



The Role and Threats of Using ChatGPT in Higher Education: Balancing Pedagogical Potential and Ethical Risks

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Abstract

The increasing use of generative AI tools in education highlights the need to understand how they can be effectively integrated into university-level teaching and learning. Although these tools offer great promise, the absence of a transparent and ethical framework for their implementation poses real challenges in aligning them with curriculum goals. AI technologies, such as ChatGPT, have already begun to reshape the way students learn, particularly in higher education settings. This research examines how students utilize ChatGPT for academic purposes, including studying, research, and learning activities. Using a quantitative approach, the study identifies usage trends and finds that students generally feel confident using ChatGPT, with many reporting improved engagement and productivity. The lack of regulated ethical standards for ChatGPT use, along with lecturer interventions prohibiting irresponsible use, also impacts the widespread use of ChatGPT in higher education settings. This study used quantitative data analysis involving 415 students from four universities: KH Abdul Chalim University, Brawijaya University, Sriwijaya University, and Gadjah Mada University. This research examines the benefits, challenges, and ethical considerations of utilising AI-based software in academic settings, particularly in higher education.

Keywords: ChatGPT, Higher Education, Academic Integrity, Digital Literacy, Ethical Use of AI

Abstrak

Meningkatnya penggunaan perangkat AI generatif dalam pendidikan menyoroti tentang perlunya memahami bagaimana alat tersebut dapat diintegrasikan secara efektif ke dalam pengajaran dan pembelajaran di tingkat perguruan tinggi. Meskipun alat-alat ini menawarkan janji besar, tidak adanya kerangka kerja yang transparan dan etika untuk implementasinya menimbulkan tantangan nyata dalam menyelaraskannya dengan tujuan kurikulum. Teknologi AI seperti ChatGPT, telah mulai membentuk kembali cara siswa belajar, khususnya dalam lingkungan pendidikan tinggi. Penelitian ini mengkaji bagaimana siswa memanfaatkan ChatGPT untuk tujuan akademis, termasuk belajar, penelitian, dan kegiatan pembelajaran. Dengan menggunakan pendekatan kuantitatif, studi ini

mengidentifikasi kecenderungan penggunaan dan menemukan bahwa siswa umumnya merasa percaya diri dalam menggunakan ChatGPT, dengan banyak juga siswa yang melaporkan peningkatan keterlibatan dan produktivitas bekerja. Kurangnya standar etika yang diatur untuk penggunaan ChatGPT dan intervensi dosen yang melarang penggunaan yang tidak bertanggung jawab juga berdampak pada meluasnya penggunaan ChatGPT dalam lingkungan pendidikan tinggi. Studi ini menggunakan analisis data kuantitatif yang melibatkan 415 mahasiswa dari empat universitas: Universitas KH Abdul Chalim, Universitas Brawijaya, Universitas Sriwijaya, dan Universitas Gadjah Mada. Penelitian ini mengkaji manfaat, tantangan, dan pertimbangan etika dalam memanfaatkan perangkat lunak berbasis AI dalam lingkungan akademis, khususnya di pendidikan tinggi.

Kata Kunci: ChatGPT, Pendidikan Tinggi, Integritas Akademik, Literasi Digital, Etika Penggunaan

INTRODUCTION

The integration of generative artificial intelligence tools, such as ChatGPT, in higher education has attracted significant attention due to their potential to enhance the learning experience, streamline academic tasks, and support curriculum delivery. On the one hand, there is a growing demand for adaptive and intelligent learning systems that can meet diverse learner needs, promote accessibility, and align with the digital transformation trend in education (Ellis & Slade, 2023; Susnjak & McIntosh, 2024). On the other hand, practical challenges related to the accuracy, bias, and transparency of ChatGPT responses pose risks in educational settings, particularly in terms of academic integrity, decreased critical thinking, and technology dependency (Kasneji et al., 2023; Tlili et al., 2023).

While general concerns centre on the ethical implementation and equitable access, specific research challenges persist in understanding how ChatGPT can be systematically integrated into pedagogical designs, considering disciplinary learning outcomes and institutional policies across various higher education contexts. Existing research on the use of ChatGPT in higher education tends to be either overly conceptual or overly case-specific, often lacking a comprehensive evaluation framework that captures the interplay between usability, pedagogical value, and long-term academic skill development.

This study presents a model to guide the integrated use of ChatGPT, supporting scientific development while responding to its needs, and maintaining sound and dignified academic ethics. The core problem addressed in this study is the lack of a structured and pedagogically grounded framework for integrating ChatGPT use into higher education curricula that balances educational potential with the associated risks. The central hypothesis posits that the use of ChatGPT among university students has reached a level that is increasingly difficult to control due to the widespread adoption of artificial intelligence. Given that artificial intelligence can help students improve learning outcomes, accelerate coursework, and even lead to addiction, it is deemed necessary to develop ethical guidelines for its use. The proposed solution centres on a design-based framework for developing contextual guidelines and scenarios utilize artificial intelligence in higher education environments. The contribution of this study lies in providing a pedagogical-technical model that can guide universities in implementing generative AI responsibly in various academic programs.

Literature Review

Artificial intelligence (AI) has made significant progress over the past decade, with one of its most notable achievements being the emergence of large language models (LLMs), such as ChatGPT. Since its launch by OpenAI in November 2022, ChatGPT has sparked intense

discussion in higher education. To understand scientific developments in this area, bibliometric analysis is employed as a valuable tool to identify publication trends, author collaborations, and the evolution of thematic keywords.

Many studies highlight ChatGPT's practical benefits in improving productivity and supporting writing assignments but have not fully explored its alignment with learning taxonomies or its role in shaping graduates' employability skills (Akgun & Greenhow, 2022; Cotton et al., 2024). The research gap lies in the absence of an integrated approach that examines ChatGPT adoption from a curriculum planning perspective, considering the technology's potential, pedagogical goals, and labour market expectations. Furthermore, technical methods such as AI-based learning analytics, ethical prompt design techniques, and discipline-based content integration remain underexplored.

Bibliometrics is currently used to map current research trends (Al Husaeni et al., 2023; Usman et al., 2025). To strengthen the discussion in this study, a bibliometric analysis was conducted by searching the literature using the Scopus and Google Scholar databases with the keywords: "ChatGPT" and ("higher education" or "university" or "campus life"), limited to the publication years 2022–2024. Data were analysed using VOSviewer and Bibliometrix (R-tool) software to map author collaboration networks, keyword trends, and publication distribution by country and institution (Huong et al., 2024). The bibliometric analysis revealed that over 1,200 scientific articles related to ChatGPT, and higher education were published between 2022 and 2024. The most significant spike occurred in 2023, with a 560% increase in publications compared to the previous year. Based on co-occurrence analysis, dominant keywords in the literature include: "AI in education," "academic integrity," "AI-assisted learning," "student writing," and "assessment challenges." Most authors are affiliated with institutions in the United States, the United Kingdom, Australia, and India. Leading universities such as Harvard University, the University of Oxford, and Monash University emerged as key contributors. Increased international collaboration is evident, particularly in research addressing the ethical implications of using ChatGPT. Several large collaborative clusters have formed, reflecting the multidisciplinary and global nature of this issue.

Table 1. Number of Scientific Publications Related to ChatGPT in Higher Education (2022–2024)

Year	Estimated Number of Publications	Percentage Increase (%)	Main Research Focus
2022	85	–	Early exploration of ChatGPT's potential; responses to the AI launch
2023	560	+558%	Academic ethics, plagiarism, impact on assessment and writing practices
2024	1200+	+114%	Curriculum integration, institutional policies, educational innovation

Data for 2024 represents estimates up to early Q2 and is expected to continue rising.

Explanation:

2022: Marked the initial release of ChatGPT (late 2022), with a limited number of publications. Many of these were commentary articles, opinion pieces, and exploratory reports examining potential uses and implications.

2023: The year when ChatGPT saw widespread use among students and faculty. Research primarily focused on academic integrity concerns, the use of AI in assignment writing, and institutional policy responses.

2024: The focus has shifted toward strategic implementation, including the use of ChatGPT as a virtual tutor, integration into Learning Management Systems (LMS), AI literacy development, and the formulation of ethical guidelines for AI use in universities.

The use of ChatGPT in higher education is not only relevant in terms of learning efficiency but also holds strong potential for developing innovative, student-centred pedagogies. One emerging approach is scaffolded dialogue and peer instruction, where ChatGPT acts as an interactive facilitator to gradually test students' understanding. (Baig & Yadegaridehkordi, 2024). The use of ChatGPT in this context reinforces constructivist and self-regulated learning approaches, which have been shown to increase engagement and retention of concepts. Furthermore, the use of LLMs, such as ChatGPT, in collaborative projects can enhance academic communication and problem-solving skills, particularly when employed in scenario simulations or case-based learning. This approach expands the scope of AI use beyond a technical tool to become part of instructional design (Al Shloul et al., 2024).

Furthermore, the integration of ChatGPT as an adaptive personal tutor has been piloted in various hybrid learning environments, demonstrating improvements in student metacognitive awareness and higher-level conceptual understanding (Alfredo et al., 2024). This indicates that ChatGPT's role is not limited to being a passive tool, but rather an active component of a pedagogical strategy that supports personalized learning pathways and higher order thinking skills (Hu & Shao, 2025; Lyu & Salam, 2025).

RESEARCH METHODS

Digital transformation has permeated all sectors of life, including higher education activities. One prominent innovation in recent years is the use of artificial intelligence-based language models, such as ChatGPT, developed by OpenAI. ChatGPT can generate text, answer questions, assist with academic writing, and even simplify complex information. Its presence has sparked discussions about its role, potential, and limitations in campus life (Wang et al., 2024). The popularity of ChatGPT as an artificial intelligence tool has sparked debate about its potential implications for the education sector. Several researchers have attempted to examine the use of ChatGPT and its impact, including conducting a SWOT analysis to outline ChatGPT's strengths and weaknesses, as well as discuss its opportunities and threats to education (Dwivedi et al., 2021; Farrokhnia et al., 2024). Threats to the use of artificial intelligence in the digital age can include a lack of contextual understanding of the subject being discussed, threats to academic integrity, the democratisation of plagiarism, the perpetuation of discrimination in education, and a decline in students' cognitive skills (Chalim et al., 2024). Given the widespread adoption of artificial intelligence in campus life, this study aimed to identify and analyse ChatGPT practices in campus life, specifically examining the intensity and frequency of use, its primary functions, and the typical times when students utilise ChatGPT.

This study presents a brightness analysis, utilising three primary colours, red, yellow, and green, to indicate a student's level of dependence on artificial intelligence for completing campus assignments or other purposes. Red represents chronic users with severe addiction or dependence, yellow represents average users, and green represents those at low risk of dependence on artificial intelligence. The use of levels for clinical conditions is often used in psychology and healthcare. Colouring can help identify analysis results or diagnose a person's condition (Usman et al., 2023).

Table 2. Questionnaire Table with Colors as Indicators

Student Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Σ
UB 005	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
UB 027	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	60
UNSRI 008	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	45
UAC 010	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	30
UGM 015	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15

In research, a Likert scale is used to facilitate respondents' understanding of questions. The Likert scale is a ubiquitous widely used measurement tool in quantitative research, particularly for assessing respondents' attitudes, perceptions, or level of agreement with a statement (Joshi et al., 2015). This scale typically consists of five to seven response categories, ranging from "Strongly Disagree" to "Strongly Agree," allowing researchers to capture the nuances of attitudes in greater detail (Boone & Boone, 2012). According to Jamieson (2004), although the Likert Scale produces ordinal data, it is often analysed in practice as interval data for descriptive and inferential statistics (Jamieson, 2004; Rokhman et al., 2023). Therefore, researchers need to understand the limitations and employ appropriate analysis methods to ensure a valid interpretation of the results. Rensis Likert first introduced this scale in his research on measuring social attitudes (Likert, 1932). To this day, this scale remains a popular method due to its simplicity and versatility, making it applicable in various research fields. This study used quantitative data analysis involving 415 students from four universities: KH Abdul Chalim University, Brawijaya University, Sriwijaya University, and Gadjah Mada University. The questionnaire was distributed via Google Forms via WhatsApp from March to April 2025. The following are some of the questions asked in the study, divided into two main groups: primary questions and secondary questions. Respondents answered using a Likert scale, with 1 representing the lowest score and 5 representing the highest score.

Main Research Questions: 1) What are students' perceptions of the use of ChatGPT in the learning process in higher education? 2) To what extent can ChatGPT improve the effectiveness and efficiency of the teaching and learning process at the university level? 3) What is the impact of using ChatGPT on student learning outcomes in the context of outcome-based learning? 4) How does the integration of ChatGPT influence students' critical thinking skills and creativity? 5) Do you believe there are any ethical and academic challenges arising from the use of ChatGPT in learning activities in higher education?

Sub-Questions:

1. How do students utilize ChatGPT to complete assignments and understand course material?
2. How can ChatGPT be used to support active learning methods such as project-based learning or case studies?
3. Is there a significant relationship between the frequency of ChatGPT use and improvements in students' academic grades?
4. To what extent does ChatGPT use affect students' perceptions of learning effectiveness?
5. Is there a significant difference in learning outcomes between students who use ChatGPT and those who do not?
6. Does digital literacy moderate the effect of ChatGPT use on student academic performance?

7. What is the correlation between the level of ChatGPT utilization in learning and student satisfaction with the learning process in class?

The 15 questions below are used in research on the use of ChatGPT in university learning activities. The questions are divided into several segments, such as frequency of use, its function in learning activities, the role of lecturers in guiding its use, and the ethics of using artificial intelligence in academic activities.

1. I understand the primary function of ChatGPT in a learning context.
2. I use ChatGPT regularly to support my learning activities.
3. ChatGPT helps me understand difficult course material.
4. I use ChatGPT to find references or additional explanations.
5. ChatGPT speeds up my academic assignments.
6. Using ChatGPT helps me organize ideas in academic writing.
7. I feel my academic grades have improved after using ChatGPT.
8. I feel more confident in discussions after using ChatGPT's assistance.
9. I feel that using ChatGPT does not make me dependent on it.
10. I recognize the importance of verifying the information provided by ChatGPT.
11. I understand the ethical boundaries of using ChatGPT for coursework.
12. I feel that using ChatGPT supports the development of my critical thinking skills.
13. I feel that my professors support the responsible use of ChatGPT.
14. I am satisfied with my learning experience using ChatGPT as a learning tool.
15. I am interested in continuing to use ChatGPT in my future learning.

Research Result

The uses of ChatGPT in campus academic life are pretty diverse. Students use ChatGPT as a learning assistant to explain complex concepts, develop assignment frameworks, summarize readings, and even practice interviews or presentations. ChatGPT is also helpful in developing critical thinking skills when used as a dialogue tool to test ideas. Lecturers can use ChatGPT to create learning materials, develop evaluation questions, or find research inspiration.

Some lecturers also integrate AI into class discussions, particularly in courses related to technology, ethics, or digital media. Administratively, ChatGPT supports campus staff efficiency by assisting with drafting letters, announcements, and compiling internal reports quickly and efficiently. However, the use of ChatGPT poses significant challenges, particularly concerning plagiarism, technological dependency, and information accuracy. Clear campus policies are needed regarding the boundaries of AI use in academic work. Education in digital literacy and academic ethics is crucial to ensure the wise use of AI.

Table 2 shows the results of data collection with 15 questions in a study on the use of ChatGPT in higher education. To simplify the questions into answers, each question displayed in the table only consists of keywords, such as function (1), frequency (2), supporting (3), reference (4), faster task completion (5), organizing ideas (6), better assignment grades (7), confidence (8), addicted (9), verification of results (10), Ethics of use (11), upgrading critical thinking (12), lecturer support for responsible use (13), experience (14), and suitable use (15).

Table 3. Results of Questionnaire Data Collection

No	Question	1	2	3	4	5	Score	Level
1	Function	2	55	75	115	168	1637	***
		2	110	225	460	840		
2	Frequency	15	23	32	167	178	1715	****
		15	46	96	668	890		

3	Support	35	55	85	100	140	1500	***
		35	110	255	400	700		
4	References	88	75	125	75	52	1173	**
		88	150	375	300	260		
5	Faster completion of tasks	3	45	54	115	198	1705	****
		3	90	162	460	990		
6	Organize academic ideas	65	124	145	45	36	1108	**
		65	248	435	180	180		
7	Better assignment grade	65	105	102	75	68	1221	**
		65	210	306	300	340		
8	Confidence	15	35	45	115	205	1705	****
		15	70	135	460	1025		
9	Addicted	35	44	75	105	156	1548	***
		35	88	225	420	780		
10	Verify results	35	50	85	100	145	1515	***
		35	100	255	400	725		
11	Etic of use	165	115	120	15	0	815	*
		165	230	360	60	0		
12	Upgrade critical thinking	169	113	125	8	0	802	*
		169	226	375	32	0		
13	Lecture support for responsible use	70	115	120	65	45	1145	**
		70	230	360	260	225		
14	Experience	4	35	45	135	196	1729	****
		4	70	135	540	980		
15	Suitable use	25	49	114	108	119	1492	***
		25	98	342	432	595		

Note: (*) Low risk, (**) Moderate risk, (***) High risk, (****) Veri high risk

Discussion

Based on the table above, which displays quantitative data from a survey on the use of ChatGPT in university-level learning using a Likert scale of 1–5, the following is a logical and interpretive explanation for each data element:

Red (Very High Score > 1700), indicating the highest level of agreement or response. Students strongly agree or very frequently experience the following questions, such as the frequency of use (1715), faster task completion (1705), confidence (1705), and experience (1729). This indicates that students actively use ChatGPT and find it significantly helpful in terms of time efficiency, increased self-confidence, and positive learning experiences.

Orange (High Score, scores between 1500–1700) indicates a high level of agreement, but not as strong as the red group. Results obtained include function (1637), support (1500), addiction (1548), verification results (1515), and suitable use (1492). These results indicate that students consider ChatGPT to be functionally beneficial but are also beginning to show signs of dependency. There is moderate awareness of its wise use, but the tendency for continued use remains moderate, as is the dependence on ChatGPT.

Yellow (Moderate Score, values between 1100–1499), indicating a moderate level of agreement. Students agree on several aspects, but may still be uncertain or inconsistent, such as organizing academic ideas (1108), better assignment grades (1221), and lecturer support for responsible use (1145). Although using ChatGPT is quite helpful academically, it has not

significantly improved the quality of assignments. Similarly, support from lecturers is also suboptimal, leading students to feel hesitant about using ChatGPT in academic activities.

Green (Low Score, values <1000), data collection results indicate a low level of agreement, as students may be unaware of, lack understanding of, or have not yet seen tangible benefits from the aspects questioned, such as ethics of use (815) and improved critical thinking (802). Ethical aspects and the development of critical thinking skills are still weak. Students are likely to use ChatGPT as a practical tool, rather than as a means of cognitive or ethical development.

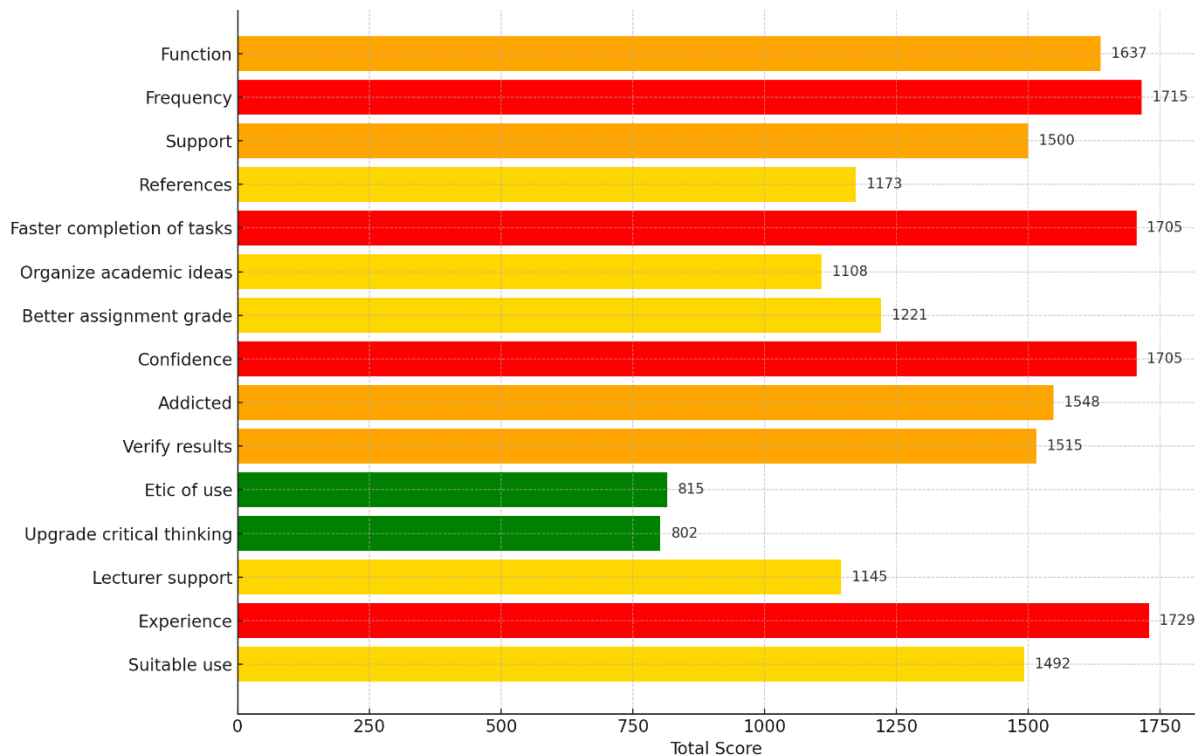


Figure 1. Interpretation of ChatGPT Usage Scores in Higher Education

Figure 1 under illustrates the interpretation of data collected on the use of ChatGPT among university students. The data analysis above indicates that ChatGPT has high practical value in assisting with assignments and providing a positive experience; however, it still falls short in terms of ethics, critical thinking, and academic guidance. However, the risk of addiction and a lack of ethical awareness could be major concerns from now on. This requires intervention in the curriculum and close supervision from course instructors. High scores on the "Verify results" and "Addicted" questions also indicate a dual nature of ChatGPT use on the one hand, its use is beneficial, but on the other, it is risky. The use of ChatGPT poses significant challenges, particularly regarding plagiarism, technological dependency, and information accuracy. These findings align with research by Cotton et al. (2023), which suggests that the use of LLMs like ChatGPT increases the risk of academic integrity violations, mainly when used without adequate supervision or ethical guidance. Furthermore, high scores on the "faster task completion" and "confidence" aspects support the findings of Wang et al. (2024), which revealed that the use of generative AI in academic assignments increases students' efficiency in completing work and strengthens their learning self-efficacy (Zawacki-Richter et al., 2019).

However, low scores were found in the aspects of ethical use and critical thinking development, indicating that students tend to pursue convenience over in-depth understanding. This is consistent with a study by Dwivedi et al. (2023), which warns that AI technology, if not

used reflectively and purposefully, can hinder the development of analytical and critical skills. The low score on the “Upgrade critical thinking” indicator reinforces the argument of Kasneci et al. (2023) that LLMs do not replace reflective thinking processes but rather serve as a tool that must be pedagogically contextualized. The low awareness of the ethical use of ChatGPT is also supported by the results of a study by Tlili et al. (2023), which emphasized the importance of AI literacy training to enable students to understand the limitations, potential biases, and responsibilities associated with using this technology. From this analysis, it can be concluded that the use of ChatGPT in higher education necessitates curriculum intervention and the active involvement of lecturers to strike a balance between the practical benefits and the values of in-depth learning. This aligns with the suggestions of Zawacki-Richter et al. (2022), which recommend an ethical and pedagogical framework for integrating AI into learning to support more sustainable, long-term learning outcomes.

CONCLUSION

The purpose of this study is to design a structured and applicable framework for integrating ChatGPT into higher education learning environments based on curriculum design principles that respect educational ethics. Findings indicate that when ChatGPT is aligned with specific learning outcomes, supported by ethical guidelines for its use, and integrated into assessment strategies, the use of ChatGPT significantly increases student engagement, improves learning efficiency, particularly in completing academic assignments on campus, and fosters critical thinking. The most effective results are seen in courses with blended learning models and clear prompting strategies. Students who actively use ChatGPT will find it technically and emotionally helpful, with assessment groups colored red and orange. However, ethical awareness, critical thinking, and the role of lecturers are still not optimal, as indicated by the results of data analysis in yellow and green.

These findings suggest that curriculum intervention and ethical development are necessary for a more balanced and responsible use of ChatGPT. ChatGPT users felt highly confident in their use, but this was also accompanied by addictive behaviour that reduced students' critical thinking skills, reduced willingness to cross-reference, and decreased ability to organize academic ideas. Data from the variance analysis suggests that the effectiveness of ChatGPT use is significantly influenced by the field of study and the teaching method used. Students in the social sciences appear to benefit more than those in other fields, such as engineering, health, or management, due to the more dialogic learning approach in the social sciences. This study was limited by its scope within a limited institutional context; future research should explore cross-disciplinary and cross-institutional models across countries for broader validation and scalability.

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