

IMPACT OF CREATIVE THINKING ON THE PERFORMANCE OF ELECTRICAL/ELECTRONIC TRADE STUDENTS IN TECHNICAL COLLEGES IN EKITI STATE

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Abstract

This study examined the impact of creative thinking on the practical performance of electrical/electronic students of technical colleges in Ekiti State. The study adopted a descriptive survey design and covered a population of two hundred and sixty-seven (267) electrical and electronic trades students and teachers of Technical Colleges in Ekiti state. Also, the population was adopted for the study as the sample. A well-structured closed-ended question was adopted for the study and administered to the respondents after being subjected to both validity and reliability tests. The data obtained from this study were subjected to statistical analysis. From the analysis result, it was established that there is a significant influence of originality, elaboration, and flexibility on the practical performance of the students in electrical/electronic trades in technical colleges in Ekiti State. Also, it was revealed that there is a significant difference in the creative thinking skills of male and female students in technical colleges in Ekiti State. It was concluded that there is a statistically significant influence of creative thinking on the practical performance of electrical/electronic students of technical colleges in Ekiti State.

Keywords: Creative, Creativity, Thinking Skill, Originality, Elaboration and Flexibility, Electrical, Electronic, Practical, Technical Colleges.

Introduction

The growing importance of science in society has driven the Federal Government of Nigeria, through the Federal Ministry of Education, to incorporate technical and vocational subjects into the curriculum of the nation's technical colleges. Among these is Electrical-Electronic trades. These trades focus on design, and application of systems using electricity, electronics, and electromagnetism. According to Eze (2018), the field emerged in the 19th century with the commercialization of technologies such as the telegraph and telephone. Electrical-Electronic trades encompass a wide range of disciplines, including computer engineering, telecommunications, power engineering, and signal processing, with overlapping fields in renewable energy, nanotechnology, and hardware

engineering. These diverse specializations highlight the breadth of the field and the growing demand for skilled professionals in related areas.

Practical activities are integral to teaching Electrical-Electronic concepts, as they provide students with hands-on learning experiences that make abstract scientific principles more tangible. Nzewi (2018) emphasizes that practical work not only reinforces knowledge but also builds long-term competence, essential for students to meet the technological demands of the nation. Many technical schools in Nigeria face challenges due to inadequate exposure to practical activities, which contributes to poor performance in practical assessments. To address this issue, there is a pressing need to enhance practical training in these schools, ensuring students acquire both theoretical understanding and practical

skills during their studies and after graduation. Central to this improvement is the incorporation of creative thinking in technical education.

Creativity, which plays a crucial role in improving the quality of life, is highly valued in educational contexts, particularly in technical fields. Anshu and Parmod (2017) define creative thinking as the ability to generate original ideas or solutions, distinguishing it from conventional forms of thinking. Rhodes (2016) further breaks down creativity through his 4 P's framework: person, process, press, and product. These components—personality traits, the creative process, the environment, and the end product—underscore the complexity of creativity, which is essential in technical education. Creativity in technical colleges can drive innovation in practical learning and problem-solving, ultimately enhancing the effectiveness of the teaching process in fields like Electrical-Electronic trades.

Creativity is assessed through originality, elaboration, flexibility, and fluency, all of which influence how teachers perceive its role in student performance. This perception can vary based on socio-demographic factors such as gender and school location. In Nigeria, societal norms often shape the expectations of boys and girls regarding intelligence and physical abilities. The prevailing belief that boys are superior in reasoning and intelligence may affect how creativity and performance are perceived in technical fields like Electrical-Electronic. Addressing these gender-based perceptions is vital for fostering a more inclusive and creative learning environment, where both male and female students can thrive.

Statement of the Problem

Vocational technical trade is crucial for developing a skilled workforce, especially in fields like electrical and electronic trades, which require both theoretical knowledge and practical proficiency. It has been observed that there is increasing concern that graduates from technical colleges, particularly in Ekiti State, Nigeria, often lack the practical skills needed to perform competently in the workplace. The difference between theoretical learning and practical application has become evident as students in these trades struggle to meet industry standards, highlighting a need for more effective hands-on training.

A key contributor to this difference is the insufficient emphasis on creative thinking within the curriculum. Creative thinking, essential for solving problems and adapting to new challenges, is critical in vocational technical fields like electrical and electronic trades. Many technical colleges in Ekiti State rely on traditional teaching methods that focus on rote learning and memorization, rather than fostering innovative thinking. Students may perform well in theoretical exams but struggle with practical tasks, ultimately affecting their performance in both academic and workplace environments.

Inability to emphasize on creative thinking skills among students in electrical and electronic trades in Ekiti State has significant implications for workforce development. As industries grow more complex and technology-driven, the need for workers who can solve problems and think creatively is increasing. Without fostering these skills, technical colleges risk producing graduates unprepared for the modern economy. The situation is worsened by inadequate infrastructure, limited access to modern tools, and a lack

of professional development for teachers, which stifles innovation and hinders effective practical training. Addressing these issues is crucial to improving students' practical performance and ensuring they are equipped to meet industry demands.

Purpose of the Study

This study examined the impact of creative thinking on the performance of electrical/electronic trades in technical colleges in Ekiti State. Specifically, this study:

- i. investigated the influence of originality on the performance of the students in electrical/electronic trades in technical colleges in Ekiti State;
- ii. determined the impact of elaboration on the performance of the students in electrical/electronic trades in technical colleges in Ekiti State;
- iii. ascertained the impact of flexibility on the performance of the students in electrical/electronic trades in technical colleges in Ekiti State;
- iv. examine the difference in the creative thinking skill of male and female students in technical colleges in Ekiti State.

Research Questions

The following research questions are raised to guide the study:

- i. Does originality affect the performance of the students in electrical/electronic trades in technical colleges in Ekiti State?

- ii. What is the impact of elaboration on the performance of the students in electrical/electronic trades in technical colleges in Ekiti State?
- iii. What is the impact of flexibility on the performance of the students in electrical/electronic trades in technical colleges in Ekiti State?
- iv. Is there a significant difference in the creative thinking skill of male and female students in technical colleges in Ekiti State?

Methodology

A descriptive research of the survey design was used for the study. The population for the study covered all the Electrical Electronic students and teachers in the five Technical Colleges owned by the Ekiti State Government. As at the time of this study, there are 258 electrical and electronic students and 9 teachers. The population was 267. Due to the small size of the population, total population of 267 would be adopted to represent the sample. The instrument for data collection was a structured questionnaire by the researcher with the help of the researcher's supervisor. The data collected were analysed using descriptive and inferential statistics. The simple linear regression was used to answer the research questions.

Results

Result

Research Question 1: Does originality affect the performance of the students in electrical/electronic trades in technical colleges in Ekiti State?

Table 1: Regression Analysis showing the influence of originality on the practical performance of the students in electrical/electronic students in technical colleges in Ekiti State

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	43.232	1.695		25.511	.000
	Originality	0.414	.175	0.149*	2.362	.012
$R=0.649$ $R^2= 0.421$ Adjusted $R^2= 0.419$ $F = 5.75217$ $P=0.019 < 0.05$ (Significant)						

Dependent Variable: Performance

Table 1 revealed that there is positive correlation between originality and practical performance of the students in electrical/electronic students in technical colleges in Ekiti State ($R=0.649$). The value of coefficient of determinant ($R^2=0.421$) indicated that originality accounted for 42.1% of the total variance in practical performance of the students in electrical/electronic students in technical colleges in Ekiti State while the remaining 57.9% unexplained variation could largely be due to other variables examined in this study. The F-ratio (5.75217) was significant at 0.05 level of significance. This implies that the predictor variable

will provide a significant explanation for the variation in practical performance of the students in electrical/electronic students in technical colleges in Ekiti State. Thus, the hypothesis that originality will not significantly influence practical performance of the students in electrical/electronic students in technical colleges in Ekiti State was not accepted.

Research Question 2: What is the impact of elaboration on the performance of the students in electrical/electronic trades in technical colleges in Ekiti State?

Table 2: Regression Analysis showing the influence of elaboration on the practical performance of the students in electrical/electronic students in technical colleges in Ekiti State

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	29.798	1.348		22.111	.000
	Elaboration	.639	.088	.421*	7.258	.000
$R=0.421$ $R^2= 0.177$ Adjusted $R^2= 0.174$ $F = 52.683$ $P=0.000 < 0.05$ (Significant)						

Dependent Variable: Performance

Table 2 revealed that there is positive correlation between elaboration and practical performance of the students in electrical/electronic students in technical colleges in Ekiti State ($R=0.421$). The value of coefficient of determinant ($R^2=0.177$) indicated that elaboration accounted for 17.7% of the total variance in practical performance of the students in electrical/electronic students in technical colleges in Ekiti State while the remaining 82.3% unexplained variation could largely be due to other variables examined in this study. The F-ratio (52.683) was significant at 0.05 level of significance.

This implies that the predictor variable will provide a significant explanation for the variation in practical performance of the students in electrical/electronic students in technical colleges in Ekiti State. Thus, the hypothesis that elaboration will not significantly influence practical performance of the students in electrical/electronic students in technical colleges in Ekiti State was not accepted.

Research Question 3: What is the impact of flexibility on the performance of the students in electrical/electronic trades in technical colleges in Ekiti State?

Table 3: Regression Analysis showing the influence of flexibility on the practical performance of the students in electrical/electronic students in technical colleges in Ekiti State

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	38.466	1.364		28.192	.000
Flexibility	.423	.173	.542	3.652	.015
$R=0.742$ $R^2= 0.524$ Adjusted $R^2= 0.521$ $F = 28.425$ $P=0.001 < 0.05$ (Significant)					

Dependent Variable: Performance

Table 3 revealed that there is positive correlation between flexibility and practical performance of the students in electrical/electronic students in technical colleges in Ekiti State ($R=0.742$). The value of coefficient of determinant ($R^2=0.524$) indicated that flexibility accounted for 52.4% of the total variance in practical performance of the students in electrical/electronic students in technical colleges in Ekiti State while the remaining 47.6% unexplained variation could largely be due to other variables examined in this study. The F-ratio (28.425) was significant at 0.05 level of significance.

This implies that the predictor variable will provide a significant explanation for the variation in practical performance of the students in electrical/electronic students in technical colleges in Ekiti State. Thus, the hypothesis that flexibility will not significantly influence practical performance of the students in electrical/electronic students in technical colleges in Ekiti State was not accepted.

Research Question 4: Is there a significant difference in the creative thinking skill of male and female students in technical colleges in Ekiti State?

Table 4: t-test showing difference in the creative thinking skill of male and female students in technical colleges in Ekiti State

Gender	N	Mean	Std. Deviation	df	t_{cal}	Sig
Male	217	74.18	7.304	246	3.142*	0.013
Female	31	81.64	6.982			

P < 0.05 (Significant Result)

The result in table 9 shows that $t_{cal} = 3.142$; $P = 0.013 < 0.05$. Since the P value is less than 0.05, therefore, the null hypothesis is not accepted. This implies that there is significant difference in the creative thinking skill of male and female students in technical colleges in Ekiti State.

Discussion

From the analysis conducted, it was established that there is a significant influence of originality, flexibility and fluency on the practical performance of the students in electrical/electronic students in technical colleges in Ekiti State. By implication, originality, flexibility and fluency have the independent capacity to engender an increase in the academic performance of both electrical and electronic students in technical colleges in Ekiti state. This finding agreed with the findings of Mohammed, *et. al.* (2017) that the components of creative thinking significantly determine the performance of students in tertiary institutions. Alakija (2018) reported that originality and flexibility maintained a significant relationship with academic success of students. Alao (2019) disclosed that creative thinking significantly stimulates an increase in academic achievement of students. Also, it was revealed that there is a significant difference in the creative thinking skill of male and female students in technical colleges in Ekiti State. The difference could be trace to the difference in personal interest and determination among male and female students. This

finding is in-line with the conclusion of Heliskin (2018) that among female and male students, there is significant difference in their level of creative thinking skill.

Conclusion and Recommendation

In order for students to acquire these skills, teachers of technical colleges are required to teach relevant practical skills to students by employing appropriate teaching and evaluation strategies. It was established that the components of creative thinking significantly influence practical performance of electrical and electronic students in technical colleges in Ekiti State. In line with the findings made, the following recommendations were made that:

- The identified creative thinking skills should be incorporated into the curriculum of Electrical and Electronic trade for training students in Technical Colleges.
- Workshop and seminars should be organized for electrical and electronic trade students on current technologies/issues in electrical and electronic trades from time to time.
- Adequate orientation should be given to electrical and electronic students in technical colleges on the relevance of their knowledge to their survival after graduation. This would stimulate more efforts from them on their practical performance.

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