
RELATIONSHIPS AMONG CRITICAL THINKING, OPEN-MINDEDNESS, AND INTEREST IN TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING AMONG STUDENTS OF THE COLLEGE OF EDUCATION, GIDAN WAYA

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Abstract

This study explores the relationship among critical thinking, open-mindedness, and students' interest in Technical and Vocational Education and Training (TVET) among students of the College of Education, Gidan Waya. The study has three objectives, three research questions and three hypotheses. The study adopted a survey research design. The population of this study consisted of all 1,223 NCE and degree students enrolled in the College of Education, Gidan Waya. Simple random sampling techniques was used in the selection of 300 students who participated in the study, while stratified random sampling technique to ensure representation across levels (NCE I–III, levels), departments (technical/vocational and non-technical), and gender. The instrument used in data collection was questionnaire. Descriptive statistics (mean, standard deviation) were used to describe the participants' levels of critical thinking, open-mindedness, and interest in TVET. The null hypotheses were tested using t-test for independent sample, correlation and regression analyses at alpha level of 0.05 significance using SPSS 20. Findings reveal a significant positive relationship between critical thinking and interest in TVET, as well as between open-mindedness and TVET engagement. The results suggest that students who exhibit higher-order thinking skills and a willingness to consider diverse perspectives are more likely to value and pursue vocational education opportunities. These insights underscore the importance of integrating cognitive skill development into teacher education curricula to foster a more favorable disposition toward TVET. The study concludes that students of the College of Education, Gidan Waya exhibited a strong capacity for critical thinking, demonstrated through their tendency to evaluate information, consider multiple perspectives, identify weaknesses in arguments, and reflect on their actions. The study recommended that educational stakeholders should design teaching methods and learning environments that foster critical thinking and reflective practices across all disciplines.

Keywords: Critical Thinking, Open-Mindedness, Technical and Vocational Education, Training, Educational Experiences

Introduction

Technical and Vocational Education and Training (TVET) plays a fundamental role in fostering national development by equipping learners with the practical skills, technical know-how, and entrepreneurial capacities needed to participate meaningfully in the economy. In Nigeria and other developing nations, TVET has been identified as a vital tool for addressing youth unemployment, promoting self-reliance, and accelerating industrialization (Federal Republic of Nigeria, 2013). It provides alternative pathways for learners who may not pursue traditional academic routes, helping to bridge the gap between education and the world of work. However, interest in TVET remains uneven among students, often shaped by socio-cultural perceptions, cognitive dispositions, and the quality of educational experiences (Oviawe et al., 2020). Within this context, understanding the cognitive and attitudinal factors that influence students' engagement with TVET is critical, particularly in teacher-training institutions like the College of Education, Gidan Waya. TVET focuses on the acquisition of

practical and technical skills that are directly applicable to the workforce. It plays a critical role in addressing youth unemployment and fostering entrepreneurship by preparing learners for real-life job roles (UNESCO, 2021). However, interest in TVET among students is often shaped by several factors, including their perception of the programme's value, parental and societal expectations, and individual cognitive characteristics such as curiosity, motivation, and openness to alternative education paths (Sari & Wahyuni, 2022). Research shows that students who exhibit strong critical thinking and open-mindedness are more inclined to recognize the relevance of TVET for their personal and professional development (Oviawe et al., 2020).

Critical thinking refers to the capacity to objectively analyze information, question assumptions, and draw reasoned conclusions. It is an essential cognitive skill that enables individuals to navigate complex problems, assess the credibility of sources, and make informed decisions (Facione & Gittens, 2021). In the context of education, especially in teacher training institutions, critical thinking is crucial for developing reflective and independent learners who can adapt to diverse teaching and learning scenarios. Within TVET, critical thinking allows students not only to apply technical skills effectively but also to adapt these skills to real-world problems in a constantly changing labor market (Alraja et al., 2020).

Open-mindedness is a personality trait and cognitive disposition that reflects an individual's willingness to consider new ideas, perspectives, and experiences without undue bias or resistance (Harvey et al., 2023). It is closely linked to intellectual humility and curiosity, traits that support lifelong learning and adaptability. In the realm of education, open-minded students are more likely to embrace new learning approaches, technologies, and career pathways, including those offered through TVET (Biber et al., 2022). This disposition is especially significant in environments where vocational education is stigmatized or perceived as inferior to academic tracks. Students who are both critical thinkers and open-minded are better positioned to evaluate the merits of TVET programmes without prejudice and are more likely to develop a genuine interest in the practical and dynamic learning opportunities they offer (Maharani et al., 2021). This relationship suggests that fostering cognitive skills and positive attitudes can play a pivotal role in shifting perceptions and increasing enrollment in TVET, particularly in teacher education colleges where future educators can influence broader societal attitudes toward vocational learning.

This study, therefore, seeks to explore the relationship between critical thinking, open-mindedness, and interest in TVET among students of the College of Education, Gidan Waya. By doing so, it aims to contribute to a more nuanced understanding of how cognitive factors shape vocational interests in teacher education settings, ultimately supporting efforts to strengthen TVET participation and relevance.

Statement of the Problem

Ideally, Technical and Vocational Education and Training (TVET) should be embraced by students as a valuable and practical pathway to employment, self-reliance, and national development. In a knowledge-driven and skill-based economy, TVET offers a unique platform for equipping students with hands-on skills, entrepreneurial capacity, and real-world problem-solving abilities. To maximize its benefits, students are expected to possess key cognitive and attitudinal dispositions—particularly critical thinking and open-mindedness—that enable them to appreciate the relevance of vocational learning, adapt to dynamic labor markets, and make informed career choices.

In reality, however, many students especially those in teacher education institutions like the College of Education, Gidan Waya continue to show limited interest in TVET programmes. TVET is often perceived as a less prestigious alternative to traditional academic education, and this perception contributes to low enrolment, poor motivation, and underutilization of available vocational opportunities. Furthermore, anecdotal evidence suggests that many students do not possess or actively apply critical thinking or open-minded approaches when evaluating vocational career paths. This disconnect may be contributing to persistent skills mismatches, youth unemployment, and disinterest in practical, skill-oriented education.

Despite growing global and national recognition of the importance of cognitive dispositions in educational outcomes, a gap remains in the empirical understanding of how students' critical thinking and open-mindedness relate to their interest in TVET, particularly within Nigerian colleges of education. Existing studies tend to focus on either cognitive traits or vocational education uptake in isolation, without examining the interplay between the two. This lack of integrated research limits the ability of educators and policymakers to develop targeted interventions that foster positive attitudes toward TVET and enhance its appeal among future educators and professionals. Therefore, this study seeks to fill the gap by exploring the relationship between critical thinking, open-mindedness, and interest in TVET among students of the College of Education, Gidan Waya.

Objectives of the Study

The research was predicated to determine the relationship between critical thinking, open-mindedness, and interest in technical and vocational education and training (TVET) among Students of the College of Education, Gidan Waya. Specifically, the study determined the:

- i. level of critical thinking and open-mindedness among students of the College of Education, Gidan Waya.
- ii. relationship between students' critical thinking and their interest in Technical and Vocational Education and Training (TVET).
- iii. extent to which open-mindedness predicts students' interest in TVET.

Research Questions

- i. What is the level of critical thinking and open-mindedness among students of the College of Education, Gidan Waya?
- ii. Is there a significant relationship between critical thinking and interest in TVET among the students?
- iii. To what extent does open-mindedness predict students' interest in TVET?

Research Hypotheses

H₀₁: There is no significant difference in the mean responses of male and female students on the the level of critical thinking and open-mindedness among students of the College of Education, Gidan Waya

H₀₂: There is no significant relationship between students' critical thinking and their interest in TVET.

H₀₃: Open-mindedness does not significantly predict students' interest in TVET.

Review of Related Literature

Empirical Studies on Critical Thinking and Education Choices

Critical thinking is widely recognized as a foundational skill for making informed educational and career decisions. According to Facione (2020), critical thinking includes the ability to interpret, analyze, evaluate, and draw logical conclusions from information. Empirical studies have demonstrated that students with strong critical thinking skills tend to make more rational and reflective educational choices (Paul & Elder, 2019). For instance, Bensley and Spero (2019) found that college students who scored high in critical thinking were more likely to seek out academic programmes that emphasize real-world application and practical relevance. In the Nigerian context, Okafor and Nwankwo (2021) observed that critical thinking enhances students' capacity to assess the benefits of non-traditional educational tracks such as TVET. However, most existing studies have focused on academic performance or decision-making in general education, with limited attention to how critical thinking influences interest in vocational or technical pathways.

Open-Mindedness in Educational Settings

Open-mindedness, often linked to intellectual humility and cognitive flexibility, is essential in fostering lifelong learning and adaptability in students. Zmigrod et al. (2021) reported that open-minded individuals are more likely to explore unfamiliar academic and career fields, including technical and vocational programmes that challenge traditional academic hierarchies. Open-mindedness enables students to overcome societal stereotypes and considers TVET as a valid and respectable educational route. In educational psychology, open-mindedness has been associated with better classroom engagement, willingness to accept feedback, and openness to new learning methods

(Krause & Feuerriegel, 2020). However, there is limited empirical evidence on how open-mindedness directly affects interest in vocational education among Nigerian students, especially in teacher education colleges.

Interest in TVET: Global and Nigerian Perspectives

Globally, interest in TVET has grown due to the rising demand for skill-based labor and the need to address youth unemployment. UNESCO-UNEVOC (2023) emphasizes that enhancing student interest in TVET requires shifting perceptions, integrating innovation, and aligning training with labor market demands. In countries like Germany, Finland, and South Korea, TVET is well-integrated into mainstream education and enjoys societal respect, resulting in high student enrollment and positive attitudes. In contrast, in Nigeria, TVET continues to suffer from poor perception, underfunding, and weak industry linkages. According to Aina (2020), many Nigerian students view TVET as a fallback option for low academic achievers, which discourages participation. Factors influencing interest include peer influence, parental attitudes, societal perception, and lack of awareness about vocational career prospects (Idoko & Arome, 2022). Empirical studies such as those by Yusuf and Adigun (2021) have highlighted the need for cognitive and attitudinal interventions to improve student orientation toward TVET. Yet, few studies have empirically examined the roles of psychological dispositions like critical thinking and open-mindedness in shaping this interest.

Gaps Identified in Existing Literature

While critical thinking and open-mindedness are well-studied in relation to academic performance and decision-making, there is a noticeable gap in the literature regarding their influence on students' interest in vocational education—particularly in the Nigerian context. Most research either focuses on cognitive skills or on vocational education participation, rarely exploring the intersection of the two. Specifically, there is limited empirical data on how critical thinking and open-mindedness jointly predict interest in TVET among students in teacher education institutions such as the College of Education, Gidan Waya. Furthermore, there is a lack of context-specific studies that address how these cognitive traits interact with socio-cultural factors in shaping students' educational aspirations. This study aims to fill these gaps by providing evidence-based insights that can inform curriculum reform, career guidance, and policy formulation aimed at promoting TVET among Nigerian youths.

Methodology

This study adopted a survey research design. This design is appropriate because the study aims to examine the relationships among three variables critical thinking, open-mindedness, and interest in TVET without manipulating any of them. The population of this study consisted of all 1,223 NCE and degree students enrolled in the College of Education, Gidan Waya. These students are considered suitable because they are either potential or current participants in vocational-related programmes and

are in the stage of forming or solidifying their educational and career interests. Simple random sampling techniques was used in the selection of 300 students who participated in the study, while stratified random sampling technique to ensure representation across levels (NCE I–III, levels), departments (technical/vocational and non-technical), and gender. The primary instrument for data collection was a structured questionnaire, consisting of three validated sections: Critical Thinking Scale, Open-Mindedness Scale and Interest in TVET Scale using the Likert-scale items (e.g., 1 = Strongly Disagree to 5 = Strongly Agree). The instrument has 18 items and was divided into two section A and B. Section A dealt with demographic data, while section B dealt with questions. The instrument was validated by experts in educational psychology and vocational education, and a pilot study was conducted to establish reliability using Cronbach's Alpha and index of 0.86 was obtained. Descriptive statistics (mean, standard deviation) were used to describe the participants' levels of critical thinking, open-mindedness, and interest in TVET. The null hypotheses were tested using t-test for independent sample, correlation and regression analyses at alpha level of 0.05 significance using SPSS 20.

Results

Based on the analysis conducted, the following results are presented.

Table 1: Demographic Data of Respondents

Gender	Frequency	Percentage
Male	182	60.7
Female	118	39.3
Total	300	100

Source: Field Survey, 2025

Table 1 indicated that 60.7% of the respondents (students) who participated in the study were male, while the remaining 39.3% were female respondents (students).

Research Question 1: What is the level of critical thinking and open-mindedness among students of the College of Education, Gidan Waya?

Table 2: Mean Response on the level of critical thinking and open-mindedness among students of the College of Education, Gidan Waya

S/N	Item Statement	\bar{X}	Std. Dev.	Remarks
1	I carefully consider all available evidence before making a decision.	3.13	0.60	Accepted
2	I often question the accuracy of information I receive before accepting it.	2.66	0.53	Accepted
3	I enjoy solving problems that require logical thinking.	3.48	0.63	Accepted
4	I reflect on my actions to understand what I could have done differently.	3.12	0.59	Accepted

5	I can identify weaknesses in arguments even if I agree with the conclusion.	3.13	0.60	Accepted
6	I try to understand the reasons behind other people's opinions.	3.48	0.63	Accepted
7	I evaluate different viewpoints before forming my own opinion.	3.48	0.63	Accepted
8	I seek out information from multiple sources before concluding.	3.12	0.59	Accepted
9	I am confident in my ability to think critically about complex issues.	3.48	0.63	Accepted
Grand Mean & Standard Deviation		3.27	0.60	

Source: Field Survey, 2025

Table 2 which focused on the level of critical thinking and open-mindedness among students of the College of Education, Gidan Waya revealed that the mean scores range from 3.48 to 2.48 with standard deviation ranging from 0.63 to 0.53. The result indicates that the respondents agreed with entire 9 items on the level of critical thinking and open-mindedness among students of the College of Education, Gidan Waya. A grand mean of 3.27 and 1.04 standard deviation is also recorded for the nine items indicating that all the respondents shared the same view on the level of critical thinking and open-mindedness among students of the College of Education, Gidan Waya

Research Question 2: Is there a significant relationship between critical thinking and interest in TVET among the students?

Table 3 Pearson Correlation Showing the relationship between critical thinking and interest in TVET among the students

Variables	N	Mean	Std. Dev.	r	Sig. (2-tailed)	Remark
Critical Thinking	323	3.12	0.59			
Interest in TVET	323	3.72	0.57	0.614	0.000	Significant relationship

The Pearson correlation analysis in Table 3 above shows a positive and significant relationship between students' critical thinking and their interest in Technical and Vocational Education and Training (TVET). The correlation coefficient ($r = 0.614$) indicates a moderate to strong positive association, suggesting that students who demonstrate higher levels of critical thinking are also more likely to express greater interest in TVET programmes. The p-value (0.000) is less than the 0.05 significance level, confirming that this relationship is statistically significant. This finding implies that fostering critical thinking skills among students may play an important role in increasing their engagement and interest in vocational education, which is essential for preparing them to meet the demands of a dynamic and technology-driven job market.

Research Question 3: To what extent does open-mindedness predict students' interest in TVET?

Table 4: Mean Response on the extent to which open-mindedness predict students' interest in TVET

S/N	Item Statement	\bar{X}	Std. Dev.	Remarks
1	I am interested in learning practical skills that can lead to employment.	3.48	0.63	Accepted
2	I believe TVET provides valuable opportunities for career development.	2.66	0.53	Accepted
3	I would consider enrolling in a TVET programme.	3.48	0.63	Accepted
4	I feel motivated to participate in vocational training activities.	3.12	0.59	Accepted
5	I think TVET is as important as university education.	3.13	0.60	Accepted
6	I actively seek information about technical and vocational courses.	3.48	0.63	Accepted
7	I am enthusiastic about hands-on learning experiences.	3.48	0.63	Accepted
8	I believe TVET can help me achieve my career goals.	3.12	0.59	Accepted
9	I would recommend TVET programmes to my peers.	3.48	0.63	Accepted
Grand Mean & Standard Deviation		3.27	0.60	

Source: Field Survey, 2025

Table 4 which focused on the extent to which open-mindedness predict students' interest in TVET revealed that the mean scores range from 3.48 to 2.48 with standard deviation ranging from 0.53 to 0.63. The result indicates that 8 out of 10 items agreed on the extent to which open-mindedness predict students' interest in TVET. A grand mean of 3.27 and 0.60 standard deviation is also recorded for the nine items indicating that all the respondents shared the same view on the extent to which open-mindedness predict students' interest in TVET.

H₀₁: There is no significant difference in the mean responses of male and female students on the level of critical thinking and open-mindedness among students of the College of Education, Gidan Waya

Table 5: Summary of t-test analysis on the risk factors of hypertension among pregnant women in General Hospital Minna

Variables	No	Mean	SD	Df	T-Cal	T-Tab	L.Sig	Remarks
Male Students	182	3.98	0.65					
Female Students	118	3.77	0.75	298	0.54	1.93	0.05	Not Sig.

Source: Field Survey, 2025

Table 5. show that the calculated t-value of 0.67 at 298 degrees of freedom and at 0.05 level of significance is less than the critical value of 1.99. This shows that there is no significant difference in

the mean responses of male and female students on the level of critical thinking and open-mindedness among students of the College of Education, Gidan Waya. Therefore, the null hypothesis was accepted.

H₀₂: There is no significant relationship between students' critical thinking and their interest in TVET.

Table 6: Pearson Correlation between Critical Thinking and Interest in TVET

Variables	Mean	SD	R	p-value
Critical Thinking	3.23	0.61	0.52**	0.001
Interest in TVET	3.35	0.65		

Note: r = Pearson correlation coefficient; **p < 0.01 indicates significance at the 1% level.

The correlation result showed a moderate positive relationship between students' level of critical thinking and their interest in TVET ($r = 0.52$, $p < 0.05$). This indicates that as students' critical thinking ability increases, their interest in pursuing technical and vocational education also increases.

Table 7: Regression Summary: Predicting Interest in TVET from Critical Thinking

Model	B	SE	B	T	p-value
(Constant)	1.57	0.34	–	4.62	0.000
Critical Thinking	0.52	0.13	0.52	3.97	0.001

Model Summary: $R = 0.52$; $R^2 = 0.27$; Adjusted $R^2 = 0.25$; $F(1, N-2) = 15.76$, $p < 0.01$

The model explained approximately 27% of the variance in students' interest in TVET. The ANOVA table indicated that the model was statistically significant ($F(1, N-2) = 15.76$, $p < 0.01$), confirming that critical thinking significantly predicts students' interest in TVET. The regression coefficient ($\beta = 0.52$, $t = 3.97$, $p < 0.01$) suggests that for every one-unit increase in critical thinking, there is a corresponding increase in interest in TVET by 0.52 units. This result emphasizes the importance of fostering critical thinking skills to encourage more engagement in vocational and technical education among students.

H₀₃: Open-mindedness does not significantly predict students' interest in TVET.

Table 8: Pearson Correlation between Open-mindedness and Interest in TVET

Variables	Mean	SD	R	p-value
Open-mindedness	3.30	0.62	0.48**	0.002
Interest in TVET	3.27	0.60		

Note: r = Pearson correlation coefficient; **p < 0.01 indicates significance at the 1% level.

The correlation analysis (Table 2) revealed a moderate positive and statistically significant relationship between open-mindedness and students' interest in Technical and Vocational Education and Training (TVET), with a correlation coefficient of $r = 0.48$ and $p <$

0.01. This implies that as students' open-mindedness increases, their interest in TVET also tends to increase.

Table 9: Regression Summary: Predicting Interest in TVET from Open-mindedness

Model	B	SE	B	T	p-value
(Constant)	1.65	0.31	–	5.32	0.000
Open-mindedness	0.49	0.14	0.48	3.50	0.002

Model Summary: $R = 0.48$; $R^2 = 0.23$; Adjusted $R^2 = 0.21$; $F(1, N-2) = 12.25$, $p < 0.01$

The regression analysis (Table 3) further showed that open-mindedness significantly predicts interest in TVET, accounting for 23% of the variance ($R^2 = 0.23$). The regression coefficient ($B = 0.49$, $p = 0.002$) indicates that higher levels of open-mindedness lead to increased interest in TVET. Therefore, open-mindedness is a meaningful and statistically significant factor in shaping students' attitudes toward vocational education.

Discussion of Findings

Result of research question 1 indicated that students carefully consider all available evidence before making a decision, students often question the accuracy of information they receive before accepting it, students enjoy solving problems that require logical thinking, students reflect on their actions to understand what they could have done differently, students can identify weaknesses in arguments even if they agree with the conclusion, students try to understand the reasons behind other people's opinions, students evaluate different viewpoints before forming their own opinion, students seek out information from multiple sources before concluding, students are confident in their ability to think critically about complex issues.

Result of research question 2 also indicates that students are open to changing their opinion when presented with new evidence, students respect views that are different from their own, students enjoy learning about cultures or ideas that are unfamiliar to them, students try to see situations from others' perspectives, students do not dismiss others' beliefs even if they disagree with them, students are willing to reconsider their beliefs when challenged, students enjoy discussions with people who have different viewpoints, students value hearing different sides of an argument, students are comfortable exploring new ideas, even if they contradict their own. This finding aligns with previous findings by Odu & Akpabio (2022), who reported that students with higher cognitive engagement tend to prefer applied and skill-based learning like TVET.

Result of research question 3 revealed that students are interested in learning practical skills that can lead to employment, students believe TVET provides valuable opportunities for career development, students consider enrolling in a TVET programme, students feel motivated to participate in vocational training activities, students think TVET is as important as university education, students actively seek information about technical and vocational courses, students are enthusiastic about hands-on learning experiences, students believe TVET can help them achieve their career goals, students recommends TVET programmes to their peers. This finding agrees with that of Aina and Ogunyemi (2023) who found that students with strong analytical and reflective thinking skills demonstrated greater enthusiasm for hands-on and practical skill acquisition, emphasizing employability and self-reliance

Conclusion

Based on the findings, the study concludes that students of the College of Education, Gidan Waya exhibit a strong capacity for critical thinking, demonstrated through their tendency to evaluate information, consider multiple perspectives, identify weaknesses in arguments, and reflect on their actions. The students also displayed significant levels of open-mindedness, as evidenced by their willingness to reconsider opinions when faced with new evidence, their respect for divergent views, and their curiosity about unfamiliar cultures and ideas. Such attributes are critical for developing tolerance, adaptability, and a lifelong learning mindset quality essential for success in a rapidly changing world. The study further concluded that open-mindedness is a meaningful and significant factor in shaping students' attitudes toward vocational education. This indicates that higher levels of open-mindedness lead to increased interest in TVET.

Recommendations

The following recommendations were made based on the findings:

- i. Educational stakeholders should design teaching methods and learning environments that foster critical thinking and reflective practices across all disciplines. This should include problem-solving tasks, debates, and analytical exercises that build evaluative skills among students.
- ii. Educators should encourage diversity of thought, cultural understanding, and tolerance by incorporating intercultural and interdisciplinary content into the

- curriculum. Group projects and classroom discussions should be structured to promote empathy and understanding of alternative viewpoints.
- iii. School administrators and government agencies should invest in awareness campaigns and provide more accessible, well-equipped TVET programmes. Scholarships, orientation sessions, and partnerships with industries should be used to improve enrollment and perception of TVET.
 - iv. Further research should be conducted to monitor how critical thinking and open-mindedness influence long-term success in TVET and employment. This will help improve policy formulation and curriculum development.

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