized the importance of clear institutional policies to support ethical AI adoption.

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Discussions

Integrating Generative AI tools into academic practices at Bandar Penawar MARA Professional College reveals several important patterns regarding student behaviour, preferences, and concerns. The findings highlight the dual role of GenAI as a valuable academic aid and a source of ethical tension within modern learning environments. Firstly, the study confirms that GenAI tools have become familiar among students. The widespread use of ChatGPT, Canva AI, and other platforms demonstrates their role in supporting students with idea generation, writing tasks, and problem-solving. These tools are often used for content creation, enhancing clarity, verifying grammar, and refining assignments, especially under time constraints. Secondly, students generally report high engagement and satisfaction with these tools. The majority believe that GenAI helps improve their academic performance, increases their enjoyment of studying, and supports a better understanding of academic topics. These findings suggest that GenAI tools are being viewed not as replacements for learning but as supplementary aids that enhance the learning experience.

Thirdly, there is a balanced awareness of the risks involved. Many students express concern about the ethical implications of using AI tools without proper attribution, the potential for reduced critical thinking skills, and issues related to data privacy. While trust in the tools is generally high, the responses indicate that students are aware of their limitations and understand the importance of responsible use. These mixed perceptions reflect broader academic discussions on the need for guidelines, institutional policies, and ethical frameworks to govern the use of AI in education. Finally, students showed interest in continued access to AI tools, with many recommending their use to peers. However, the responses also indicate a need for more support and clearer direction from educators, especially regarding when and how these tools should be used in academic contexts. Without formal integration into teaching strategies, students are left to navigate the tools independently, often relying on peer recommendations.

Conclusion

This study provides a comprehensive overview of how Bandar Penawar MARA Professional College students adopt and engage with Generative AI tools in their academic work. The results highlight the usefulness of GenAI in enhancing learning engagement, supporting academic tasks, and improving overall efficiency. Students recognize the benefits of these tools in facilitating research, writing, and comprehension, and many incorporate them into their regular study routines. Despite the generally positive outlook, concerns about ethics, data privacy, and over-reliance remain prevalent. These concerns indicate a growing awareness among students of the importance of using GenAI responsibly and in alignment with academic standards. The study also finds that while many students are confident in the reliability of GenAI tools, they desire clearer institutional support regarding usage policies and disclosure practices. In conclusion, while GenAI has proven to be a valuable academic resource, its responsible implementation requires structured guidance. Institutions must introduce clear frameworks that promote ethical usage, transparency, and critical engagement. With appropriate support, GenAI can continue to serve as a meaningful companion in modern education, helping students navigate academic challenges with greater confidence and creativity.

Limitations and Future Studies

While offering valuable insights into the adoption and usage of generative AI tools among students at MARA Professional College (MPC), this study is subject to several limitations. First, the survey was conducted solely among diploma students at the Bandar Penawar campus, which may limit the generalizability of the findings to students from other campuses or academic levels, such as degree or postgraduate cohorts. Second, although the sample size (n = 140) provides an initial understanding of student behaviour and attitudes, it may not fully capture the diversity of experiences and opinions across the broader student population. Additionally, self-reported data may be influenced by biases such as social desirability or misunderstanding of certain survey items. Third, the study primarily focused on frequency and perceived usefulness, but did not measure actual academic performance or compare outcomes between AI users and non-users. As such, the impact of generative AI on academic success remains interpretive rather than empirically tested. Finally, while the survey addressed ethical concerns and data privacy, it did not explore institutional policies, digital literacy levels, or the role of faculty in guiding the use of AI. Future research should expand the demographic scope to include students from other campuses, fields, and academic levels. Comparative studies across institutions could help validate and enrich current findings. Moreover, future studies could adopt a mixed-methods approach, incorporating interviews or classroom observations to contextualize students' AI use behaviour.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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