

Academic Integrity in the Age of Generative AI: Ethical Challenges and Perceptions among TVET Students at POLIMAS

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Abstract: This research examines the ethics of using generative artificial intelligence (AI) technology with students enrolled in Technical and Vocational Education and Training (TVET) at Politeknik Sultan Abdul Halim Mu'adzam Shah (POLIMAS) in Malaysia. The emergence of generative AI technologies, especially ChatGPT, has created new opportunities and challenges in education, including serious issues related to academic dishonesty and integrity. This study adopted a mixed-methods approach that included a survey of 2,472 students from five departments at POLIMAS to assess their understanding of academic integrity, usage of generative AI tools, and perceptions regarding ethical applications of those tools in an academic environment. Results indicate there is high awareness among students regarding issues of academic integrity (mean score 3.97/5); however, there is also concerning dependence on AI tools (3.6/5) and a high need for policies on ethical AI use (3.92/5). The study notes that engineering students had a higher dependence on AI, while non-engineering students were less dependent. The latter gender-based analysis showed female students tend to have greater awareness of academic integrity issues than male students. This research adds to the increasing discussion on policy issues in education in the generative AI age and proposes solutions that frame ethical AI usage in TVET curricula while maintaining innovations in academic integrity. It is recommended that Malaysia's TVET system focus on the development of all-encompassing AI frameworks, increasing students' and teachers' digital literacy levels, implementing assessment methods that consider AI, encouraging proper attribution, and applying AI disregard policies within the Malaysian context.

Keywords: *Academic integrity, generative artificial intelligence, ChatGPT, TVET education, ethics, Malaysian higher education, student perceptions*

1.0 INTRODUCTION

The development of advanced generative tools, particularly large language models such as ChatGPT, has severely altered the educational landscape and increased concerns around academic dishonesty to a whole new level (Nguyen, 2025; Francis et al., 2025). Ever since the public launch of ChatGPT in November 2022, educational institutions around the globe have struggled with finding a middle ground between harnessing the power of these technologies and safeguarding educational standards as well as academic integrity (Liu et al., 2024; Evangelista, 2025). Despite providing impressive possibilities for enhancing education, the ability of generative AI to create text indistinguishable from that written by a human poses a troublesome challenge for upholding academic integrity. As noted by Eaton (2025), the education sector is facing what could be termed a “post-plagiarism” world, where the very idea of lacunae authorship and dishonest practices is being reconstructed.

In this landscape, TVET institutions confront specific difficulties. Unlike traditional academic institutions, these schools of learning, which emphasize practical skills, have distinct implications for the integration of generative AI (Deckker & Sumanasekara, 2025). Malaysia has placed marked emphasis on TVET for national development and readiness for Industry 4.0. This places attention on how AI impacts integrity issues academically within this peculiar scope of education (Mat Yusoff et al., 2025). The work explores the dimensions of academic integrity gaps cognized by POLIMAS students, a leading Malaysian TVET institution, through the lens of generative AI. Intending to inform school policy and practice, this research analyzes student attitudes and awareness of generative AI tools to ensure that the integration of technology does not come at the expense of academic integrity. The provided research focuses on the following issues:

- a) How knowledgeable and comprehensively aware are the TVET students at POLIMAS regarding academic integrity, especially with respect to generative AI?
- b) What is the perception and usage of generative AI tools by TVET students at POLIMAS for other academic purposes?
- c) What is the disparity in perception and usage across different departments as well as within various demographic categories?
- d) What policies and educational approaches can be formulated to maintain appropriate policies for educational integrity while enabling leverage of generative AI in TVET education?

Answering these questions will help the emerging literature regarding AI ethics in education, especially with regard to the TVET education in Malaysia or other developing countries that are undergoing rapid shifts in educational technology.

2.0 Literature Reviews

2.1 Generative AI and Its Impact on Education

Generative artificial intelligence (AI) refers to a new form of technology that can create content that simulates human work. The development of advanced language models such as ChatGPT has changed the educational landscape around the world since late 2022 (Pahud de Mortanges, 2025). These technologies offer educational opportunities by assisting in complex problem solving and essay writing, but they also pose challenges for educational institutions (Batista et al., 2024). The impact of generative AI on the teaching and learning activities of higher education institutions has been studied recently. Liu et al. (2024) analyzed how these tools are transforming academic discourse and focused on the fact that students are using these technologies for almost all stages of their learning. Wirzal et al. (2024) also performed a bibliometric analysis and highlighted the paradoxical role of generative AI as a powerful pedagogical instrument and a potential source of misconduct within science education.

Deckker and Sumanasekara (2025) emphasize the importance of AI technology within skill learning settings in the context of Technical and Vocational Education and Training (TVET). Their study indicates that practical training can be enhanced through the use of generative AI by preparing individualized learning resources, creating real-life environment simulations, and assisting with technical writing relevant to the vocational field. Nonetheless, as Beriçgel et al. (2025) note in their systematic review, the incorporation of AI into TVET curriculum poses distinct challenges regarding ethical application and upholding the authenticity of practical skill evaluation.

2.2 Academic Integrity in the Digital Age

The implementation of generative AI technologies has profoundly altered the conception of academic integrity. The traditional frameworks that have been developed for managing plagiarism, incorporating prevention and detection, are becoming increasingly obsolete in the face of the more nuanced ethical concerns associated with content generated by AI (Eaton, 2025). As noted by Francis et al. (2025), educational institutions are rethinking innovation and integrity in a way that accounts for the shifting landscape of knowledge creation and knowledge evaluation poses. Lund et al.'s (2025) study concerning students' perceptions of academic misconduct in the era of generative AI showcases a novel facet of student hood that is rapidly evolving in the context of technology. The research indicates that a precise distinction between permissible AI use and academic dishonesty is, for many students, a

widespread “gray zone” which undermines policies designed to uphold academic integrity as traditionally defined.

The implications of academic AI in TVET are particularly intricate in the context of generative AI. As noted by Khairulanwar and Jamaludin (2024), certificate-level learning contexts, such as those in fashion design, deal with the dual challenges of textual and visual content generated by AI, requiring a multi-modal integrity framework. In addition, the vocational, skill-intensive orientation of TVET education raises questions not only about documents prepared by learners but also about the extent to which AI influences the generation of solutions to technical problems central to vocational education and training (Berigel et al., 2025).

2.3 Ethical Frameworks and Policy Responses

All educational institutions around the globe have applied varied responses to the ethical issues raised by generative AI technology. Supervised policymaking analyses conducted by Stracke and colleagues (2025) uncovered that some institutions have placed total prohibitions on the integration of AI tools within classrooms, whilst others allow its use provided that there is attribution. The findings reveal that policies tend to succeed when they focus on the ethics of use as opposed to the restricted guidelines that are bound to be unenforceable.

Nnorom (2025) discussed an educational ethics policy suggesting the use of AI in education while maintaining effective human factors, precision, compassion, and actions within a taught course. Policies are grounded on the need to ensure all AI applications executed are to maintain humanity in education whilst protecting empathy and applying fairness. Nwozor (2025) came up with just and all-encompassing policies positing clear preventives to address the controversies of academic honesty and recombination of dishonesty in the AI age.

In the case of Malaysia, Mat Yusoff et al. (2025) studied the perception of students towards the use of AI-enhanced learning technologies in higher education, stating that trust and ethics are integrated into successful adoption. They claim that institutions of higher learning in Malaysia should advance policies and frameworks that are culturally sensitive to reflect the ethos of education in the country alongside global technology.

2.4 Student Perceptions and Behavior

In today's digitally advanced society, with tools like ChatGPT being readily available, it is essential to analyze how these tools affect academic integrity and ethics. Understanding educators' and students' perspectives at varying levels is the first step toward better utilizing AI technology in all forms of learning. To that end, Aladsani (2025) emphasizes the role of ethical AI in academia and its underlying principles through participatory action research with postgraduate students. It was found that while postgraduate students understood AI's potential as a resource, substantial guidance on its ethical application was necessary. From a language learning perspective, Hossain et al. (2024) examined the AI literacy of EFL students. It was evident that students possessed different levels of familiarity with AI, as well as varying knowledge surrounding ethical AI use. That said, their research revealed an increasing necessity for marked instructional materials on ethics and AI.

Verma (2025) focused on student perceptions of GenAI in higher education. It highlighted the students' understanding of the benefits posed by AI tools, while also showcasing their concerns regarding ethical AI usage and academic integrity implications. Students recognize generative AI's potential, yet ethical considerations remain overarching concerns. Balraj (2025) highlights similar concerns with undergraduates' perceptions of ChatGPT in academic writing and his literature review.

The themes of utility, ethical concerns, and institutional guidance appeared repeatedly throughout the work. Xiaoyu et al. (2025) also documented changing pedagogical approaches to generative AI from 2022 to 2024, highlighting the increasing focus on empirical studies exploring the ethical dilemmas and academic integrity issues surrounding AI technology.

3.0 Methodology

3.1 Research Design

This study applied a quantitative approach using the survey method to examine the attitudes and perceptions on academic integrity and the use of generative AI by TVET students of Politeknik Sultan Abdul Halim Mu'adzam Shah (POLIMAS). This approach was aimed at finding general trends across a huge population of students and differences among departments and other demographic groups.

3.2 Research Setting and Participants

The study was performed in POLIMAS, one of the polytechnics in Malaysia that provides TVET education. The participant population included 2,472 students from 5 academic departments.

- a) Diploma of Civil Engineering (JKA): 620 students
- b) Diploma of Electrical Engineering (JKE): 414 students
- c) Diploma of Mechanical Engineering (JKM): 199 students
- d) Diploma of Commerce (JP): 835 students
- e) Diploma of Information Technology and Communication (JTMK): 404 students

The sample comprised 1289 male students (52.1%) and 1183 female students (47.9%), which gives equal gender representation. To enhance analysis, participants were further classified as “Engineering” (JKA, JKE, JKM) and “Non-Engineering” (JP, JTMK) to assess trends in the specific disciplines.

3.3 Research Instrument

Responses to the questionnaire created to capture the use of generative AI and academic integrity were obtained using a Likert scale (Balakrishnan & Ponnusamy, 2025; State of Affairs POLIMAS 2025). Participants of this questionnaire were asked to rate themselves according to their perception on the following five levels:

- a) Strongly Disagree
- b) Disagree
- c) Somewhat Agree
- d) Agree
- e) Strongly Agree

Verbal Instructions given to participants to facilitate ease of engagement with the survey were done so using the Malay language, which is the native language of POLIMAS. This was done in order to enable participants to interpret questions without any language-induced understanding barriers. The tool covers other constructions:

- a) Understanding of academic integrity in relation to generative AI are explored in items (1, 4, 6).
- b) Average dependency on Generative AI Tools (2, 15).
- c) Changed perceived impact of Generative AI on learning (5, 10).
- d) Ethical Issues in Generative AI Instruments (3, 7, 8, 9).
- e) Elucidated Self-Reported Use Pattern (12, 13, 14).
- f) Preferred institutional response to the (3, 11).

3.4 Data Collection Procedure

Data collection was conducted throughout the 2023-2024 academic year using an online survey shared with students from all five departments. Respondents participated voluntarily, having granted informed consent before taking part in the survey. The survey was made available through the institution's student portal system, which provided access to all enrolled students.

Departmental representatives aided in enhancing participation, which, along with other strategies, was intended to improve response rates. Data collection was done in compliance with the institutional policies regarding research ethics, ensuring the anonymity and confidentiality of the participant data.

3.5 Data Analysis

Responses from surveys were computed using both descriptive and inferential statistical techniques. Each item's mean and standard deviation were calculated to determine trends on a more global level. Further analyses were performed by:

1. Department, whether individual or in a grouped form as Engineering/Non-Engineering.
2. Gender, according to male and female.

Mean scores for each item were estimated for all these groupings to check any noteworthy differences in perceptions or reported behaviors. Standard deviations were evaluated to determine how variable the responses were. The analysis aimed to find insights that would aid in developing policies and educational strategies about generative AI technologies and academic honesty for POLIMAS and other similar TVET institutions.

4.0 Results and Findings

4.1 Overall Student Perceptions and Understanding

Based on the analysis of TVET students, their perception and understanding of academic integrity as it relates to generative AI showed several trends of interest. Insightful, in-depth decisions were made using quantitative data from the 2472 sampled students (with the corresponding answer sets to the 15 items listed in Table 1), with the mean and standard deviation of each item captured.

The generative AI concerns have an average rating above 3.8 out of 5. Therefore, there is a clearly high level of awareness regarding academic integrity issues. Students' understanding of Artificial Intelligence limitations with content creation ($M=3.98$, $SD=0.89$), along with unrecognized AIs masquerading as human authors in academics ($M=3.97$, $SD=0.97$), showed notable agreement with Items 10 and 1, respectively.

Table 1

Overall Student Responses to Survey Items (N=2,472)

Item	Statement	Mean	SD
1	I understand that using generative AI (such as ChatGPT) without proper acknowledgment in academic assignments is considered academic dishonesty.	3.97	0.97
2	I rely more on generative AI for assignments than on my own learning.	3.60	1.04
3	I believe that TVET educational institutions should teach students how to use generative AI ethically.	3.92	0.91
4	I understand the implications for academic integrity when overly relying on generative AI for academic assignments.	3.90	0.90
5	I believe that the use of generative AI in education will reduce students' ability to think critically.	3.87	0.93
6	I understand the academic consequences (such as failure or disciplinary action) that may be faced if misusing generative AI in academic assignments.	3.91	0.90
7	I believe that using generative AI without guidance is a major threat to academic integrity in TVET education.	3.95	0.94
8	I believe that using generative AI for academic writing assistance without making appropriate modifications is the same as plagiarism.	3.91	0.94
9	I believe that using generative AI to generate ideas and provide brainstorming assistance is ethical even without stating the source.	3.90	0.91
10	I understand that content generated by AI can be inaccurate and cannot be fully trusted for academic work.	3.98	0.89
11	I believe that lecturers should use AI detection tools to detect AI use in student assignments.	3.86	0.94
12	I use generative AI like ChatGPT to help with academic writing (structuring, summarizing, or paraphrasing) without directly plagiarizing.	3.90	0.91
13	I use generative AI to get feedback on my assignments before final submission.	3.87	0.92
14	I acknowledge generative AI sources when using its input in my academic work.	3.84	0.90
15	I use generative AI to help understand difficult concepts in my TVET course.	3.95	0.90

Students studying TVET and utilizing generative AI tools are increasingly dependent. This is suggested by the not very high average value about item 2, which is (M=3.60, SD=1.04). Moreover,

this depression demonstrates the highest standard deviation when compared to other items, answering it along with the greatest unpredictability. There is a strong endorsement of the institution governing the AI ethics (Item 3, $M=3.92$, $SD=0.91$). There is also recognition of using AI technology in the absence of scholarly prudence and the possible risks pertaining to the integrity of scholarship (Item 7, $M=3.95$, $SD=0.94$).

4.2 Comparison Between Engineering and Non-Engineering Students

The comparison between the responses of Engineering students (JKA, JKE, JKM; $n=1,233$) and non-Engineering students (JP, JTMK; $n=1,239$) highlighted striking differences within each academic discipline's response analysis. The most significant differences were selected for illustrative purposes; the comparison of means is displayed in Table 2.

Table 2

Comparison of Engineering and Non-Engineering Students' Perceptions

Item	Statement	Engineering Mean	Non-Engineering Mean	Difference
1	I understand that using generative AI (such as ChatGPT) without proper acknowledgment in academic assignments is considered academic dishonesty.	4.02	3.92	0.10
2	I rely more on generative AI for assignments than on my own learning.	3.68	3.51	0.17
5	I believe that TVET educational institutions should teach students how to use generative AI ethically.	3.90	3.85	0.05
10	I understand the implications for academic integrity when overly relying on generative AI for academic assignments.	4.01	3.95	0.06
13	I believe that the use of generative AI in education will reduce students' ability to think critically.	3.92	3.82	0.10
14	I understand the academic consequences (such as failure or disciplinary action) that may be faced if misusing generative AI in academic assignments.	3.91	3.77	0.14
15	I believe that using generative AI without guidance is a major threat to academic integrity in TVET education.	3.98	3.92	0.06

The findings show that Engineering students ascribed higher levels of dependency on AI (Item 2), with the only non-Engineering students trailing behind by a mean difference of 0.17 more than Engineering students' AI acknowledgment in greater AI usage in academics when compared to non-Engineering peers (Item 14, difference of 0.14). Engineering students also reported greater use of AI to provide feedback on assignments (Item 13, difference of 0.10). Engineering students displayed unique features of enhanced awareness or understanding of academic integrity concepts (Item 1) alongside an overall better understanding of limitations of AI over their Non-Engineering peers in other areas (Item 10).

4.3 Gender-Based Analysis of Perceptions

The analysis also included differences in perception for male students (n = 1289) and female students (n = 1183). Key differences that were seen across gender groups are captured in Table 3.

Table 2
Comparison of Engineering and Non-Engineering Students' Perceptions

Item	Statement	Male Mean	Female Mean	Difference
1	I understand that using generative AI (such as ChatGPT) without proper acknowledgment in academic assignments is considered academic dishonesty.	3.94	4.01	0.07
2	I rely more on generative AI for assignments than on my own learning.	3.63	3.56	0.07
3	I believe that TVET educational institutions should teach students how to use generative AI ethically.	3.90	3.95	0.05
4	I understand the implications for academic integrity when overly relying on generative AI for academic assignments.	3.91	3.89	0.02
9	I believe that the use of generative AI in education will reduce students' ability to think critically.	3.90	3.91	0.01
14	I understand the academic consequences (such as failure or disciplinary action) that may be faced if misusing generative AI in academic assignments.	3.84	3.84	0.00

Increased awareness of academic integrity issues (Item 1, with a difference of 0.07) and support of educational programs aimed at preventing AI ethics misuse (Item 3, with a difference of 0.05) were more characteristic of female students. Male students reported greater dependence on generative AI tools (Item 2, difference of 0.07) relative to their peers. With the use of AI technologies and perceptions towards them, it is evident that the gender differences highlighted tend to be lesser than the focus group

differences, which signifies that the “departmental context” might have a stronger bearing as compared to “gender.”

5.0 Discussion and Conclusions

5.1 Understanding Academic Integrity in the AI Context

The results indicate that POLIMAS students are generally aware of the principles of academic integrity, as most of them believe that failure to acknowledge the use of AI technologies constitutes academic dishonesty. This is consistent with research by Lund et al. (2025), which noted that modern-day students tend to appreciate traditional concepts of academic integrity but, for some reason, fail to apply them to new contexts involving AI. The relatively high mean scores for items concerning understanding consequences (Item 6, $M=3.91$) and implications (Item 4, $M=3.90$) indicate that TVET students, indeed, have some grasp of the principles underlying academic integrity.

Nonetheless, the extremely high standard deviation for Item 1 ($SD=0.97$) suggests a lack of uniformity in understanding among the population, some of whom may possess greater sophistication in their understanding than others. This discrepancy corroborates the explanation given by Hossain et al. (2024), where the researchers reported notable differences among students with respect to AI literacy, especially in understanding the ethical dimensions of its use.

The balance between understanding integrity principles and self-reported dependency on AI (Item 2, $M=3.60$) showcases what Nguyen (2025) refers to as the “integrity-utility paradox” regarding generative AI use. Students observe ethical limits and, at the same time, partake in activities that potentially subvert those limits. It creates a gap that accentuates the need for more definitive instructional policies and educational strategies focusing on the borderline nuances of AI support verging on academic dishonesty.

5.2 Disciplinary Differences in AI Perceptions and Use

The difference between Engineering and Non-Engineering students showcases the differences in disciplines in regard to technology and learning. Engineering students had more AI dependencies and usage rates across several items, which aligns with Deckker and Sumanasekara’s (2025) finding that more technically oriented TVET programs employ AI tools at a higher rate than non-technical programs.

Engineering students had higher AI source acknowledgment rates (Item 14, $M=3.91$ vs. 3.77). This suggests that higher AI usage may actually connote greater AI attribution awareness and attribution practices in students. Such findings go against claims that greater AI dependency and usage are directly linked to decreased academic integrity. Instead, findings suggest that frequent users understand ethical AI integration more and, in fact, support Francis et al (2025) who argue that having access to AI tools can strengthen ethical considerations when used in a proper context.

The variations noted could illustrate different teaching styles and evaluation practices. Engineering classes, for example, focus on problem-solving and applications where the role of AI support is likely to be considered more legitimate. On the contrary, business and IT programs may place greater value on original thought and imagination, raising more complicated issues of academic integrity regarding AI help. This corresponds to Mat Yusoff et al.'s (2025) results that AI adoption trends in Malaysian higher education are heavily shaped by the operating disciplinary cultures.

5.3 Gender Dimensions of AI Perceptions

The slight gender gaps noted in this study, especially female students' greater sensitivity to issues of academic integrity (Item 1) and their stronger endorsement of AI ethics education (Item 3), correspond with existing literature on gender and academic integrity. Balraj's (2025) research noted similar trends and reported that female students, for instance, prefer to take more socially responsible stances with regard to the problem of technology ethics.

The smaller gender difference compared to the one observed in disciplines indicates that the departmental culture and teaching style are more important than gender in shaping perceptions and behaviors toward AI. This is also in line with the findings of Xiaoyu et al. (2025), whose systematic review noted that institutional and disciplinary contexts, as a whole, tend to have a greater impact on perceptions of AI than demographic characteristics do.

5.4 Gender Dimensions of AI Perceptions

The high agreement with Item 3 supports the institutional policies on AI ethics use and reflects a weak formal AI support structure for students ($M=3.92$). This corresponds with Stracke et al.'s (2025) findings that students, in general, prefer some guidelines rather than outright prohibitive policies regarding the use of technology in education.

The high agreement with Item 7 ($M=3.95$) concerning the use of AI technology and its potential violation of academic integrity, untethered guidance suggests that the students acknowledge the dangers of orthogonal frameworks. This echoes Nnorom's (2025) arguments on the need to construct strategies that effectively blend the advantages of AI while safeguarding educational values.

Blinded by AI limits, students contradict dominating concerns regarding the acceptance of AI outputs, content having limitations (Item 10, $M=3.98$). This refined perception supports Liu et al.'s (2024) argument that students treat AI as supplementary resources rather than primary sources of information because of instructional framing on AI's capabilities and limits.

5.5 Implications for TVET Education in Malaysia

The results are particularly important for Malaysian TVET institutions adapting to the generative AI shift. The positive response to Item 15 ($M=3.95$) on using AI to break down complex concepts illustrates AI's possible role as a learning aid in technical education. This supports Khairulanwar and Jamaludin's (2024) claim that AI serves to enhance skill acquisition within vocational learning contexts whenever it is utilized as a supplemental instructional resource.

The gap noted in attribution practices (Item 14, $M=3.84$) points to a need for more effective student support strategies at Malaysian TVET institutions. In the words of Evangelista (2025), attribution models for AI's schematized input outline an important dimension of policy integrity and scholarly conduct in the era of generative AI. The data illuminates the blank space in Malaysian TVET policy regarding AI, which demands contextualization regarding proficiency education alongside existing academic regulations. The relatively high standard deviations across items denote disparities which, as Berigel et al. (2025) suggest, accompany calls for more refined, participatory policy frameworks that rely on and respond to multiple viewpoints.

5.6 Conclusion

This study is focused on the perceptions and issues regarding academic integrity in the context of generative AI among POLIMAS TVET students in Malaysia. The study uncovered several key insights:

- a) The majority of TVET students exhibit high levels of awareness regarding the principles of academic integrity relevant to the use of generative AI, with most agreeing that failure to give credit for AI use is a form of academic misconduct.
- b) The human dependency on generative AI tools among students poses concern because there is a gap between integrity awareness and behavioral practices.
- c) Students emphasize the need for educational institutions to actively teach the ethical aspects of AI use and to develop policies on its appropriate use in academic activities.
- d) There are notable discrepancies across different academic fields of study, such as with the Engineering students who reported higher AI usage but also greater awareness of attribution compared to non-Engineering students.
- e) Compared to differences between disciplines, gender differences in perceptions tend to be subtler, where in this case, female students appeared to be slightly more aware of the integrity issues.
- f) Assisting students to use generative AI tools, such as for conceptual clarification, receiving feedback on assignments, and academic writing, emerges as the most common use among students.
- g) AI attribution – the practice of acknowledging AI contributions – has a significant gap, with nearly one-third of learners not AI attribution students failing to autonomously acknowledge the use of AI contributions within their academic engagements.
- h) These results help address the gap in the literature related to generative AI in the context of TVET education in Malaysia. They illustrate students' understanding of the ethical implications of AI technologies; however, attempting to practically exercise ethical practices poses challenges, necessitating stronger institutional guidance.

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