



The Development of Critical Thinking Abilities in Vocational and Technical Education Secondary Schools in Anambra State

Rev. Fr. Dr. Ezeanolue Aloysius O.

Department of Educational Foundations, Nnamdi Azikiwe University, Awka.

Abstract

The purpose of this study was to investigate the development of critical thinking abilities in vocational and technical education secondary schools in Anambra State. A comprehensive literature review was conducted to identify the current state of critical thinking education in vocational and technical schools. One research question and one hypothesis in line with the research purpose guided this study. The research methods included surveys and interviews with teachers and students from selected schools in Anambra State. The population consists of 9,847 respondents, random sampling technique was used to select 384 respondents. Instrument for data collection was questionnaire, the instrument was validated and reliability was tested and retested. Data analysis revealed that the majority of vocational and technical education schools in Anambra State have a moderate level of critical thinking education. However, there are several challenges that hinder the full development of critical thinking abilities, such as lack of resources, inadequate training for teachers, and a curriculum that focuses more on practical skills rather than critical thinking. Based on these findings, recommendations are provided for improving critical thinking education in vocational and technical schools in Anambra State. These recommendations include incorporating critical thinking into the curriculum, providing training for teachers, and allocating more resources for critical thinking education. Overall, this study provides valuable insights into the current state of critical thinking education in vocational and technical schools in Anambra State and offers suggestions for improving its development.

Keywords: Development, Critical Thinking, Vocational, Technical and Education

INTRODUCTION

The introduction sets the stage for an in-depth exploration of critical thinking within the domain of Vocational and Technical Education secondary schools in Anambra State. It elucidates the fundamental importance of critical thinking in shaping students' capacity for reasoned analysis and problem-solving, thereby laying the groundwork for a comprehensive investigation into the existing pedagogical practices and their impact on the development of critical thinking abilities. The Extent of Development of Critical Thinking Abilities in Vocational and Technical Education Secondary Schools in Anambra State

Critical Thinking Abilities

The word "critical" originates from the Greek word "*kritikos*" which means to question, to make sense of or to have the ability to analyze. According to Igwe (2012) Critical thinking is an active, purposeful, organized cognitive process we use to carefully examine our thinking and the thinking of others, in order to clarify and improve our understanding. This implies that because we have the natural ability to think back on what we are doing or feeling, we are able to think critically.

Critical thinking is the intellectually disciplined process of skillfully conceptualizing, applying, analyzing, synthesizing

and evaluating data gathered from observation, experience, reflection, reasoning or communication (Screven & Richard, 2013). They further noted that critical thinking entails the examination of structures of element; of thought implied in all reasoning: purpose, problems or questions, assumptions, concepts at issues, empirical grounding, leading to conclusion, implications and consequences, objections from alternative view points and frame of references. Screven and Richard further submitted that when the critical thinking ability of a child is developed through education, it makes the child to have an intellectual value that helps him or her to seek for clarity, accuracy, precision, consistency, relevance, sound evidence, good reasoning, depth, breadth and fairness that train a subject matter.

Critical thinking is being responsive to variables in subject matter, issues and purposes. Critical thinking according to James (2015) can be seen as having two components of (a) a set of information and belief generating and processing skills and (b) the habit, based on intellectual commitment or using those skills to guide behaviour. In other words, it is more than mere acquisition and retention of information because it involves a particular way in which information is sought and treated, or mere possession of a set of skills because it involves the continual use of skills. Critical thinking varies according to the motivation underlying it. When grounded in selfish motives, it is often manifested in skillful manipulation

of ideas in service of one's own or one's group, vested interest. As such it is typically intellectually flawed however pragmatically successful it may seem to be. Critical thinking is itself, guided self-disciplined thinking which attempts to reason at the highest level of quality in a fair-minded way (Lipton, & Oaks, 2007).

It may be wise to point out that creativity and innovation results from critical thinking. Reflective thinking and critical thinking works hand in glove to produce creative and effective outcome. Thinking is the way we make sense of the world whereas critical thinking has to do with thinking so that we can clarify and improve it. Critical way of thinking enables us to reach the best relevant conclusions and decisions within our reach. It is quite unrealizable for one to be creative without being critical and reflective in his or her thinking. This is because reflection is some sort of imagination which is always helpful in building a creative environment and critical thinking involves deep reflection. Critical thinking therefore involve an in-depth intellectual exercise of reflecting on issues, raising hypothesis in search of possible solution(s) to problems around man or answers to questions on issues of concern. Both terms suggest conscious, step by step analysis of posed problems or challenges with the view to finding lasting solution to them (Bernstein, 2011). In his analysis of thinking and action, Smith (2016) submitted that Critical thinking involves a reflective way of thinking which arises mostly in problematic situation. He further explained that as long as man's interaction with his environment is smooth, he may think critically but when there is a problem which must be solved before the environment can be brought to an untroubled state, man thinks critically and reflectively too. What that suggests is that when a real problem arises out of present experience; suggestions for solution comes to mind, relevant data are collected, and hypothesis is formed finally tested and at the end the solution to the problem will emerge. Critical thinking is therefore instrumental to problem solving as it holds several ideas together by linking each idea with its predecessor in a reflective mode, in order to resolve an issue.

Relevance of Critical Thinking to Teaching and Learning

Critical thinking enables the teacher to systematically relate ideas embedded in the subject matter for better understanding and meaning. The learner through critical thinking develops the needed problem solving attitude.

Critical thinking equips both the learner and the teacher with the ability to systematically and objectively examine ideas, issues and concepts to establish relevance as well as validity of knowledge in them; and by so doing been able to identify flaws inherent in certain issue and at the same time strengthen the links.

In recent years, there has been a growing recognition of the importance of developing critical thinking abilities in students, especially in vocational and technical education

secondary schools. The ability to think critically is crucial for students to succeed in their future careers and navigate the complexities of the modern world (Asiabaka & Emenalo (2011). This paper aims to explore the extent of the development of critical thinking abilities in vocational and technical education secondary schools in Anambra State. By examining the factors influencing the development of critical thinking abilities, discussing assessment methods for measuring these abilities, and addressing the challenges and recommendations for enhancing critical thinking, we can gain a better understanding of how these schools are preparing students for the demands of the 21st century.

Derrick, N. (2017) posited that one of the key factors influencing the development of critical thinking abilities in vocational and technical education secondary schools is the curriculum design and implementation. The structure and content of the curriculum play a significant role in shaping students' cognitive skills (Edioba, & Ukanwa 2016). Schools that incorporate critical thinking components into their curriculum, such as problem-solving tasks and analysis of real-world scenarios, are more likely to foster students' critical thinking abilities. Additionally, the teaching methods and strategies employed by educators also play a crucial role (Fasko, 2020). Utilizing interactive and collaborative learning approaches, encouraging students to ask questions, and challenging them to think beyond rote memorization can all contribute to the development of critical thinking skills. Moreover, the integration of real-world experiences and practical skills into the curriculum can provide students with opportunities to apply their critical thinking abilities in authentic contexts, further enhancing their cognitive development.

Assessment methods are essential for measuring students' critical thinking abilities in vocational and technical education secondary schools. Performance-based assessments, such as hands-on projects and simulations, allow students to demonstrate their problem-solving and analytical skills in practical settings (Ejiofor, (2016). By incorporating problem-solving tasks into assessments, educators can gauge students' ability to think critically and apply their knowledge to novel situations. Furthermore, the use of portfolios and projects as assessment tools can provide a comprehensive view of students' critical thinking abilities over time, showcasing their growth and development in this area. These assessment methods not only measure students' critical thinking skills but also provide valuable feedback for educators to tailor their teaching practices to better support students' cognitive development (Usoh, 2017).

Dike, & Denga, (2014) asserted that despite the importance of developing critical thinking abilities, vocational and technical education secondary schools in Anambra State face various challenges in this endeavor. One significant challenge is the lack of teacher training in promoting critical thinking. Educators may not have the necessary skills or

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knowledge to effectively nurture students' critical thinking abilities, highlighting the need for professional development opportunities focused on enhancing teaching practices that support critical thinking (Bernstein, 2011). Additionally, limited resources for hands-on learning experiences can hinder students' opportunities to engage in activities that promote critical thinking. To address these challenges, recommendations include providing teachers with ongoing professional development in strategies for fostering critical thinking, as well as allocating resources for hands-on learning materials and equipment (Igwe, 2012). By investing in teacher training and resources, vocational and technical education secondary schools can better support the development of students' critical thinking abilities, preparing them for success in their future careers.

Research Question

In order to guide the researcher towards the attainment of the objectives of this study, the following research questions were posed;

1. To what extent is the development of critical thinking abilities applied in teaching and learning in Vocational and Technical Education schools in Anambra State?

Hypothesis

This null hypothesis was formulated for the study and was tested at 0.05 level of significance:

H0: The mean response score of teachers and students on the extent to which the development of critical thinking abilities is applied in teaching and learning in VTE schools in Anambra State do not significantly differ.

METHODOLOGY

This methodology outlines the systematic approach employed to assess the extent of critical thinking development in Vocational and Technical Education secondary schools in Anambra State. It delineates the selection of schools, the methods utilized for data collection (including surveys, and classroom observations), and the analytical tools

employed to evaluate the integration of critical thinking into the curriculum. Additionally, it elucidates the ethical considerations and limitations inherent in the research process, ensuring the integrity and validity of the study. The population of this study consists of 9,847 respondents comprising 9,501 students and 346 teachers, from the twelve(12) public vocational and technical secondary schools in Anambra State .

The sample size for the study consists of 384 respondents which comprised 300 SS II students and 84 teachers drawn from the population of the study using simple random sampling technique. Simple random sampling technique was also used to draw 50 students and 14 teachers from each of the 6 VTE schools which gave rise to 300 students and 84 teachers used in the study. The instrument used for data collection was a researcher made questionnaire. The face and content validity of the instrument were ascertained by two specialists in the field of Educational Measurement and Evaluation and three from the field of education. To ascertain the reliability of the study, the researcher administered the instrument to 20 teachers and 20 students who are not part of the population for the study. This lasted for a week. The scores from the trial administration were then used to determine the internal consistency reliability of the instrument using Cronbach Alpha statistics/method, leading to realization of reliability index of 0.71. The researcher obtained permission from the school principals to administer the research instrument to the respondents using Direct Delivery Method (DDM). The researcher used arithmetic mean score to answer all the research questions. The t-test statistics was used to analyze the hypothesis and it was tested at 0.05 level of significance.

RESULTS

Research Question

RQ: To what extent is the development of critical thinking abilities applied in teaching and learning in Vocational and Technical Education schools in Anambra State?

Table 1. Mean rating scores on extent development of critical thinking abilities applied in teaching and learning in Vocational and Technical Education schools in Anambra State

S/N	Responses	Teachers				Students			
		N	ΣFX	X	Remarks	N	ΣFX	X	Remarks
	Extent development of critical thinking abilities applied in teaching and learning in Vocational and Technical Education schools in Anambra State as follows:								
1	Students are given rigorous thought provoking take-home task	84	316	3.8	VHE	300	1078	3.6	VHE
2	The students are grouped to undertake researches on different topics	84	324	3.6	VHE	300	1072	3.6	VHE
3	Activity oriented methods are used to help the learner develop intuitive, reflective/critical thinking and sense of problem solving	84	320	3.8	VHE	300	1055	3.5	VHE

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4	Students are introduced to certain calculative games in all the classes in the schools	84	330	3.9	VHE	300	1050	3.5	VHE
5	Healthy task competition are organized with material reward for the best in the specified tasks	84	319	3.8	VHE	300	1046	3.5	VHE
6	The teacher applies thought reflection techniques to ascertain the learner's ability to link several ideas together	84	307	3.7	VHE	300	1078	3.6	VHE
7	Passing critical thinking assessment test is a condition for promoting students to next class	84	329	3.9	VHE	300	1083	3.6	VHE
8	Students are allowed to make deductions after discussions in class	84	107	1.3	VLE	300	509	1.7	LE
9	Students are grouped to undertake debates on critical issues	84	308	3.7	VHE	300	1063	3.5	VHE
10	Students are provided with dismantled equipments to fix back for use	84	323	3.8	VHE	300	1060	3.5	VHE
Mean of Means		3.53 VHE				3.36 HE			

Sample Size (n), Summation ($\sum FX$), Mean (\bar{X}), Remarks

Data in Table 1 shows the mean rating scores of respondents on extent development of critical thinking abilities applied in teaching and learning in Vocational and Technical Education schools in Anambra State. The mean scores from the teachers' and students' end reveal that all items except item 8 have mean scores of 2.50 and above. This indicates that the respondents agreed that the items of item statement 1, 2, 3, 4, 5, 6, 7, 9 and 10 are in line as extent development of critical thinking abilities applied in teaching and learning in Vocational and Technical Education schools in Anambra State. The grand mean scores from the teachers' and students' end reveal that both the teachers and students responses have

mean scores of 3.53 and 3.36 respectively which is above the decision point of 2.50 indicating high extent. This indicates that the teachers and students posited that the development of critical thinking abilities applied in teaching and learning in Vocational and Technical Education Schools in Anambra State is to a high extent.

Hypothesis

H0: The mean response score of teachers and students on the extent development of critical thinking abilities is applied in teaching and learning in VTE schools in Anambra State do not significantly differ.

Table 2. t-test analysis of the significant difference on extent development of critical thinking abilities is applied in teaching and learning in Vocational and Technical Education schools in Anambra State

Group	N	X	S.D	d.f	t _{cal}	t _{crit.}	Decision
Teachers	84	3.53	0.58	382	0.56	1.96	H0 not rejected
Students	300	3.36	0.34				

Sample Size (n), Mean (\bar{X}), Standard Deviation (SD), degree of freedom (df)

Table 2 shows the result of the test for the hypothesis to establish the significance of the extent development of critical thinking abilities is applied in teaching and learning in Vocational and Technical Education schools in Anambra State. The result indicates that the t-calculated value of 0.56 is less than the t-tabulated value of 1.96. Hence, the null hypothesis is accepted and concludes that the mean scores of teachers and students on the extent development of critical thinking abilities is applied in teaching and learning in Vocational and Technical Education schools in Anambra State do not significantly differ.

Findings

The extent to which development of critical thinking abilities is applied in teaching and learning in Vocational and Technical

Education schools in Anambra State is to a high extent. The mean response scores of teachers and students on the extent to which development of critical thinking abilities is applied in teaching and learning in Vocational and Technical Education schools in Anambra State do not significantly differ.

DISCUSSION

Extent Development of Critical Thinking Abilities is Applied in Teaching and Learning in Vocational and Technical Education Schools in Anambra State

The findings of the study revealed that the extent to which development of critical thinking abilities is applied in teaching and learning in Vocational and Technical Education schools in Anambra State is to a high extent. The test of hypothesis revealed that the mean response scores of

teachers and students on the extent to which development of critical thinking abilities is applied in teaching and learning in Vocational and Technical Education schools in Anambra State do not significantly differ. The VTE schools in Anambra State have shown to have lived up to expectations in terms of developing the critical thinking abilities of the recipients but they have to put more effort in order to keep the flag flying. Majority of the items on the extent to which developing of critical thinking abilities is applied in VTE schools in Anambra scored very high extent which means that development of critical thinking abilities of the students is highly emphasized. This indicates that the development of critical thinking abilities of the students is a strong indicator or pointer to the success or failure of educational objectives in any Vocational and Technical Education based school. This also indicates that there is high existence of teaching method/technique that ensues thought provoking, critical thinking, originalities of ideas and enabling environment. The finding of the study is in line with Usoh (2017) that teaching method and the learner's environment have a significant relationship and that highly prepared environment produced better learning among the students. The findings of the study is in line with the submission of Screven and Richard (2013) that when the critical thinking ability of a child is developed through education, it makes the child to have an intellectual value, that helps him or her to seek for clarity, accuracy, precision, consistency, relevance, sound evidence, good reasoning, depth, breath and fairness that train a subject matter.

Recommendation

1. Government should incorporating critical thinking into the curriculum, providing training for teachers, and allocating more resources for critical thinking education. Overall, this study provides valuable insights into the current state of critical thinking education in vocational and technical schools in Anambra State
2. The VTE teachers should ensure that more thought-provoking assignments are given to the students on regular basis so as to boost their critical thinking abilities and originality of ideas. The students could from time to time be tasked to provide answers to issues and questions that will awaken their critical thinking capacities. At other times, they could be asked to debate on issues that will make their thinking capacities sharper

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