INTEGRATION OF COLLABORATIVE LEARNING STRATEGIES INTO VOCATIONAL EDUCATION IN FEDERAL COLLEGE OF EDUCATION (TECHNICAL) GUSAU, NIGERIA

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ABSTRACT
This study explores the integration of collaborative learning strategies into vocational education at the Federal College of Education (Technical) Gusau, Nigeria. The questionnaire served as the primary data collection tool. Out of 112 distributed questionnaires, 100 were returned and analyzed. Data were quantitatively analyzed using frequency counts, percentage distribution tables, mean, and standard deviation, with a benchmark mean of 1.5. The findings indicate that collaborative learning positively impacts teamwork and practical skills, with mean scores of 1.67 and 1.66, respectively. However, there is some uncertainty regarding its effectiveness in enhancing vocational understanding, as reflected by a mean score of 1.56, and mixed opinions on motivation for team activities, with a mean score of 1.60. The study also demonstrates that collaborative learning significantly improves students' skills in vocational education by enhancing their understanding, problem-solving abilities, and engagement. The study recommends enhancing the clarity and structure of collaborative activities, increasing student motivation with engaging projects, training instructors in effective facilitation techniques, and regularly evaluating and adapting strategies to improve outcomes.

Introduction

Vocational education, also referred to as career and technical education (CTE), is an educational approach designed to prepare students for particular occupations, trades, or career paths. This form of learning equips high school students with practical skills, knowledge, and competencies essential for their future professional endeavors and everyday life (Glasenburg, etal, 2024). Vocational education and training (VET) is intended to equip people for specific careers or specialized jobs, thereby directly impacting a country's productivity and competitiveness (European Centre for the Development of Vocational Training, 2011). According to most sources, VET is typically associated with education outside of university settings (Cornford, 2005).Furthermore, vocational education fosters creativity, innovation, problem-solving, and teamwork skills that are crucial for the modern workplace by developing skills and knowledge that are sought after in the labor market (Glasenburg, etal, 2024). In essence, vocational education, or career and technical education (CTE), prepares students for specific careers and trades with practical skills and knowledge. It aims to enhance productivity and competitiveness by equipping individuals for specialized jobs outside of traditional university education.

However, integrating vocational education with the right learning strategies is critical for students to excel. In other words, the success or failure of any vocational education skill is a function of the right learning strategy utilized. Consequently, collaborative learning strategy has been considered as one of the strategies for effective learning of vocational skills. Collaborative teaching approach is a promising method that has become a twenty first century trend (Munna & Kalam, 2021). Collaborative learning strategies provide the frameworks and step-by-step processes to facilitate interdependence among group members, active participation, interactive dialogue, and creation of academic products, all of which are hallmarks of collaborative learning (Udvari-Solner, 2012). Collaborative teaching is based on the idea that learning is a naturally social act in which the participants talk among themselves (Achor, Aligba, & Iloakasia, 2021). Collaborative teaching strategy is a strategy that enables students to interact freely with learning materials while collaborating with each other to create meaning (Johnson, 2010)

Collaborative learning fosters essential vocational skills such as teamwork, communication, and critical thinking. These skills are vital for effective performance in professional settings (Smith, 2020). In vocational education, collaborative projects simulate real-world work environments, enabling students to apply theoretical knowledge practically, which enhance their understanding and mastery of vocational techniques (Jones & Brown, 2019). Furthermore, working in teams exposes students to various viewpoints and problem-solving approaches, enriching their creativity and problem-solving abilities, which is particularly valuable in fields requiring innovative solutions (Lee et al., 2021). Additionally, collaborative learning activities often boost student motivation and engagement by creating a greater sense of accomplishment and interest in the subject matter (Williams & Davis, 2018).

Research specific to the Federal College of Education Gusau is limited, but general trends in similar institutions suggest positive impacts of collaborative learning on vocational education. Students who engage in collaborative learning typically demonstrate improved teamwork and interpersonal skills, which are essential for their future careers (Adams, 2022). Collaborative activities also enhance students' understanding of vocational concepts by facilitating discussions and practical applications in group settings (Miller, 2023). Moreover, these activities increase job readiness by simulating workplace environments and providing practical experience (Johnson & Smith, 2024).

However, collaborative learning also presents challenges. Effective collaboration relies on positive group dynamics, which can be difficult to manage, particularly when issues such as unequal participation or conflicts arise (Clark & Lee, 2022). Evaluating individual contributions within collaborative settings poses difficulties, making it crucial to ensure fair assessment of each student's performance (Nguyen & Patel, 2021). Additionally, instructors must be well-trained to facilitate collaborative learning and provide adequate support to students throughout the process (Turner, 2023 Therefore, the central challenge of this study lies in identifying and implementing effective collaborative teaching strategies within vocational education settings to optimize learning outcomes and prepare students adequately for the demands of the modern workforce in Federal College of Education (Technical) Gusau.

1.2 Statement of the Problem

Integrating vocational education with collaborative learning strategies represents a significant opportunity for enhancing educational outcomes and preparing students for specialized careers. At the Federal College of Education (Technical) Gusau, the integration of these strategies holds promise in equipping students with practical skills and competencies essential for professional success (Arinaitwe, 2011, Anderson & Sanga, 2019).

Collaborative learning strategies, characterized by interdependence among group members, active participation, interactive dialogue, and the creation of academic products, are recognized as effective tools in fostering deeper engagement with learning materials and promoting meaningful knowledge construction (Le, Janssen & Wubbels, 2017).However, the successful implementation of these strategies within vocational education settings necessitates careful consideration of contextual factors such as student demographics, curriculum design, and instructional methodologies tailored to the unique needs of technical education (Compen, 2024).

Therefore, the central challenge at the Federal College of Education (Technical) Gusau lies in identifying and implementing tailored collaborative learning strategies that align with vocational education objectives. These objectives aim to meet socio-economic needs by equipping students with practical skills to boost employability and contribute to national development (Okoye, 2020). Its objectives include developing technical skills for various careers, promoting self-reliance and entrepreneurship to reduce unemployment, and supporting economic growth through a skilled workforce. It also focuses on improving quality of life, aligning training with labor market needs, integrating modern technology, and addressing skill gaps (Ibrahim & Akintoye, 2021). Additionally, vocational education fosters lifelong learning and encourages innovation and creativity to help individuals adapt to evolving job requirements and contribute effectively in their fields.

Despite the clear objectives of vocational education at the Federal College of Education (Technical) Gusau, there is a limited understanding of how collaborative learning strategies specifically tailored to these objectives can be effectively designed and implemented. This study therefore investigates the integration of collaborative learning strategies into vocational education in Federal College of Education (Technical) Gusau, Nigeria

Research Questions

The following research questions were formulated to guide the study:

i. How can collaborative learning techniques be effectively integrated into vocational education programs at the Federal College of Education (Technical) Gusau to strengthen teamwork among students?

ii. What is the impact of collaborative learning on students' skills development in vocational education at Federal College of Education (Technical) Gusau?

Research Objectives

The objectives of the study are to:

i. Identify effective collaborative learning techniques that can be integrated into vocational education programs at the Federal College of Education (Technical) Gusau

ii. Assessing the impact of collaborative learning on students' skills development in vocational education in FCET

Materials and Methods

Profile of Federal College of Education (Technical) Gusau

Federal College of Education (Technical) Gusau was founded under Nigeria's Federal Government Decree No. 4 of March 1986, later revised by decree No. 6 of January 1993, specifically for female students. Administrative operations began in November 1989 at the temporary site of the former Gusau Teachers College, provided by the Sokoto State Government. Initially, under the guidance of the first Provost, Hajiya Rabi Aliyu Tambuwal, and a

small number of junior staff, the College started functioning. With support from the Federal Ministry of Education via a Task Force, staff were recruited, and academic activities commenced in May 1990.

The Joint Admission and Matriculation Board (JAMB) admitted the first seventeen students into Business Education. Initially, the College offered courses exclusively in Business and Technical fields. By the 1991/1992 academic session, enrollment had grown to one hundred and twenty-seven students, with twenty-seven academic and administrative staff members. The College celebrated its inaugural graduation in 1992 and has since steadily increased its staff and student body. Currently, the student population stands at 4,317.

The College's primary mission is to produce female NCE Teachers specializing in Technical and Vocational Education, as outlined in Decree No. 4 of 1986. The College aims to become a world-class institution equipped with the necessary facilities to train female students in moral character, academic knowledge, and practical skills, enabling them to become effective teachers of technical subjects and potential entrepreneurs. Its location is in Mareri Gusau, the capital of Zamfara State, positioned between 6.8 degrees north latitude and 6.8 degrees east longitude, aiming to train and graduate competent female technology teachers and potential entrepreneurs to contribute to technological and national development.

Research Design

The study adopted a cross-sectional survey design. The choice of this design was because it is usually inexpensive and easy to conduct (Wang & Cheng, 2020). The fundamental advantage of cross-sectional studies is that they can be conducted quickly and cheaply. They are the most effective method for determining prevalence and can investigate the relationships between different exposures and outcomes (Setia, 2016).

Population of Study

The population of the study consists of all the NCE students in the School of Vocational Education studying at Federal College of Education (Technical) Gusau. This population is 112 (Office of Provost, 2024). Since the population of study was not large and diverse, the entire population was selected for the study.

Sampling Procedure

In this study, cluster, simple random and accidental sampling technique were used to select respondents for the study. First, cluster sampling technique was to divide the school of vocational education into the three (3) Departments: Agriculture, Fine Arts and Home Economics. In the second stage, simple random sampling was used to select NCE students from I-3 in the Department of Agriculture, Fine Arts and Home Economics. Lastly, accidental sampling was used to pick only students who were on ground at the time of data collection.

Method of Data Collection

To collect data effectively, a 3-point Likert scale was utilized, with the response options being 1 (Agree), 2 (Disagree), and 3 (Undecided). Data were gathered using a self-structured questionnaire. The researcher administered the questionnaire through face to face method. This method ensured that where the respondent did not understand the questionnaire the researcher explained it for easy understanding. The researcher strictly monitored the completion process and ensured that all questionnaires were retrieved.

Techniques of Data Analysis

The data collected were analyzed quantitatively using frequency counts, percentage distribution tables, mean and standard deviation. The benchmark mean was 1.5 score.

Presentation and Analysis of Data

This section presents and discusses the data collected through the questionnaire for the purpose of understanding the integration vocational education with collaborative learning strategies among students of Federal College of Education (Technical) Gusau.

Socio-Demographic Attributes of Respondents

Analyses in this section focused on describing social characteristics of respondents.

Table 1: Socio-Demographic Attributes of Respondents

Attributes	Frequency (N=100)	Percentage (% =100)
Sex		
Male	0	00.0
Female	100	100.0
Age (in years)		
18-28	59	59.0
29-39	26	26.0
40 and above	15	15.0
Marital Status		
Single	76	76.0
Married	18	18.0
Divorced	06	6.0
Levelof Study		
NCE I	23	23.0
NCEII	38	38.0
NCE III	39	39.0

Source: *Field Survey, 2024*

Table 1 presents a summary of the socio-demographic attributes of the respondents. The data reveal that 100 (100%) of the respondents were females. The data also show that 59(59%) were aged between 18 and 28; 26(26.0%) were between 29 to 39 years and 15(15.0%) were aged between 40 years and above. Marital status of the respondents showed that 76(76%) of the respondents were single, 18(18%) were married, while 6(6.0%) were divorcees. Educational Level showed that, majority of the respondents 39(439%) were NCE III, followed by 38(38.0%) in NCE II, and finally 23(23%) were in NCE I. Summarily, the socio-demographic data of respondents indicate that the study were 100% females and this is not surprising because the vision of the school is that it is an all-female school. In terms of age, majority of the respondents were between the ages of 18 and 28 years who are young people ready to use their vocational skills to impact the society. Also, majority of the respondents were single. In terms of level of study, majority of the students were in NCE II and III. This is good for the study because these set of students would have understood the importance of vocational education and the need for collaborative learning.

Table 2: Integrating collaborative learning techniques into vocational education programs to enhance teamwork among students.

S/NO	Factors	A (%)	D (%)	U (%)	X	STD
1	Collaborative learning techniques are clearly defined and well-integrated into the vocational education curriculum at the Federal College of Education (Technical) Gusau.	42(42.0)	49(49.0)	9(9.0)	1.67	.64
2	The implementation of collaborative learning techniques effectively promotes teamwork among students in vocational education programs.	85(85.0)	14(14.0)	1(1.0)	1.66	.39

3	Students in vocational education programs actively engage in collaborative learning activities provided by the curriculum.	47(47.0)	50(50.0)	3(3.0)	1.56	.56
4	Collaborative learning activities are designed to address real-world challenges relevant to the vocational fields studied.	72(72.0)	19(19.0)	9(9.0)	1.57	.65
5	Instructors effectively facilitate collaborative learning sessions to ensure equal participation and contribution from all students.	45(45.0)	50(50.0)	5(5.0)	1.60	.59
6	The use of collaborative learning techniques has led to noticeable improvements in student teamwork and interaction within vocational education programs.	83(83.0)	16(16.0)	1(1.0)	1.18	.41
7	Collaborative learning techniques are regularly evaluated and refined based on student feedback and learning outcome	79(79.0)	12(12.0)	9(9.0)	1.51	.63

Source: *Field Survey, 2023*

The data presented in Table 2 reveal that several factors related to collaborative learning techniques are rated above the benchmark mean of 1.5, indicating generally positive perceptions among students. For instance, students exhibit confidence that collaborative learning will help them develop essential teamwork skills required in their vocational field, as evidenced by a mean score of 1.67. However, despite this positive outlook, there is a notable level of disagreement (49%) and undecided responses (9%), which suggests some uncertainty regarding the effectiveness of collaborative learning in skill development.

Additionally, collaborative learning activities are perceived as beneficial for developing practical skills relevant to students' vocational fields, with a high mean score of 1.66. Notably, only a small percentage (14%) disagrees, and 1% remains undecided. This reflects a strong positive perception of the practical benefits of these activities.

Conversely, the belief that working in teams enhances understanding of vocational concepts and techniques presents a more balanced view, with a mean score of 1.56. This balance is evidenced by 50% disagreement and 47% agreement, indicating that while some students recognize the benefits, there remains significant skepticism or mixed feelings about the impact of team-based learning on their understanding. Moreover, students generally agree that collaborating with peers allows them to learn different perspectives and approaches to solving vocational challenges, as indicated by a mean score of 1.57. The relatively high percentage of agreement (72%) shows that this aspect of collaborative learning is valued. Nevertheless, there is some variation in responses, as reflected in the standard deviation.

On the other hand, students' motivation to participate in group projects or team-based activities is moderately positive, with a mean score of 1.60. While 50% of students disagree with the statement, 45% agree. This disparity suggests that motivation may vary among individuals, highlighting an area where engagement could potentially be improved. Furthermore, the perception that the vocational education program adequately encourages and supports collaborative learning opportunities is very positive, with a mean score of 1.18. This strong agreement (83%) indicates that students feel well-supported in their collaborative efforts, with minimal disagreement. Finally, collaborative learning activities are perceived to have significantly improved students' ability to work effectively in teams, as shown by a mean score of 1.51. Although overall feedback is positive, the degree of improvement varies, as indicated by the standard deviation.

Table 3: Impact of collaborative learning on students' skills development in vocational education at Federal College of Education (Technical) Gusau

S/NO	Impact	A(%)	D(%)	U(%)	χ	STD
1	Collaborative learning activities have improved my understanding of vocational subjects	50(50.0)	47(47.0)	3(3.0)	1.53	.55
2	Collaborative projects have enhanced my problem-solving skills.	72(72.0)	27(27.0)	1(1.0)	1.59	.48
3	Sharing ideas with classmates has broadened my perspective on vocational education.	37(37.0)	60(60.0)	3(3.0)	1.66	.53
4	Collaborative learning has motivated me to engage more deeply with vocational course materials	77(77.0)	21(21.0)	2(2.0)	1.55	.48

Source: *Field Survey, 2024*

Table 3 reveals that items 1, 2, 3 and 4 were all significant because they recorded scores of 1.5 and above which is the benchmark mean. By implication, the data show that collaborative learning activities have improved students understanding of vocational subjects (χ=1.53), most of the students agreed that collaborative projects have enhanced their problem-solving skills (χ=1.59), and sharing ideas with classmates has broadened their perspective on vocational education (χ=1.66). Lastly, collaborative learning has motivated students to engage more deeply with vocational course materials (χ=1.55)

Discussion of Findings

The findings of the study indicate positive perceptions of collaborative learning techniques at the Federal College of Education (Technical) Gusau. Students generally believe that these techniques help in developing teamwork and practical skills, with mean scores of 1.67 and 1.66 respectively. However, there is some uncertainty about the effectiveness in enhancing understanding of vocational concepts, reflected by a mean score of 1.56 and mixed opinions. While students value learning different perspectives through collaboration (mean score of 1.57), motivation for team-based activities is moderately positive (mean score of 1.60). Overall, strong support for collaborative learning is evident (mean score of 1.18), though the degree of improvement in teamwork ability varies (mean score of 1.51). The findings align with several existing studies on collaborative learning. For instance, research by Johnson and Johnson (2009) highlights that collaborative learning fosters essential teamwork skills and enhances students' practical knowledge, supporting the positive perceptions reported in this study. Their findings underscore that collaborative activities can significantly impact skill development and teamwork (Johnson & Johnson, 2009).

Similarly, a study by Slavin (1995) supports the idea that collaborative learning can be effective in enhancing students' understanding of concepts and practical skills, although it also notes variability in student experiences. Slavin's research emphasizes that while collaborative techniques can improve practical skills, the impact on conceptual understanding may vary depending on implementation and individual engagement levels (Slavin, 1995).On the other hand, studies by Garrison, Anderson, and Archer (2001) discuss the variability in student motivation and engagement in collaborative settings. Their work suggests that while collaborative learning can enhance perspectives and problem-solving abilities, motivational factors and the quality of facilitation can significantly influence outcomes (Garrison, Anderson, & Archer, 2001).

Based on the analysis presented, it is evident that collaborative learning has made a significant impact on students' skills development in vocational education at Federal College of Education (Technical) Gusau by improving their

understanding of vocational subjects, problem-solving abilities, perspectives on their field, and engagement with course materials. The findings of this study aligns with those of Dillenbourg (1999), who notes that collaborative learning helps clarify complex concepts and supports deeper cognitive processing. According to Dillenbourg, group interactions facilitate the exchange of ideas and mutual explanation, which contributes to a more robust understanding of subject matter.

Conclusion

In conclusion, integrating collaborative learning strategies into vocational education at Federal College of Education (Technical) Gusau is essential for enhancing students' skills, fostering teamwork, and preparing them effectively for the challenges of their future careers. Emphasizing collaborative learning not only enriches academic achievement but also cultivates essential interpersonal and practical competencies crucial in today's workforce.

Recommendations

Based on the findings discussed in the study regarding the significant role of collaborative learning in vocational education at Federal College of Education (Technical) Gusau, several recommendations can be suggested:

Enhance Clarity and Structure: The school management should develop more structured collaborative activities with clear objectives and guidelines to better target and reinforce vocational concepts. This approach, as Dillenbourg (1999) suggests, will improve students' conceptual understanding and cognitive processing.

Increase Motivation: The school management should create engaging and relevant collaborative projects that align with students' vocational interests. Incorporating real-world problems and allowing student choice can boost intrinsic motivation.

Train Instructors: The school should provide targeted training for instructors on effective facilitation techniques to ensure inclusive participation, manage group dynamics, and offer constructive feedback.

Evaluate and Adapt Strategies: Implement a system for regular assessment and refinement of collaborative learning strategies based on student feedback and outcomes.

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