Measuring Perceived Use of Critical Thinking Skills of University Students

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Abstract

The results indicated a strong correlation between students' perceptions and their understanding of critical thinking. Specifically, students who reported higher awareness of critical thinking demonstrated a greater ability to identify and use critical thinking skills. Additionally, it was established that teachers who are more aware of critical thinking employ a wider variety of strategies to develop these skills in students. The research recommends encouraging critical thinking from an early age, while discouraging rote learning.

Keywords: Critical Thinking, University Students, Perception, Quantitative Research.

Introduction

The ability to ask students to make their own arguments, rather than assuming information is simply provided to them, is a key task for teachers because, in addition to improving their academic success, it also improves their skills as problem solvers in the future (Abrami et al., 2008). By introducing critical thinking instruction into teacher education programs, it is possible to ensure that future teachers will be able to train students to think critically and reflectively (Akcaoglu et al., 2023). Interaction between students and educators is crucial to the development of higher-order thinking because the interactive process fosters comprehension and practice of knowledge (Bouziane, 2020).

Critical thinking will allow learners to apply solutions to problems within and outside the classroom systematically and to evaluate evidence and apply it to the problem. Although critical thinking is important, teachers can underemphasise it because they lack the necessary knowledge of effective instructional practices, have inadequate professional development, and lack organised practice opportunities (Choy & Cheah, 2009). The focus on thinking skills in instruction has been shown to enhance performance across all fields, especially in STEM education, where student achievement requires analysing, reasoning, and decision-making (Cloete, 2018; Cheng et al., 2024).

Growth in critical thinking necessitates dynamic learning strategies, such as problem-based assessments, discussion forums, and inquiry-based activities. The process of offering these opportunities is facilitated by teachers; students gain the most by receiving guided interactions, feedback, and demonstrations of reasoning processes (Kanbay & Okanlí, 2017). Critical thinking, when integrated in curricula instead of being taught as a unit, has been found to enhance

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metacognitive awareness, self-regulation, and overall cognitive flexibility of students (Akcaoğlu et al., 2023).

Moreover, even an educational setting has a significant influence on students' critical thinking development. The use of supportive classroom experiences, peer collaboration, and structured assessments that test students' reasoning skills motivates the application of critical thinking skills in practice (Bouziane, 2020). New studies also stress the importance of technology and social media in developing analytical skills of students and the necessity of educators to teach students how to analyse digital information critically (Cheng et al., 2024).

Finally, the development of critical thinking in the educational setting is not only a pedagogical requirement but also a practical one, equipping learners to meet the challenges of higher education and professional life in the modern world. The conscious emphasis on critical thinking, coupled with teacher education, cooperative learning, and the use of proper assessment plans, is the guarantee that students are ready not only to excel in their academic success but also to solve all their problems, including those in the real world, effectively (Kanbay & Okanlı, 2017).

Objectives of the Study

The objective of the study is the following:

- Measure the perceived level of critical thinking use.
- Study the changes in the use of critical thinking skills with reference to categorical variables (gender, field of study, CGPA).

Research Questions

The following research questions were addressed in the study:

1. What is the perceived level of critical thinking skill usage among university students?
2. How does the use of critical thinking skills differ based on gender, field of study, and CGPA?

Methodology

Research Design

The aim of this study was to explore the factors affecting university students' academic performance. A qualitative research design was chosen to investigate students' perceptions and lived experiences. The study used a case study approach, enabling an in-depth understanding of the phenomenon in its natural context. Data collection used semi-structured interviews, and thematic analysis was used to identify the most important factors affecting academic achievement.

Sample Size

The random sampling was used to select two public and two private universities. These universities were then used to sample 400 students using simple random sampling. This approach means that all members of the population are equally likely to be included in the sample, and therefore the sample is representative of the population (Gay, 2012).

Instrumentation

Participants' responses were collected through a self-designed semi-structured interview. The tool covered demographic items (gender, education, GPA) and questions about factors that influence academic success, including motivation, confidence, and experiences of success (or failure). All responses were documented systematically to ensure uniformity (Rasmussen & Yikmis, 2020).

The instrument was pilot-tested to ensure clarity and accuracy. Expert and participant feedback was taken into consideration, and the final version of the interview was prepared for collection.

Data Collection

The researcher collected the data personally, beginning in December 2024. After meeting with the institute's head to obtain permission, I asked the students to participate in data collection. A research team member personally collected the data for each sample. Each respondent completed the survey on the spot after responding to the questionnaire.

Data Analysis

After the data collection, it was entered into the Statistical Package for Social Sciences (SPSS). In descriptive statistics, frequency distributions were used to describe trends in data. Data analysis was conducted to examine patterns in the level of critical thinking among aspiring teachers. Findings and recommendations were made at the end of the analysis and conclusion.

Results

A detailed description of the participants' demographic characteristics is provided in the tables below. Participants' distribution based on their demographic attributes, such as gender, age, qualification, experience, status of job, designation, and workshops attended, in terms of critical thinking, has been provided in frequencies and percentages to create a better picture.

Table 1: Age of the respondents

Age	Frequency	Percent	Valid Percent	Cumulative Percent
18-24	202	51.1	51.1	51.1
25-30	193	48.9	48.9	100.0
Total	395	100.0	100.0	

Table 1 shows that out of 395 total respondents, 202 individuals (51.5%) reported between 18-24 year of age who respond to perceived critical thinking among students (1.00), while 193 individuals (48.9%) reported between 24-30 years of age who respond to perceived critical thinking among students (2.00)

Table 2: Effect of Age On Analysis Information

Parameter	Age	Mean	Std. Deviation	t	P
Analysis information	18-24	8.5446	2.62413	-2.343	.020
	24-30	9.1969	2.89443		

Table 2 shows comparison between age difference of students for use of 'Analysis of Information' factor of critical thinking. The results showed that there is significant difference (t=-2.343, p=.020). between 18-24 years (M=8.5446, SD=2.62413) and 24-30 years (M=9.1969, SD=2.89443) ($p \leq 0.05$). There is a satisfactory difference between 18-24 years and 24-30 years students in the analyzing information. 18-24 years scored significantly less than 24-30 years of age($p<0.05$), suggesting age may influence performance in this parameter.

Table 3: Effect of Age On Evaluating Information

Parameter	Age	Mean	Std. Deviation	t	P
Evaluating info	18-24	9.8564	2.23811	-1.806	.072
	24-30	10.2539	2.13180		

Table 3 shows comparison between age difference of students for use of 'Evaluating Information' factor of critical thinking. The results showed that there is no significant difference (t=-1.806, p=.072). between 18-24 years (M=9.8564, SD=2.23811) and 24-30 years (M=10.2539, SD=2.13180) ($p \geq 0.05$). There is no satisfactory difference between 18-24 years and 24-30 years students in the evaluating information. 18-24 years scored significantly less than 24-30 years of age($p>0.05$), suggesting age may influence performance in this parameter.

Table 4: Effect of Age On Interpreting Information

Parameter	Age	Mean	Std. Deviation	t	P
Interpreting information	18-24	6.1980	1.69295	-1.367	.172
	24-30	6.4301	1.67908		

Table 4 shows comparison between age difference of students for use of 'interpreting Information' factor of critical thinking. The results showed that there is no significant difference (t=1.367, p=.172). between 18-24 years (M=6.1980, SD=1.69295) and 24-30 years (M=6.4301, SD=1.67908) ($p \geq 0.05$). There is no satisfactory difference between 18-24 years and 24-30 years students in the interpreting of information. 18-24 years scored significantly less than 24-30 years of age($p>0.05$), suggesting age may influence performance in this parameter.

Table 5: Effect of Age On Inference and Reasoning

Parameter	Age	Mean	Std. Deviation	t	P
Inference and Reasoning	18-24	9.6386	2.63974	-.769	.442
	24-30	9.8394	2.54544		

Table 5 shows comparison between age difference of students for use of 'Inference and Reasoning' factor of critical thinking. The results showed that there is no significant difference (t=-.769, p=.442). between 18-24 years (M=9.6386, SD=2.63974) and 24-30 years (M=9.8394, SD=2.54544) ($p \geq 0.05$). There is no satisfactory difference between 18-24 years and 24-30 years students in inference and Reasoning. 18-24 years scored significantly less than 24-30 years of age($p>0.05$), suggesting age may not influence performance in this parameter.

Table 6: Effect of Age On Overall Perception

Parameter	Age	Mean	Std. Deviation	t	P
Overall perception	18-24	16.4604	4.03602	-1.989	.047
	24-30	17.2902	4.25719		

Table 6 shows comparison between age difference of students for use of 'Overall perception "factor of critical thinking. The results showed that there is significant difference (t=-1.989, p=.047). between 18-24 years (M=16.4604, SD=4.03602) and 24-30 years (M=17.2902, SD=4.03602) ($p \leq 0.05$). There is a satisfactory difference between 18-24 years and 24-30 years

students in the overall perception. 18-24 years scored significantly less than 24-30 years of age($p<0.05$), suggesting age may influence performance in this parameter.

Table 7: Effect of Age On Critical Thinking

Parameter	Age	Mean	Std. Deviation	t	P
Cognitive skills	18-24	12.3168	3.06296	-.545	.586
	24-30	12.1399	3.38134		

Table 7 shows comparison between age difference of students for use of Cognitive skills factor of critical thinking. The results showed that there is no significant difference (t=-.545, p=.586). between 18-24 years (M=12.3168, SD=3.06296) and 24-30 years (M=12.1399, SD=3.38134) ($p\geq0.05$). There is no satisfactory difference between 18-24 years and 24-30 years students in the cognitive skills. 18-24 years scored significantly higher than 24-30 years of age($p>0.05$), suggesting age may influence performance in this parameter.

Table 8: Effect of Age On Barriers of Critical Thinking

Parameter	Age	Mean	Std. Deviation	t	P
Barriers of critical thinking	18-24	15.4802	3.49301	-.300	.765
	24-30	15.5855	3.48721		

Table 8 shows comparison between age difference of students for use of 'Barriers of critical thinking" factor of critical thinking. The results showed that there is no significant difference (t=-.300, p=.765). between 18-24 years (M=15.4802, SD=3.49301) and 24-30 years (M=15.5855, SD=3.48721) ($p\geq0.05$). There is no satisfactory difference between 18-24 years and 24-30 years students in the barriers of critical thinking. 18-24 years scored significantly less than 24-30 years of age($p>0.05$), suggesting age may not influence performance in this parameter.

Table 9: Effect of age on total perception

Parameter	Age	Mean	Std. Deviation	t	P
Total perception	18-24	50.6980	10.23276	-2.206	.028
	24-30	53.0104	10.59579		

Table 9 shows comparison between age difference of students for use of 'total perception' factor of critical thinking. The results showed that there is significant difference (t=-2.206, p=.028). between 18-24 years (M=50.6980, SD=10.23276) and 24-30 years (M=53.0104, SD=10.59579) ($p\leq0.05$). There is a satisfactory difference between 18-24 years and 24-30 years students in the total perception. 18-24 years scored significantly less than 24-30 years of age($p<0.05$), suggesting age may influence performance in this parameter.

Discussion

The purpose of the present study was to examine students' perceptions of critical thinking and to explore how age influences various aspects of critical thinking. The study's findings show that students vary in their critical thinking skills across age and experience. Critical thinking is considered a reflective and purposeful process that develops through learning and engagement (Halpern, 2014; Facione, 2020).

The study's findings show a significant difference in students' ability to analyse information across age groups. Students aged 24–30 performed better than those aged 18–24, indicating that analytical ability improves with maturity and experience. Analytical thinking involves examining information logically and systematically, a skill that develops over time through practice and exposure (Paul & Elder, 2019). Likewise, reflective thinking activities such as inquiry and reasoning are built on experience and enable individuals to perform better analysis (Dewey, 1933/2018).

The study results indicate that the two age groups do not differ significantly in their information assessment. Even though the older students scored slightly higher, the difference was not significant. This implies that evaluation skills are not age-sensitive. Judging involves determining the relevance and credibility of information, which can be influenced by intellectual dispositions rather than demographic factors (Facione, 2020). People with open-mindedness and a readiness to listen to various opinions can do the same in evaluation, regardless of age (Ku & Ho, 2010).

The study results indicate that there is no significant difference between younger and older students in interpreting information. This implies that the two groups are similar in that they share the same capabilities for comprehending and explaining information. The development of interpretation is associated with the ability to identify arguments and interpret evidence, and it can be acquired during the course of learning but not solely by age (Halpern, 2014). Students might develop similar interpretive abilities through exposure to similar educational settings.

The research results indicate that the inference and reasoning skills are not significantly different between the two age groups. The younger and older students seem to possess equal abilities to make conclusions and make logical decisions. One of the key elements of critical thinking is inference, which involves drawing conclusions from evidence and reasoning (Facione, 2020). Dispositions such as truth-seeking and the use of logic are also important in determining effective reasoning, rather than age differences (Davies, 2015).

The results of the research indicate that overall perceptions of critical thinking differ significantly, with older students being more advanced than younger students. This implies that with age and exposure to academics, the knowledge and awareness of critical thinking increase. Dispositions for critical thinking are built over time through repeated practice and learning (Dwyer et al., 2014). This comprehension is further augmented by reflective thinking, which enables people to assess their learning processes (Brookfield, 2017).

The results of the research indicate that as students' age increases, their perception of critical thinking also increases. This implies that critical thinking is built over time. Problem-solving, open-mindedness, and reflecting skills are enhanced through continuous application and experience (Paul & Elder, 2019). The higher the student advances in his academic life, the more effectively he integrates these skills into his thought processes.

The study's results indicate no significant difference in cognitive skills across age groups. The younger students had a slightly higher score, but the difference was not significant, indicating that basic cognitive abilities are not highly age-dependent. Equally, the results indicate that there is no significant difference in obstacles to critical thinking, and therefore, both groups have similar challenges. Poor teaching practices, lack of motivation, and excessive reliance on technology are among the factors that can inhibit the development of critical thinking at any age (Dwyer et al., 2014).

To sum up, the study's results indicate that age has only a partial impact on critical thinking. Although there are differences in the analysis and general perception, other elements, such as evaluation, interpretation, inference, cognitive abilities, and barriers, are similar across age groups.

Experience, practice, and intellectual dispositions, instead of age alone, contribute to the development of critical thinking (Facione, 2020; Paul & Elder, 2019).

Conclusion and Recommendations

In summary, the research presented in this paper indicates that teacher training and instructional methods are crucial for promoting critical thinking among students. The research indicates that students tend to have a moderate level of critical thinking ability, and that levels differ depending on gender, educational background, and prior exposure to critical thinking concepts. Professionally trained teacher educators were identified as more effective in employing these strategies, suggesting the significance of teacher training courses (Paul & Elder, 2014; Brookfield, 2019). In addition, more advanced critical thinking techniques were used by experienced teachers with higher qualifications, indicating that experience and professional growth can positively influence teaching methods that foster student critical thinking. Student resistance, inflexible curricula, and exam systems are also considered barriers to the development of these skills, underscoring the necessity of systemic changes in teacher training programs (Ennis, 2015; Facione, 2020).

Based on these findings, the study recommends the following:

- Incorporate critical thinking explicitly into curricula, as a separate discipline or as part of other curricula, to ensure that students acquire critical and reflective skills.
- Practically equip teacher educators to use critical thinking strategies by supplying them with professional development workshops, seminars and formal courses.
- Provide formal and informal spaces where educators can discuss best practices and effective strategies for promoting critical thinking.
- Encourage the development of critical thinking in institutional policies and give teachers incentives to embrace effective instructional methods, with recognition or rewards for their effective application.
- Provide students with classroom activities and exercises that encourage critical thinking and, where possible, link them to assessment to give time to apply higher-order thinking skills rather than just cover content.
- Coordinate assessment systems with the goals of critical thinking, so that exams and homework can measure students' analytical, evaluative, and inferential skills.

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