VOCATIONAL TEACHERS' PERCEPTION ON INNOVATIVE TEACHING AND LEARNING STRATEGIES REQUIRED FOR ENHANCING STUDENTS' LEARNING OUTCOMES IN TECHNICAL COLLEGES IN RIVERS STATE

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Abstract
The study aimed at finding out the perception of vocational teachers' on innovative teaching and learning strategies that are required for enhancing students' learning outcomes in technical colleges in Rivers State. Descriptive survey design was adopted for the study. Three research questions and three hypotheses guided the study. A-29 item questionnaire structured in a-4 points rating scale was used to collect data for the study. The instrument was face and content validated by three experts and the reliability coefficient of 0.75 was obtained using Cronbach's Alpha coefficient method. The population of the study consists of 137 male teachers' and 48 female teachers' in the four Rivers State government owned technical colleges. Simple random sampling technique was used to select 100 male teachers' while all the 48 female teachers' were used for the study without sampling because their population size was considered manageable. Data was analyzed using mean and standard deviation to answer the research questions, while t-test statistics was used to test the hypotheses at 0.05 level of significance. It was found that simulation-based learning, collaboration learning, adaptive learning among others are innovative teaching and learning strategies that can enhance students learning outcomes, lack of training and support, limited outcomes, time constraints and resistance to change are the major challenges faced by teachers in implementing innovative teaching and learning strategies. Consequently, it was recommended among others that vocational teachers' should ensure that they adopt the use of innovative teaching and learning strategies, government should ensure that regular training programme on innovative teaching and learning strategies is organized regularly for teachers' at all levels of our educational system.
Keywords: Vocational teachers, Perception, Innovative, Teaching, Learning, Strategies.

Introduction

Technical colleges in Nigeria are the principal technical institutions established to equip students with relevant technical skills as craftsmen in different occupation. According to National Board for Technical Education (NBTE, 2015) technical colleges are institutions where students are trained to acquire relevant knowledge and skills in different occupations for employment in the world of work. The courses offered at the technical colleges according to National Board for Technical Educational (NBTE, 2014) usually lead to the award of National Technical Certificate (NTC) and Advance National Technical certificate (ANTC).

The rapidly changing global economy and technological advancement have created a high demand for skilled workers who might have possess either the NTC or ANTC at the end of their training at technical college that have been equipped with practical skills, knowledge and competencies required to driven innovative productivity. According to Ibeziem and Ugwuorji (2023) technical colleges play a vital role in providing vocational education and training to students, equipping them with the required skills and knowledge necessary to succeed in the workforce. Ekweremadu (2021) posited that the effectiveness of vocational education depends on the quality of teaching and learning strategies employed by vocational teachers. Chukwuka and Nwaigwe (2024) maintained that a teacher is the ministry or a prime mover of the educational system. A teacher the authors added is the one that hold the key to the door and change in school. This is acknowledged in the National Policy on Education (FRN, 2013) which stated that no education system can rise above the quality of its teacher. Similarly, Peter and Morgan (2022) observed that without a qualified teacher that the adoption of innovative teaching and learning strategies in schools will be difficult to utilize during teaching and learning process that will help to achieve educational objectives.

Innovative teaching and learning strategies according to Onukwube and Amini (2022) is the new, creative and effective approaches to teaching and learning that can enhance students' engagement, foster critical thinking and as well improve learning outcomes. Similarly, Odukwu and Oferemba (2019) posited that innovative teaching and learning strategies are essential in enhancing learning outcomes because they improve students' engagement, enhance knowledge retention, develop critical thinking and problem-solving skills, prepare students for future and as well improve teacher-students relationship. According to Kelvin and Charles (2021) innovative teaching and learning strategies in teaching and learning that can enhance students' learning outcomes include; project-based learning, simulation-based learning, problem-based learning, online and balanced learning, field trip-based learning and collaborative learning. Ali and Ogundele (2021) also stated that innovative teaching and learning strategies that can enhance students' learning outcomes include; gamification, flipped classroom, adaptive learning and inquiry-based learning.

Several studies such as (Amakiri, 2021; Bello & Chukwuma, 2022; Taiwo & Izime, 2019) have revealed that there are effective innovative teaching and learning strategies that teachers needed to adopt during teaching and learning process in order to achieve educational objectives.

According to Mathew and Elekwachi (2023) most effective innovative teaching and learning strategies that technical-vocational teachers must adopt in order to achieve educational objectives include; interactive lesson, personalized learning, peer teaching, project-based learning and collaborative learning. In the same vein, Raji and Kamalu (2019) outlined the following as most effective innovative teaching and learning strategies that can enhance students' learning outcomes during teaching and learning period; technology-integrated learning, Jigsaw technique, active learning, design thinking process and problem-based learning strategy.

In order to carry out teaching task effectively in any of the technical- vocational related trades of the technical college level adopting any of the innovative teaching and learning strategies teachers are to be guided by certain principles of teaching and learning which have a great implication for enhancing students learning outcomes(Agwi & Amadike, 2019). Some of these principles the authors continued are that students' learn best by being actively involved, learning is transferred to the extent the learner see possibilities for transfer and has opportunity to apply his/her knowledge, learning is increased when provided in a rich and varied environment, students learn more effectively if they know the objectives and are shown how to gain from the objective of the lesson. Eke and Odunze (2021) reported that for a teacher to effectively and efficiently carryout his/her teaching task successfully in line with the principles of teaching and learning that the objectives of what the students are expected to learn must be properly spelt out by the teachers before the beginning of the lesson as to enable the teacher achieve the objective of enhancing students' learning outcomes.

Past research works (Gbenga, 2022; Russell, 2019; Seya, 2021) have identified major roles of a teacher during the period of teaching and learning to include among others; that the teacher leads the class during teaching and learning process, win the confidence of the students' during teaching and learning process, plan and organize regular practical class for the students, select appropriate teaching method/strategy. The importance of these roles of a teacher at the technical college level in particular is to achieve teaching and learning objectives that will enhance students' engagement and learning outcomes. These roles as required by the teacher are good, they are expected to help in achieving educational objectives. However, as long as the authors of this paper is concerned, the realization of these objectives are a mirage due to many challenges that are faced by the teachers in implementing innovative teaching and learning strategies in schools in Nigeria.

According to Adebanjo and Orji (2023) despite the importance of effective innovative teaching and learning strategies in achieving educational objectives, many teachers in Nigerian schools still find it very difficult to adopt the use of innovative teaching and learning strategies in delivering of their lesson. Nwachukwu (2022) observed that in many schools in Nigeria that technological resources are not available for use by teachers to carry out their teaching tasks. As a result of this problem many teachers in Nigerian schools usually teach in abstract without using the required technological resources that will allow them to adopt the use of innovative teaching and learning strategies. Akwube and Ukwe (2021) outlined the following as major challenges that are faced by teachers in implementing innovative teaching and learning strategies; lack of training and support, poor internet network, time constraints, resistance to change and lack of infrastructure. Okwuchukwu and Nwaga (2024) also stated that assessment and evaluation challenges, large class size and limited resources are major challenges that cannot allow teachers to effectively implement the adoption of innovative teaching and learning strategies in Nigerian schools.

Despite the importance of innovative teaching and learning strategies from the foregoing, government at all levels in Nigeria seem not to have done much in the provision of technological resources in schools in Nigeria that will help teachers adopt the use of innovative teaching and learning strategies and teachers in schools in Nigeria seem not to effectively implement the adoption of innovative teaching and learning strategies to deliver their lesson. These evidence was obtained from study carried out by (Ukachukwu, 2019; Smart, 2023). Therefore, the study tends to determine the perception of vocational teachers on innovative teaching and learning strategies required for enhancing students' learning outcomes in technical colleges in Rivers State.

Research Questions

The following research questions guided the study:

1. What are the perception of vocational teachers' on innovative teaching and learning strategies required for enhancing students' learning outcomes in technical colleges in Rivers State?
2. What are the innovative teaching and learning strategies required for enhancing students learning outcomes in technical colleges in Rivers State?

3. What are the challenges faced by vocational teachers' in implementing innovative teaching and learning strategies required for enhancing students' learning outcomes in technical colleges in Rives State?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

1. There is no significant difference in the mean responses of male and female vocational teachers regarding innovative teaching and learning strategies required for enhancing students' learning outcomes in technical colleges in Rivers State.
2. There is no significant difference in the mean responses of male and female vocational teachers regarding innovative teaching and learning strategies required for enhancing students' learning outcomes in technical colleges in Rivers State.
3. There is no significant difference in the mean responses of male and female vocational teachers regarding challenges faced by vocational teachers' in implementing innovative teaching and learning strategies required for enhancing students' learning outcomes in technical colleges in Rivers State.

Methodology

The study adopted descriptive survey design. According to Nworgu cited in Ekweremadu (2021) descriptive survey is aimed at or describing in a systematic manner, the characteristic feature or fact about a given population. The population of the study was 185 comprising (137 male teachers and 48 female teachers) from the four Rivers State government owned technical colleges. These technical colleges include GTC Port Harcourt, GTC Ahoada, GTC Ele-Ogu and GTC Tombia as at 2025/2026 academic session obtained from the office of the Vice Principals academics of various technical colleges. Simple random sampling technique was used to obtain from the population of male vocational teachers a sample of 100 teachers while all the 48 female vocational teachers where used in the study without sampling because their population size was considered manageable.

The instrument that was used for data collection for the study was a structured questionnaire which was developed by the researchers. The instrument was titled "Vocational Teachers' Perception on Innovative Teaching and Learning Strategies for Enhancing Students Learning Outcomes Questionnaire" (VTPITLSQ). The response category of the instrument adopted four (4) point rating scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD)

with corresponding values of 4, 3, 2 and 1 respectively. The instrument was face and content validated by three experts in Department of Industrial and Technology Education, Niger Delta University, Amassoma, Bayelsa State. The reliability of the instrument was determine through Cronbach's alpha reliability coefficient. A total of 20 respondents who were not part of the sample size were used in testing the reliability of the instrument. The reliability coefficient of 0.85 were obtained. A total of 148 copies of the instrument was administered to the respondents directly by the researchers with the help of five research assistants. The total number of the instrument retrieved after two weeks was 135 representing 91% retrival rate and was used for data analysis.

The data collected from the respondents were analyzed using mean and standard deviation while t-test was utilized to test the null hypotheses at 0.05 level of significance. In answering the research questions a cut-off point of 2.50 was used in taking decision. Thus, it was decided that an item with a calculated mean value equal or greater than 2.50 (2.50 - 4.00) was regarded as "Agree" while an item is regarded as "Disagree" if the mean falls below the criteria mean of 2.50. Standard deviation was used to show homogeneity of the responses of the respondents. In testing the null hypotheses if the calculated t-value is less than the critical t-value the hypotheses was accepted otherwise the hypotheses was rejected.

Result of the Findings

The results of the study are presented in Tables 1-6 in line with the research questions and hypotheses.

Research Question 1: What are the perception of vocational teachers' on innovative teaching and learning strategies required for enhancing students' learning outcomes in technical colleges in Rivers State?

Table 1: Mean and Standard Deviation Responses on the Perception of Vocational Teachers' Regarding Innovative Teaching and Learning Strategies required for Enhancing Students' Learning Outcomes

S/N	ITEMS	MALE TEACHERS' N = 95			FEMALE TEACHERS' N = 40		
		$\bar{X}$	SD	Remark	$\bar{X}$	SD	Remark
1.	Gamification can make learning more engageable and interactive.	3.15	0.85	Agree	3.00	0.81	Agree
2.	Project-based learning is an effective way to enhance students learning outcomes.	2.85	0.73	Agree	2.61	0.61	Agree
3.	Flipped classroom can improve students learning outcomes.	2.67	0.71	Agree	2.58	0.69	Agree

4.	Simulation-based learn can enhance students learning outcomes.	2.91	0.76	Agree	2.70	0.70	Agree
5.	Collaborative learning can enhance students' learning outcomes.	3.25	0.85	Agree	2.65	0.78	Agree
6.	Field trip-based learning is an effective way to enhance students learning outcomes.	2.80	0.71	Agree	2.54	0.70	Agree
7.	Problem-based learning can enhance students outcomes.	3.00	0.72	Agree	2.61	0.72	Agree
8.	Inquiry-based learning can promote communicative skills of students.	2.67	0.70	Agree	2.53	0.69	Agree
9.	Online and balanced learning can enhance students learning outcomes.	3.05	0.73	Agree	2.82	0.73	Agree
10.	Adaptive learning can enhance students' learning outcomes.	2.83	0.72	Agree	2.68	0.72	Agree
	Average Mean/SD	**2.92**	**0.75**		**2.67**	**0.71**	

Source: Field Survey, 2025

The results in Table 1 indicated that all the ten items were rated as "Agree" by the respondents. The grand mean scores of 2.92 and 2.67 for both male and female vocational teachers' show that the respondents agreed that there are innovative teaching and learning strategies that are required for enhancing students' learning outcomes in technical colleges in Rivers State. The standard deviation which ranged from 0.70 to 0.85 indicates closeness in the opinion of both categories of respondents.

Research Question 2: What are the innovative teaching and learning strategies required for enhancing students learning outcomes in technical colleges in Rivers State?

Table 2: Mean and Standard Deviation Responses on Teachers' Regarding Innovative Teaching and Learning Strategies for enhancing students learning outcomes

S/N	ITEMS	MALE TEACHERS' N = 95			FEMALE TEACHERS' N = 40		
		$\overline{X}$	SD	Remark	$\overline{X}$	SD	Remark
11.	Interactive lesson.	3.00	0.83	Agree	2.87	0.81	Agree
12.	Personalized learning.	2.91	0.75	Agree	2.63	0.69	Agree
13.	Peer teaching.	3.05	0.85	Agree	2.67	0.70	Agree
14.	Collaborative learning.	2.85	0.71	Agree	2.53	0.67	Agree
15.	Technology-integrated learning.	2.70	0.70	Agree	2.51	0.65	Agree
16.	Project-based learning.	3.01	0.80	Agree	2.50	0.62	Agree
17.	Jigsaw-Technique	2.63	0.78	Agree	2.61	0.68	Agree
18.	Active learning	2.74	0.79	Agree	2.54	0.65	Agree
19.	Design thinking process.	2.83	0.72	Agree	2.55	0.63	Agree
20.	Problem-based learning.	2.84	0.73	Agree	2.57	0.64	Agree
	Average Mean/SD	**2.86**	**0.77**		**2.60**	**0.68**	

Source: Field Survey, 2025

The results in Table 2 indicated that all the ten (10) items were rated as "Agree" by the respondents. The grand mean scores of 2.86 and 2.60 for both male and female vocational teachers' show that the respondents agreed that there are most effective innovative teaching and learning strategies that can enhance students' learning outcomes in technical colleges in Rivers State. The standard deviation which ranged from 0.62 to 0.85 indicates closeness in the opinion of both categories of respondents.

Research Question 3: What are the challenges faced by vocational teachers' in implementing innovative teaching and learning strategies required for enhancing students' learning outcomes in technical colleges in Rives State?

Table 3: Mean and Standard Deviation Responses on the Perception of Vocational Teachers' on challenges faced by teachers in implementing Innovative Teaching and Learning Strategies required for Enhancing Students' Learning Outcomes

S/N	ITEMS	MALE TEACHERS' N = 95			FEMALE TEACHERS' N = 40		
		X	SD	Remark	X	SD	Remark
21.	Lack of training and support.	3.02	0.85	Agree	2.87	0.84	Agree
22.	Limited resources.	2.81	0.79	Agree	2.67	0.81	Agree
23.	Large class size.	2.83	0.80	Agree	2.67	0.82	Agree
24.	Time constraints	2.74	0.78	Agree	2.59	0.70	Agree
25.	Resistance to change	2.80	0.81	Agree	2.53	0.68	Agree
26.	Lack of infrastructure	2.63	0.75	Agree	2.51	0.66	Agree
27.	Assessment and evaluation challenges	2.71	0.76	Agree	2.61	0.70	Agree
28.	Poor internet network.	2.58	0.73	Agree	2.58	0.69	Agree
29.	Lack of technological resources.	2.91	0.83	Agree	2.63	0.74	Agree
	Average Mean/SD	**2.78**	**0.78**		**2.54**	**0.61**	

Source: Field Survey, 2025

The results in Table 3 indicated that all the nine (9) items were rated as "Agree" by the respondents. The grand mean scores of 2.78 and 2.54 for both male and female vocational teachers' show that the respondents agreed that there are challenges teachers faced in implementing innovative teaching and learning strategies that are required for enhancing students' learning outcomes in technical colleges in Rivers State. The standard deviation which ranged from 0.60 to 0.85 indicates closeness in the opinion of both categories of respondents.

Hypothesis 1: There is no significant difference in the mean responses of male and female vocational teachers regarding innovative teaching and learning strategies required for enhancing students' learning outcomes in technical colleges in Rivers State.

Table 4: t-test Analysis Responses Regarding Innovative Teaching and Learning Strategies required for Enhancing Students' Learning Outcomes

Respondents	N	$\bar{x}$	SD	Df	p	t-cal.	t-crit.	Decision
Male Teachers	95	2.92	0.75					
				133	0.05	0.05	1.96	Accepted
Female Teachers	40	2.67	0.71					

Table 4 revealed that 95 male teachers had a mean rating of 2.92 (SD = 0.75) and the 40 female teachers' had a mean rating of 2.67 (SD = 0.71) yielding a calculated t-value of 0.05 with the calculated t-value of 0.05 less than the critical t-value of (1.96) at df = 133 and 0.05 level of significance. The first null hypothesis was therefore accepted. The implication of the result is that both categories of respondents hold the same opinion regarding innovative teaching and learning strategies required for enhancing students' learning outcomes in technical colleges in Rivers State.

Hypothesis 2: There is no significant difference in the mean responses of male and female vocational teachers' regarding most effective innovative teaching and learning strategies required for enhancing students' learning outcomes in technical colleges in Rivers State.

Table 5: t-test Analysis of Responses regarding Most Effective Innovative Teaching and Learning Strategies required for Enhancing Students' Learning Outcomes

Respondents	N	$\bar{x}$	SD	Df	p	t-cal.	t-crit.	Decision
Male Teachers	95	2.86	0.77					
				133	0.05	0.08	1.96	Accepted
Female Teachers	40	2.60	0.68					

Table 5 revealed that 95 male teachers' had a mean rating of 2.86 (SD = 0.77) and the 40 female teachers' had a mean rating of 2.60 (SD = 0.68) yielding a calculated t-value of 0.08 with the

calculated t-value of 0.08 less than the critical t-value of (1.96) at df = 133 and 0.05 level of significance. The second null hypothesis was therefore accepted. The implication of the result is that both categories of respondents hold the same opinion regarding most effective innovative teaching and learning strategies required for enhancing students' learning outcomes in technical colleges in Rivers State.

Hypothesis 3: There is no significant difference in the mean responses of male and female vocational teachers' regarding challenges faced by vocational teachers' in implementing innovative teaching and learning strategies required for enhancing students' learning outcomes in technical colleges in Rivers State.

Table 6: t-test Analysis Responses Regarding Challenges faced by Teachers' in Implementing Innovative Teaching and Learning Strategies required for Enhancing Students' Learning Outcomes

Respondents	N	$\bar{x}$	SD	Df	p	t-cal.	t-crit.	Decision
Male Teachers	95	2.78	0.78					
				133	0.05	0.11	1.96	Accepted
Female Teachers	40	2.54	0.61					

Table 6 revealed that 95 male teachers' had a mean rating of 2.78 (SD = 0.78) and the 40 female teachers' had a mean rating of 2.54 (SD = 0.61) yielding a calculated t-value of 0.11 with the calculated t-value of 0.11 less than the critical t-value of (1.96) at df = 133 and 0.05 level of significance. The third null hypothesis was therefore accepted. The implication of the result is that both categories of respondents hold the same opinion regarding challenges that teachers are facing in implementing innovative teaching and learning strategies required for enhancing students' learning outcomes in technical colleges in Rivers State.

Discussion of Findings

Perception of Vocational Teachers on Innovative Teaching and Learning Strategies Required for Enhancing Students in Technical Colleges in Rivers State

Data presented in Table 1 indicated that gamification, project-based learning, flipped classroom, simulation-based learning, collaborative learning, field trip-based learning, online and balanced learning and adaptive are innovative teaching and learning strategies that can enhance students learning outcomes in technical colleges in Rivers State. The finding is in agreement with the view of Odukwu and Oferemba (2019) who noted that innovative teaching and learning strategies are essential in enhancing learning outcomes because they improve students' engagement, enhance knowledge retention, develop critical thinking and problem-solving skills, prepare students' for the future and as well improve teacher-students' relationship. This is also in line with Kelvin and Charles (2021) who posited that innovative teaching and learning strategies in teaching and learning process that can enhance students' learning outcomes include; project-based learning, simulation-based learning, problem-based learning, online and balance learning, fieldtrip-based learning and collaborative learning.

Innovative Teaching and Learning Strategies Required for Enhancing Students Learning Outcomes in Technical Colleges in Rivers State

Data presented in Table 2 on innovative teaching and learning strategies required for enhancing students' learning outcomes in technical colleges in Rivers State revealed that interactive lesson, personalized learning, collaborative learning, technology-integrated learning, project-based learning, jigsaw-technique, active learning, design thinking process and problem-based learning are the most effective innovative teaching and learning strategies that can enhance students learning outcomes in technical colleges in Rivers State. This is in conformity with the view of Mathew and Elekwachi (2023) who stated that the most effective innovative teaching and learning strategies that teachers' must adopt in order to enhance students' engagement and learning outcomes during teaching and learning process include; interactive lesson, personalized learning, peer teaching, project-based learning and collaborative learning. This is also in line with Raji and Kamalu (2019) who outline the following as effective innovative teaching and learning strategies that can enhance students' learning outcomes during teaching and learning process; technology-integrated learning, jigsaw technique, active learning, design-thinking process and problem-based learning strategies.

Challenges Faced By Vocational Teachers in Implementing Teaching and Learning Strategies in Technical Colleges in Rivers State

Data presented in Table 3 on challenges faced by vocational teachers' in implementing innovative teaching and learning strategies in technical colleges in Rivers State revealed that lack of training and support, limited resources, large class size, time constraints, resistance to change, lack of infrastructure, assessment and evaluation challenges, lack of technological resources and poor internet network are major challenges that vocational teachers' are facing in implementing innovative teaching and learning strategies in technical colleges in Rivers State. This finding is in agreement with Akwube and Ukwe (2021) who outlined the following as major challenges that vocational teachers' are facing in implementing innovative teaching and learning strategies; lack of training and support, time constraints, resistance to change and lack of infrastructure. This is also in line with Okwuchukwu and Nwaga (2024) who stated that assessment and evaluation challenges, large class size and limited resources are major challenges that are usually faced by teachers' in implementing innovative teaching and learning strategies in most Nigerian schools. The results of the 3 hypotheses tested showed that all the 3 hypotheses were not rejected. This further showed in the opinions of the respondents that there were no divergent opinion on the raised issues in the research bothering on effective innovative teaching and learning strategies that can enhance students' learning outcomes in technical colleges in Rivers State.

Conclusion

Based on the findings of this study, it can be concluded that vocational teachers in technical colleges in Rivers State are generally aware of innovative teaching and learning strategies and recognized the importance in enhancing students learning outcomes. Teachers perceive that strategies such as project- based learning, simulation, collaborative learning and ICT-based instruction have the potential to improve students practical skills, creativity, critical thinking and employability in line with industry demands.

Recommendations

Based on the findings of the study the following recommendations are offered;

1. Teachers' should ensure that they adopt fully the use of innovative teaching and learning strategies during teaching and learning process as to achieve educational objectives.

2. Effective innovative teaching and learning strategies that will motive students' to learn such as project-based learning and problem-based learning should be adopted regularly by teachers during teaching and learning process.
3. Adequate training and support should be given to teachers' by the government in order to encourage them to adopt innovative teaching and learning strategies during teaching and learning process that can enhance students' learning outcomes in Nigerian schools.
4. Government and school authorities should as a matter of urgency ensure that regular workshop programme/seminar are regularly organized for teachers as to up-date their knowledge on current innovative teaching and learning strategies.

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