

# Relationship Between Perceived Students' Critical Thinking Skills and Academic Writing Skills

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## ABSTRACT

Critical thinking and academic writing skills are important to be learnt by students especially at tertiary level. However, these two skills are reported not being able to be portrayed by students when they are required to solve problems. Hence, this study aimed to investigate students' perceptions towards their critical thinking and academic writing skills and to determine relationship between the perceived critical thinking and academic writing skills. Cross-sectional research design was employed and there were 122 responses obtained. The results showed that students perceived both their critical thinking and academic writing skills as good and it was also discovered that there was a significant correlation between students self-perceived critical thinking and academic writing skills. This implicated that the educators needed to integrate both skills during the teaching and learning processes. Thus, future research could investigate students' perceptions more in-depth by utilising qualitative approach and students' academic performance could be added as another variable to be looked into by future researchers

**Keywords:** Critical thinking skills, Academic writing skills, Relationship, Perceptions, Students

## INTRODUCTION

Critical thinking skills are important for learners to learn especially at tertiary level. Critical thinking skills help learners develop better cultural competence and a deeper understanding of the authenticity of the subject matter (Afzal et al., 2023). Also, critical thinking skills prepare students to handle real-world challenges and succeed in the workforce, highlighting their essential role. (Murawski, 2014; Sarwari & Kakar, 2023). Nevertheless, several reports have underlined that students encounter various challenges in developing their critical thinking skills. Students perceive those factors such as their background, general knowledge, language proficiency, over-reliance on teachers, and rote learning hinder their ability to enhance critical thinking skills (Aouaf et al., 2023). These challenges are linked to students' unfamiliarity towards the concept of critical thinking and the content which requires them to be critical thinkers (Fadhullah & Ahmad, 2017). Hence, these issues are possible barriers that impede students' in growing their critical thinking skills.

Other than critical thinking skills, students at tertiary level are also required to learn academic writing skills. This is because acquiring academic literacies is important today as it would help students to think creatively and critically (Starfield, 2019). Indirectly, this shows that acquiring academic writing skills could expand students' analytical skills and be adventurous to explore new things. This is because students are able to analyse, synthesise and evaluate the statements in academic essays (Ybyrayeva et al., 2023) and at the same time students may develop their problem-solving skills to a better level (Rahmat, 2020). This suggests that students could be a better decision maker and simultaneously enhance their critical thinking skills. However, students face difficulties when they learn academic writing. Maharani et al. (2023) found that the difficulties faced by students are their lack of knowledge in terms of the structure of academic writing, the suitable vocabulary used, the sentence structure used in academic writing, and they also feel anxious when writing

academic writing. This is maybe due to students' lack of knowledge and exposure towards academic writing before they enter tertiary level education. Moreover, students are having difficulty to coherently articulate their academic writing on paper with credible sources (Hasnawati et al., 2023). Therefore, it could be said that these difficulties may lead to students not being able to write academic writing well.

The relation between critical thinking and academic writing proficiency is well-documented in the literature (for instance Aunurrahman et al., 2017). The exhaustive research on this relationship is attributed to critical thinking being an essential element for students' success in the higher education setting (McKinley, 2015). Teng and Yue (2022) establish that the relationship between critical thinking, metacognition, and academic writing is significant. This is further supported by Beh and Ganapathy (2021) as they evidenced that students' academic writing competence is influenced by their critical thinking skills, which are crucial for effective writing skills. Despite the extensive empirical evidence on the association between these two skills, much anecdote has shown that students grapple with academic writing tasks imposed upon them while simultaneously struggling with developing the critical thinking skills needed in the completion of the tasks (O'Flaherty & Costabile, 2020). Scholars such as Nelson and Crow (2014) have sighted didactic teaching style as a primary contributor for learners' difficulties in acquiring the needed critical thinking skills for writing. Although critical thinking is closely intertwined with academic writing as it enhances students' ability for reasoning, evaluation and problem solving, all of which are necessary for producing high-quality academic writing works (Alidmat & Ayassrah, 2017), more empirical research is needed to further scrutinise the relationship between critical thinking and academic writing, specifically in the Malaysian higher education setting which practises the collectivist learning culture that encourages students to consume new learning materials without questioning.

Thus, based on these issues discussed above, this current study aims to investigate students' perceptions towards their critical thinking skills and academic writing skills. Moreover, the relationship between the perceived critical thinking and academic writing skills is further assessed in this study.

## LITERATURE REVIEW

### A. Students' Critical Thinking Skills

Critical thinking, a metacognitive process involving skills such as analysis, evaluation, and reflective judgement, is essential for students in education as it enables them to break down complex ideas, make informed decisions, and present logical arguments, and its development can be significantly enhanced through guided academic support. Empirical studies consistently show similar set critical thinking skills that should be possessed by students. For instance, Facione (1990) defined critical thinking skills as a purposeful and self-regulatory judgement that results in interpretation, analysis, evaluation, and inference. In the field of education, critical thinking is viewed as an important skill to be possessed and applied among the students. This is because this skill allows students to evaluate possible solutions, decide on the best solutions deemed appropriate for the problems encountered and understand more complex information in various situations and disciplines (Fajari et al., 2020; Dwyer, 2020). Extending Facione's (1990) definition, Dwyer (2020) interpreted critical thinking as a metacognitive process which includes a number of skills and dispositions, in which through reflective judgement, increases the probability of producing solutions to problems and valid conclusions to arguments. In a science classroom setting, Aini et al. (2020) outlined 12 indicators of critical thinking skills, including formulating questions, analysing arguments, asking and answering questions, assessing the credibility of resources, observing and evaluating observation reports, making and evaluating deductions, making and assessing inductions, evaluating, defining and assessing definitions, identifying assumptions, guessing, and integrating. Therefore, critical thinking enhances students' ability to break down complex ideas and arguments into simpler components, and this ability is crucial for organising thoughts and presenting them logically in academic writing. By providing these students with guidance (in the form of drafts and discussions), academicians could facilitate the development of this ability (Tahira & Haider, 2019).

Despite numerous initiatives and dedicated efforts by the Ministry of Education (Malaysia) to incorporate critical thinking skills into the syllabi and courses at all educational levels, students still lack proficiency in this soft skill (Fadhlullah & Ahmad, 2017). According to past studies done at Malaysia's tertiary education institutions, it was found that the critical thinking ability of these undergraduates was at a low moderate level and also indicates the critical thinking ability of Malaysian undergraduates was comparatively low compared to their international counterparts (Fadhlullah & Ahmad., 2017). This highlights the need for Malaysian educational institutions to promote and enhance the application of critical thinking skills among the students across the curriculum. A more recent study by Irwanto et al. (2024) highlighted that students' proficiency in critical thinking remains insufficient. Similarly, Jafari et al. (2020) examined medical sciences students in Iran and found that their level of critical thinking skills was at a low level. This lack of proficiency has significant implications, as it was observed that many students struggle to find solutions for problems that require advanced thinking abilities. Instead, they are only able to solve lower-level questions which is a concerning matter (Eisenman & Payne, 2016; Hadiano et al., 2022).

The integration of instructional methods and activities in textbooks and curriculum, could potentially enhance tertiary-level students' cognitive development. However, equal attention must be given to improving students' language abilities, especially for non-native speakers (Nguyen & Nguyen, 2020). Critical thinking, which involves analysing and evaluating information, arguments, and evidence (Reynders et al., 2020), is essential for assessing the quality of sources, identifying biases, and constructing well-reasoned arguments in academic writing (Malloy et al., 2020). However, the learning and teaching of academic writing does not automatically improve critical thinking skills in students (Karanja, 2021). Therefore, an integrated approach that fosters critical thinking skills must be developed to assist students to achieve effective academic writing (Barasa, 2024). Fortunately, empirical research shows that achieving proficiency in both skills is possible with the combined efforts of peers, academicians, curriculum developers, as well as policy makers (Rahmat et al., 2020; Aston, 2023; Thornhill-Miller et al., 2023).

## **B. Students' Critical Thinking Skills**

Academic writing is a formal style used to systematically communicate ideas, reflections, findings, and arguments, requiring adherence to specific conventions such as coherent organisation, precise vocabulary, and standardised formatting to ensure clarity and credibility (Ismiati & Pebriantika, 2020). Irvin (2010) further defines academic writing as showing proficiency in thinking, interpreting, and presenting specific body of knowledge and information in an evaluative form. Yuvayapan and Bilginer (2020) added that this writing style often aims to convey objective arguments, present critical analysis, and synthesise relevant information with logical reasoning. Academic writing is distinct from other forms of writing, as it not only demands mastery of the subject matter but also the ability to adhere to its specific conventions. This dual proficiency is crucial for producing work that is clear, credible, and contributes meaningfully to the body of knowledge.

The ability to acquire academic writing skills is a common expectation for students in higher education institutions (Mauranen et al., 2020). Mastery of these skills is essential not only for completing written assignments but also for effective communication within the academic environment and preparing for the professional world (Anaktototy et al., 2023). Writing has always been deemed a complex process (Rastri et al., 2023) yet academic writing in particular poses additional difficulties due to its strict standards of academic writings which include conducting prior research and including claims and opinions (Sulaiman, 2022). Thus, students find it challenging because academic writing requires the development of key skills like thesis formulation, sentence structuring, idea organisation, and accuracy in grammar, vocabulary, punctuation, and syntax (Haerazi & Irawan, 2019). As they progress, students would also have to engage with more complex writing tasks that require critical thinking, analysis, and synthesis of information from multiple sources. As such there is evidence that suggests students find academic writing challenging for many reasons (Nurkamto et al., 2024). Some of them could be because they are not proficient in the language itself (Azmar & Razali, 2024) but also in the conventions of academic writing (Qayoom & Saleem, 2020) such as maintaining objective opinions and providing sound arguments with logical reasoning.

Interestingly, several studies have evidenced that academic writing skills can be influenced by the writers' psychological state. For instance, Altınmakas and Bayyurt (2019) found that students sometimes experience anxiety when presented with writing tasks. These anxieties could stem from lack of precise instructions and experience, negative attitudes towards writing, and mismatch of institutions expectations and their own ability. For this reason, to support the development of students' academic writing skills, educators should spend more time providing personalised feedback to the students to help them refine their writing skills. Moreover, students should be exposed to a wider range of learning materials to familiarise themselves with the different styles of academic texts. It can be rationalised that at the tertiary level, academic writing helps develop students' confidence to partake in scholarly conversations and communicate ideas effectively. It is not only a requirement for academic success (Tomak, 2022), it is also an essential skill for professional success (French, 2020). Given that academic writing is a genre which requires criticality from a writer, it is of importance to explore the connection between these two skills.

### **C. Relationship between Students' Critical Thinking Skills and Academic Writing Skills**

The relationship between tertiary-level students' critical thinking skills and academic writing skills is a topic of significant interest in educational research (Rauf, 2021; Ma & Li, 2022). Enhancing one set of skills may lead to an improvement in the other, therefore, academicians could promote the application of critical thinking during the academic writing process (Khairuddin et al., 2021). Therefore, it can be deduced that developing strong critical thinking skills enhances one's ability to write academically and engaging in academic writing further hones critical thinking abilities.

One of the ways to foster critical thinking among students is through students' academic writing as incorporating critical thinking into academic writing not only deepens the comprehension of complex subjects but also guarantees the accuracy and reliability of the information presented (Yusupova & Ergasheva, 2024). This is also supported by Ben and Ganapathy (2021)'s study which was conducted on 60 university students who had gone through a 6-week quasi-experiment to investigate the effectiveness of the Fragenheim's (2006) Thinking Skills Framework (TSF) on academic writing. It was found that there were improvements in their writing in terms of critical thinking skills, in which Higher-Order Thinking Skills (HOTS) was promoted throughout the writing process. This highlights the importance of engaging students with the content actively which could contribute to the success of critical thinking skills application.

## **METHODOLOGY**

This research utilised a quantitative research approach by employing a cross-sectional research design. Quantitative research approach is suitable for research that investigates variables such as gender, age, attitudes, behaviours and perceptions (Creswell, 2014). This research used multistage sampling. In the first stage, the researchers employed purposive sampling where the researchers purposefully select the specific population. Purposive sampling technique was used to specify the population group because there were specific characteristics in choosing the population (Creswell, 2014). The specific criteria of the population were those who had learnt two courses/subjects that were related to academic writing and critical thinking content. After that, the researchers utilised simple random sampling techniques in selecting respondents to allow each individual to have the same opportunities of being selected as respondents (Creswell & Creswell, 2023; West, 2016). The respondents of this research would be students from four programmes, namely LG240, LG241, LG242 and LG243. These students were from one of the public universities in Klang Valley, henceforth known as University X. Since the population size was around 700, the sample size of this research should be 248 respondents based on the sample table by Krejcie and Morgan (1970). Participation in this research was on a completely voluntary basis. Hence, respondents were allowed to withdraw from this research at any time and with no consequences and repercussions to respondents and their data would not be used in the analysis.

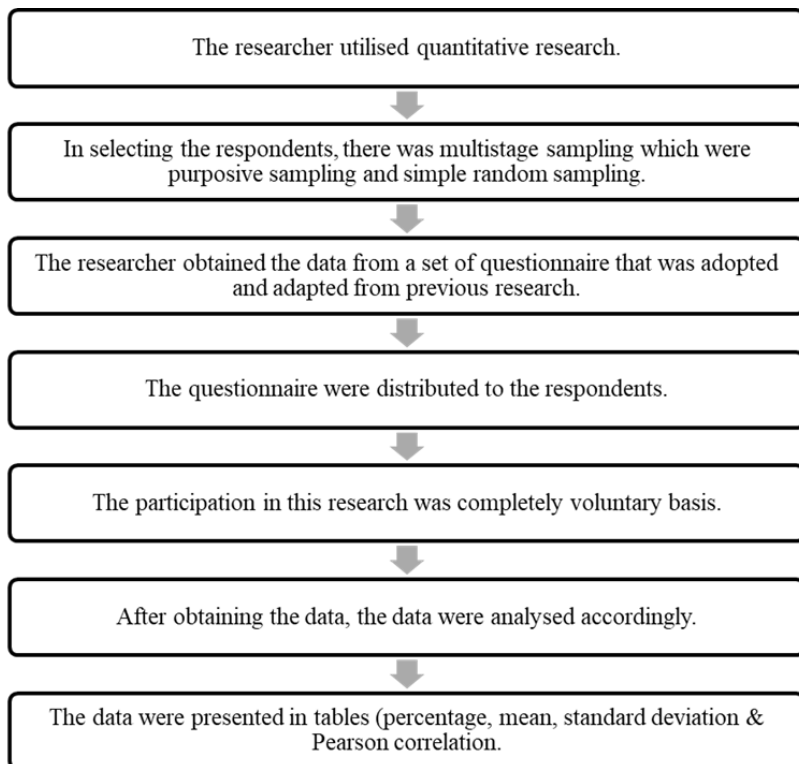
In order to collect the data, this research used a set of questionnaires and there were 3 sections in the questionnaire. The first section focused on demographic details of the respondents (gender, semester,



programme and grades). The second section addressed the first variable which was critical thinking skills, and the third section conveyed the second variable which was academic writing skills. There were twenty-eight (28) items for the first variable (critical thinking skills) which were separated with sub-variables. The sub-variables were, (a) to formulate the main issues, (b) to ask questions, (c) to answer questions, (d) to analyse arguments/opinions, (e) to solve problem, (f) to reveal the facts needed in solving a problem, (g) to identify bias/prejudice based on multiple points of view, and (h) to draw conclusions. As for the third section (academic writing skills), there were forty (40) items. There were three (3) sub-variables which were (a) before writing, (b) during writing, and (c) after writing. The reliability test was conducted for both variables and the Cronbach Alpha's values obtained were,  $\alpha = .946$  (critical thinking skills) and  $\alpha = .941$  (academic writing skills).

Once the researchers obtained the data, the data was analysed using Statistical Package for Social Sciences (SPSS v29). The results later will be presented in descriptive and inferential analysis (mean, standard deviation, correlation) and in tables. Fig. 3.1 demonstrates the flowchart of research methodology.

Fig. 1 Methods of Data Collection and Analysis



## RESULTS

### A. Demographic profile of the respondents

This study obtained data from 122 responses collected, 28.7% of the respondents were male, and 71.3% were female.

TABLE I Programme

Programme	Percentage
English for Professional Communication	48.4%
Malay Language for Professional Communication programme	17.2%
Arabic Language for Professional Communication programme	4.9%
English for Intercultural Communication programme	4.9%

Based on the Table 1 above, the respondents were primarily students from various programmes: 48.4% were enrolled in the English for Professional Communication programme, 17.2% in the Malay Language for Professional Communication programme, 29.5% in the Arabic Language for Professional Communication programme, and 4.9% were from the English for Intercultural Communication programme.

TABLE II SEMESTER

Programme	Percentage
Semester 3	18.9%
Semester 4	27%
Semester 5	26.2%
Semester 6	27.9%

Based on Table 2, the respondents were students from semester 3 to semester 6 of their respective programmes. Specifically, 18.9% of the respondents were in their third semester, 27% were in their fourth semester, 26.2% in the fifth semester 5 and 27.9% in their sixth semester.

*RQ 1: Students' self-perceived critical thinking skills and academic writing skills*

TABLE III Students' self-perceived critical thinking skills

Critical Thinking Skills	Mean	Standard Deviation
Ability to formulate the main issues	3.7295	.57229
Ability to ask	3.8463	.55804
Ability to answer questions	3.4645	.61293
Ability to analyse arguments/opinions	3.9891	.61199
Problem solving ability	3.8975	.58277
Ability to reveal the facts needed in solving a problem	3.7842	.63985
Ability to identify bias/prejudice based on multiple points of view	3.9508	.61310
Ability to draw conclusions	3.9303	.57520
Overall	3.8364	.48839

Table 3 illustrates the descriptive statistics for students' self-perceived critical thinking skills. The highest mean value is 3.9891 (SD = 0.61199), indicating that the students have the ability to analyse arguments/opinions. The second highest mean score is 3.9303 (SD = 0.57520), showing that the students responded positively to their ability to identify bias/prejudice based on multiple points of view. Next, the students agree that they are able to draw conclusions (M = 3.8364, SD = 0.48839), followed by problem solving ability, ability to ask and a ability to reveal the facts needed in solving a problem with the mean scores of (M = 3.8975, SD = 0.58277; M = 3.8463, SD = 0.55804; M = 3.7842, SD = 0.63985) respectively. Moreover, with the mean score of 3.7295 (SD = 0.57229), the students are able to formulate the main issues. The lowest mean score is 3.4645 (SD = 0.61293) in which the students responded that they have the ability to answer. The overall mean score for students' self-perceived critical thinking skills is 3.8364 (SD = 0.48839).

TABLE IV Students' self-perceived academic writing skills

Academic Writing Skills	Mean	Standard Deviation
Before Writing	3.6899	.56977
During Writing	3.6996	.54204
After Writing	3.7910	.63319
Overall Academic Writing	3.7287	.52737

Table 4 displays the descriptive statistics for students' self-perceived academic writing skills. The mean scores and standard deviations for the three stages of writing process indicate a gradual development in the students' self-perceived academic writing skills. Before writing, the mean score is 3.6899 (SD = 0.56977). During the writing process, the mean score slightly increases to 3.6996 (SD = 0.54204). After completing the writing process, the mean score further increases to 3.7910 (SD = 0.63319). The overall mean score for students' self-perceived academic writing skill is 3.7287 (SD = 0.52737).

*RQ 2: The correlation between students' self-perceived critical thinking skills and academic writing skills*

TABLE V Correlation between students' self-perceived critical thinking skills and academic writing skills

		Overall Academic Writing	Overall Critical thinking
Overall Academic Writing	Pearson Correlation		
	1	.722**	
	Sig. (2-tailed)		<.001
	N	122	122
Overall Critical thinking	Pearson Correlation		
	.722**	1	

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 3 shows there is a significant association between students' self-perceived critical thinking skills and academic writing skills. Correlation analysis shows that there is a strong positive significant correlation between critical thinking skills and academic writing performance ( $r = 0.722$ ,  $p < 0.01$ ). This indicates that students with strong views about their critical thinking skills perceive an improvement in their academic writing skills.

## DISCUSSION

Based on the research objectives of this research which are to investigate students' perceptions towards their critical thinking skills and academic writing skills and to determine the relationship between the perceived critical thinking and academic writing skills, a notable descriptive result shows that the majority of students were able to analyse and identify arguments, opinions, and bias/prejudice when they were assigned with topics and during discussions. This indicates that students could differentiate the category of the information based on the topics discussed. This result is parallel with Ghafar (2024) where he discovered that students managed to examine and assess the arguments shared and provided during the classroom discussion and debate. This indirectly could enhance students' ability to think critically. Another interesting finding indicates that students were able to solve problems and draw conclusions during the classroom discussion. This suggests that they could provide suitable and relevant suggestions to resolve the issues that occurred. Wang (2021) found that students were able to solve problems by using suitable strategies. This suggests that by providing suitable techniques and guidance, students would be able to solve the issues encountered during classroom activities.

In addition, the research observed that students perceived that they were able to formulate main issues during the discussion. This shows that students were able to understand the topic that they need to discuss. However, this result is not in line with a research done by Kartika Dewi (2020) where in her research, she found that students were not able to formulate the main issues such as to write the thesis statement and to provide supporting details for the thesis statement. The difference in the results is maybe due to the different variables and focus as it examined the challenges faced by students during the writing process (Kartika Dwi, 2020).

On top of that, the result shows that students perceived their ability to ask questions as the lowest skill. This means students were not confident with their ability to ask suitable and appropriate questions. Nadile et al.

(2021) also discovered that students did not ask questions in class which was due to anxiety, lack of confidence and fear of negative evaluation. Nonetheless, in general, students perceive that they have a high level of critical thinking skills which is parallel to a research done by Amir Johan (2023) which also discovered that students perceived they had a high level of critical thinking skills. This suggests that students consider that they have good critical thinking skills.

As for students' academic writing skills, they perceived that they have a good level of academic writing skills before, while and after they wrote academic papers. Nonetheless, Suprpto (2022) stated that students have difficulties during the prewriting stage which was before the writing process starts. However, students felt that their academic writing skills are moderate during the writing process and after the writing process. This suggests that once students have brainstormed their ideas during the prewriting stage, it may ease the writing process. Overall, students perceived that they have good academic writing skills. However, Tustiawati et al., (2023) revealed that students felt that they still needed guidance to write academic papers. The result differs from the current research which may be because the methodology used in obtaining the data is different.

Lastly, the current research discovered that there is a strong and positive relationship between students' critical thinking skills and academic writing skills. Several studies in the literature such as Rahmat et al. (2020) have highlighted the interconnectedness of critical thinking skills and the quality of academic writing. Wijaya (2022) reveals that university students exposed to interactive and engaging academic writing activities demonstrate improved writing quality and enhanced critical thinking skills. Similarly, Imaniar et al. (2018) stress that critical thinking is an essential aspect that develops alongside academic writing, indicating that both skills are intertwined and develop simultaneously. Further supporting this finding, Beh and Ganapathy (2021) point out that students' mastery of critical thinking skills significantly influences their ability to produce effective writing. This finding implied that developing critical thinking skills through continuous practice and interactive learning activities positively influences the quality of students' academic writing. Therefore, the integration of critical thinking into academic writing instruction should be prioritised to enhance students' problem-solving, decision-making, and communication abilities in their writing endeavours.

## CONCLUSION

The research findings offer some interesting insights into the relationships of tertiary-level students' critical thinking and academic writing skills. The results underscore a strong positive correlation between these skills, highlighting their mutual importance and interdependence. Despite the challenges that they may face during the writing process, which inevitably includes the thinking process, the students seem to perceive that their critical thinking and academic writing skills are considered as positive. Although they mentioned difficulties and challenges, with adequate scaffolding, the students also perceived an improvement in both skills. Given that significant curriculum changes can take years to implement, it would be beneficial for the students to receive constructive feedback in the classroom as this process promotes the development of critical thinking and academic writing skills. Teachers or instructors can also implement various strategies to help students improve both academic writing and critical thinking skills such as collaborative learning and student-centered approach in the classroom. Furthermore, explicit instruction on how to apply critical thinking frameworks, such as questioning assumptions or identifying biases, would equip students to better engage in their writing. Tasks that encourage reflective thinking and connect course content to real-world issues may also enhance students' ability to critically engage with academic writing tasks.

One notable limitation of this research is the relatively small sample size, with only 122 respondents, due to the limited number of students in the relevant programs. Although the findings provide valuable insights, future studies involving a larger and more diverse group of participants could offer a more comprehensive understanding of the relationship between these skills. As this current research focuses and only limited to students' perspective quantitatively on their critical thinking and academic writing skills, it is suggested that



future research explores university students' perceptions qualitatively of potential courses and/or subjects that can help them to better understand and more effectively apply critical thinking skills in their academic writing. Future research could also look into students' academic writing performance by inculcating the elements of critical thinking skills. Additionally, further research on university lecturers' role to improve these skills could result in significant findings to further enhance students' critical thinking and academic writing skills.

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