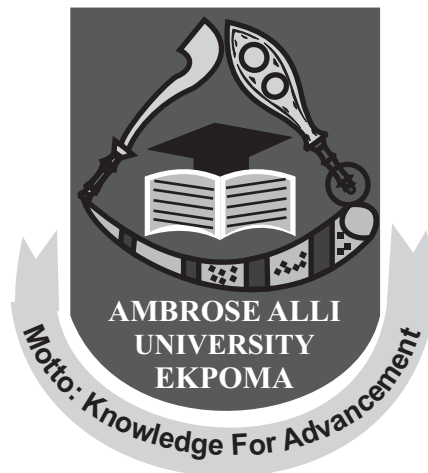


ISSN: 1117-2398

STUDIES IN EDUCATION

Vol. 22 Number 1, September, 2024



OFFICIAL JOURNAL OF THE FACULTY OF EDUCATION
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**ASSESSING THE RELEVANCE OF CONCEPT AND OBJECTIVE OF ACCOUNTING EDUCATION ON THE PROSPECT OF BUSINESS EDUCATION PROGRAM IN DIGITAL ERA IN NIGERIA.
(CASE STUDY OF AHMADU BELLO UNIVERSITY, ZARIA)**

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Abstract

The study focuses on the assessment of the concept and objective of Accounting Education on the prospect of Business Education program in the digital era in Nigeria. Two research objectives, two research questions and two research hypotheses were developed for the study. Survey research design was adopted, the population of the study was 403 business Education students of undergraduate, and Postgraduate as well as lecturers of Ahmadu Bello University. It was purposively sampled to the postgraduate students and Lecturers. A questionnaire instrument tagged “Concept and Objectives of Accounting Education in Business Education Instrument (COAEBEI)” using Linkert scale was used to collect data. The data collected was analyzed and tested using Regression. The Hypotheses were tested at alfa equals to 0.05 level. The first Null Hypothesis was retained while the later was rejected and the finding is that concept of accounting education in the digital era has no relevance on the prospect of Business Education program, but the objectives of Accounting education has contextual relevance in Business Education program.

Keywords: Assessment, Concept, Objective, Prospect and Digital era

Introduction

Education is the training of the mind in the understanding of the world around; and for the acquisition of appropriate skills, abilities and competence both mental and physical as equipment for the individual to live in and contribute to the development of the society. Education is to be qualitative, comprehensive, functional and relevant to the needs of the society: development of the individual into a sound and effective citizen and the provision of equal opportunities for all citizens of the nation at the basic, secondary and tertiary levels (FRN2014; Adebisi, 2014).

Business education as that aspect of educational training which an individual receives with the primary motive of enabling him to acquire adequate attitudes, concepts, knowledge, understanding and skills in business activities for vocational usage in careers as an administrator, manager or teacher wherever he may find himself in the business world (Okoye & Ashibogwu 2018). According to Njoku (2006), he defined business education as an educational programme that equips an individual with functional and suitable skills, knowledge, attitude and value that would enable him/her operate in the environment he/she finds himself/herself. Accounting Education is an option area in Business education programme. Other options are: accounting Education, Office Technology Management Education (OTME), Marketing and Distributive Education and Entrepreneurship Education.

Concept of Accounting Education

The philosophy of accounting education is the achievement of self-reliance and sustainable development. The acquisition of knowledge, skills, attitude and competencies appropriate for paid-employment and self-employment in a dynamic world, is the integral part of business education/vocational education which prepares individual students, youth to acquire knowledge, skills, understanding, attitude and competencies for gainful employment. Accounting education can be described as the process of giving systematic instructions to enlighten the students, accountants and other accounting personals, (Akpan, 2023).

Accounting education is an aspect of business education involving practical accounting skill and knowledge in addition to general education. It involves the study of acquisition of practical skills, knowledge, attitudes, understanding and competencies relating to professional occupations in some sectors of economic and social life and effectively participating in the world of work (Akpan, 2023).

Accounting education, according to Isaac, Ibe Bassey and Evanson (2007) is a programme designed and aimed at developing skills, knowledge, and understanding that are necessary to facilitate financial information control and processing. It provides individuals opportunity for the acquisition of relevant skills, abilities and competences both mental and physical equipment for the individual to

live in and contribute to the development of the nation. Accounting education incorporates a package of instructional programmes prepared to educate and enlighten “would be” accountants in the field of education, to make them versatile and adaptable to the numerous roles they may be required to play after graduation. It attempts to develop concepts, skills, rules, theories, procedures and general knowledge for solving accounting problems. It further emphasizes the ability to differentiate and integrate alternative problem solving perspectives, the ability to identify accounting related information resources, the ability to proffer solutions to problems, develop communication skills and the ability to analyze, interpret problem situations and figure out lasting solutions (Okafor, 2012; Otamiri & Ochi, 2023).

The concept and objectives of accounting education in Nigeria tertiary institutions are designed to produce high-quality accounting graduates who can meet the needs of businesses, government, and other organizations. Accounting education endeavors to fulfill the requirements of the labour market by equipping individuals with the necessary skills and knowledge to become proficient professionals capable of effectively adjusting to fluctuations in the business landscape (Adekunle & Udechukwu, 2018).

The relevance of accounting education stems from the intrinsic value of accounting as a discipline and its possible societal advantages within its operational context. Key features of accounting education

encompass the provision of comprehensive accounting knowledge to prepare and certify accounting personnel, the facilitation of continuous professional development for accounting practitioners across diverse economic sectors, the identification of programme and training requirements to address the challenges faced by economic entities, and the enhancement of the accounting profession through the creation of contemporary scientific curricula (Eze, 2020; (Adekunle & Udechukwu, 2018).

Objectives of Accounting Education in Nigerian University

As outlined by BMAS in Okafor (2012), National Universities Commission is the chief regulator that gives a benchmark minimum academic standard (BMAS) for program including accounting. Objectives of accounting education are:

1. Ability to recognize and analyze accounting and management problem and evolve strategies for the solutions
2. Ability to recognize and implement good accounting management policies
3. Computational and processing skill relating to accounting, financial and manpower data
4. Ability to demonstrate knowledge and understanding of essential facts, concept and principle and apply theories to accounting and management.
5. Understand their cultural environment which they find themselves and how such environment condition their behavior.

6. Be able to understand, explain, predict and influence human behavior in work organization
7. Observe the ethical conduct in consonance with the provision of professional accounting standard and financial reporting council of Nigeria.
 - i. Specifically BMAS for the first degree accounting program provides for foundation courses in economics, humanities, management sciences and general administration
 - ii. Courses to develop communication and analytical skills which include the use of engine base mathematics, statistic, business lair and communication technologies (ICT)
 - iii. Courses to develop specific accounting skills like financial accounting auditing and investigation, taxation, public sector accounting, international accounting and financial management.
 - iv. Courses in research methodology to develop analytical research skills and
 - v. Industrial attachment for exposure to practical job experience.

Challenges of Accounting Education in Nigeria Tertiary Institutions

Accounting education is facing a lot of challenges ranging from outdated curricula that do not reflect changes in the accounting profession, inadequate teaching facilities and resources, including outdated textbooks and lack of access to accounting software, understaffing and inadequate training of

accounting educators, leading to a lack of qualified teaching staff, limited opportunities for practical training and internships, making it difficult for students to gain relevant work experience and inadequate funding and support programme, leading to a lack of resources and infrastructure. The absence of industry training for accounting students in universities significantly contributes to employers' skepticism about the technical proficiency of newly graduated accounting professionals. The amount of funding that a university has available ultimately determines its capacity to provide high-quality education. Funding is necessary to enhance the educational infrastructure and facilitate the recruitment and retention of highly qualified instructors (Nwaokokorom, and Ikpeama 2023).

Accounting education involves different levels of study, with each level designed to equip students for various roles within the discipline of accounting. This means that each level furnishes students with unique skills and expertise that are ideal for roles in the changing accounting profession. These various levels of the accounting education include certificate programs, Diplomas, Bachelor's degrees, Master's degrees, Doctoral degrees as well as professional certificates. The conventional core are as in accounting education curriculum include Auditing and Assurance, Accounting Information Systems, Taxation, Financial Accounting as well as Management and Cost Accounting. These courses are established through academic educational institutions and industry collaboration,

driven by professional accounting bodies such as Institute of Chartered Accountants of Nigeria (ICAN), CIMA, ACCA and Chartered Nigerian Accountants (CNA). Accounting education during the digital era has to evolve and add the digital technologies to their core modules, considering that through Accounting education graduates are generally prepared to work in the rapidly transforming business environment with the fusion of technological advancements and digitalization is the centre of this evolution.

The digital era has significantly transformed the world. While some professions will be rendered redundant or obsolete without inculcating digitalization, some will grow with the emerging digital technologies and the accounting profession is envisaged to be one of the professions to be fundamentally affected by digital transformation (Aulia, 2025). While some jobs will be lost, some new jobs will emerge (construction by destruction) and some will remain the same but with an evolution of required skills and competencies. The adoption of digital technologies is considered a fundamental evolution in the auditing and accounting profession. The evolving business environment forces are possibly going to continue widening the need, integration and acceptance of digital technologies such as cloud computing, AI, block chain and big data among other technologies. For example, the World Economic Forum (2025) explained that by 2025 at least 30% of company audits are anticipated to be conducted by AI. Baldwin-Morgan (1995) in Favorite and Sebele-Mpofu (2024) argues

that the exposure of accounting students to AI remained invisible and advocates for the incorporation of AI in accounting curriculum so as to adequately equip students and avoid them encountering AI in the workplace. Therefore, accounting education should urgently consider how the new competencies demanded by the digital era are going to be developed to ensure graduate employability and relevance in the digital world. This is because, in the digital age, higher education institutions should not only produce accounting professionals with subject matter knowledge, professional values and ethics, but individuals who possess key competences, such as digital acumen, business acumen, adaptability, critical thinking and problem-solving skills as well as communication skills

Justification of the study

There are considerable concerns by Business Education students, their lecturers, employers of Business Education graduates, and curriculum experts that the objectives of an undergraduate Accounting option of Business Education degree program are not being implemented (Ubulom & Dambo 2016). This condition has grossly been argued by those concerned that the outlined objectives of the program do not commensurate with the quality of its product turned out, making one believe that undergraduate accounting students of Business Education degree program might not have been meeting the expectations and needs of the contemporary society due to technological advancement in education

globally. However, there is no current empirical evidence to show that the program is adequately or effectively being implemented in line with the National Universities Commission minimum academic standard to conform to the above assertions. It is against this background that this views prompted the need for an assessment of the concept and objective of accounting education on the prospect of Business Education program in Digital Era in Nigeria. Specifically, to assess the program whether it has served the needs of contemporary society and also, whether it has brought about desirable changes in the behavior, character, skill level, and social life of students that have passed through the program.

Objectives of the Study

Specifically the objectives of this study is:

1. To examine the relevance of concept Accounting education on the prospect of Business Education program in digital era
2. To assess the relevance of objectives of accounting Education on the prospect of Business Education accounting program in Digital era

Research Questions

1. What is the relevance of concept of accounting education on the prospect of Business Education program in digital era?
2. What is the relevance of objectives of accounting education on the prospect of

Business Education Program in the digital era?

Research Hypotheses

1. Concept of accounting education has no relevance on the prospect of Business Education program in the digital era
2. Objectives of accounting education has no relevance on the prospect in Business Education program in the digital era.

Methodology

A descriptive survey research design was employed in carrying out the study. The population of the study consists of 403 business education undergraduate, Postgraduates and lecturers. Purposive sampling was used to delimit to four hundred level, post graduate and lecturers in Ahmadu Bello University. Data were collected using the instrument tagged; “Concept and Objective of Accounting Education in Business Education Instrument (COAEBEI)”. The instrument was validated by two Business Educators and an expert in Measurement and Evaluation. Are liability estimate of. 71. was achieved for the research variables using Cronbach Alpha Statistical Analysis after a trial test was conducted using 25 first year hundred level Business Education students (Ahmadu Bello University Zaria) who did not form part of the main study sample. The questionnaire was administered sing google FormApp through class WhatsApp groups to four hundred level students, post graduate

students as well as individual Whatsapp chat of lecturers and One Hundred and Sixty five (165) responses were collected. Data collected were analyzed using regression

analyses, the Hypotheses was tested at 0.05 level of significance and the result is presented below.

Table 1: Analysis of Demographic Variables of Respondents

S/No	Variable	Variable Items	Frequency	Percentage
1	Gender	Male	130	78.8
		Female	35	21.2
		Total	165	100.0
2	Level	Postgraduate	155	94.0
		Lecturer	5	3.0
		Undergraduate	5	3.0
		Total	165	100.0

Research Question 1:What is the relevance of concept of accounting education on the prospect of Business Education in digital era?

Table 2: Concept of Accounting Education in Business Education

S/No	Item	X	St.D	Decision
1	Accounting students in Business Education are trained to have the necessary skills that will facilitate financial information and control.	3.05	0.705	Agree
2	Accounting Education prepares students' mind with practical skills in financial information as it relate with the understanding of the Business world	3.30	0.629	Agree
3	Accounting Education provide competencies relating to professional occupation that facilitate self-reliant	3.42	0.554	Agree
4	Accounting students of Business Education Program easily write professional exam like ICAN, ANAN, CNA, without stringent condition or requirement	3.30	0.760	Agree
5	Accounting to students of Business Education are taught to observe ethical conduct in consonance with the provision of professional accounting standard and financial reporting council of Nigeria.	3.58	0.554	Agree
6	Accounting students of Business Education graduates are provided with opportunities for recipient to update their professional competencies	3.36	0.483	Agree
7	Business Education accounting teachers are trained to improve on their skills, innovation and creativity	3.48	0.559	Agree
8	Accounting students of Business education program are trained using modern technological facilities that guaranty them to be competent in our digital era	2.79	0.810	Agree
9	Business Education accounting graduate can manage the finance of a large business enterprise	2.76	0.655	Agree
Average mean = 3.23, St.D= 0.278				

N = 165

Research Question 2: What is the relevance of objectives of accounting education on the prospect of Business Education Program in the digital era?

Table 3: Objectives of accounting program of business education graduates

S/No	Item	X	St.D	Decision
1	Business Education accounting graduate can function in other lucrative office jobs as compared with counterpart in accounting field. E.g. HND, B. Sc	2.48	0.76	Disagree
2	Business Education accounting students are able to understand, explain, predict and influence human behavior in work organization	2.12	0.810	Disagree
3	From your observation most Business Education accounting graduates usually start a business but couldn't sustain the business because they lack entrepreneurship skills	2.21	0.642	Disagree
4	The reason why accounting students of business education graduates are few in other aspect of the economy like the B.sc and HND accounting graduate apart from teaching is because of inferiority complex	2.39	0.738	Disagree
5	Most teachers of Financial Accounting Commerce an Economics in secondary schools are not from Business Education but those who studied pure accountancy, Economic, from faculty of Management/social science	2.55	0.784	Agree
6	Employers of teachers of accounting at secondary schools prefer pure accounting graduate from B.sc or HND because the judged business education accounting graduate to be incompetent in the subject matter of accounting	2.76	0.856	Agree
7	Most Business Education accounting graduates lacks critical thinking and as such cannot discharge their responsibility effectively.	2.12	0.593	Disagree
8	Most Business Education do not have the ability to search for Job in their favorite places due to inferiority complex	2.40	0.739	Disagree
9	Most employers of labour do not believe in the competency and capacity of business education accounting graduate because they do not know what the program has to offer	2.55	0.784	Agree

Average mean = 2.40, St.D= 0.204

N = 165

Hypothesis One: Concept accounting education has no relevance on the prospect of Business Education program in the digital era

Table 4: Bivariate regression analysis of relevance accounting education concept in Business Education [N = 165]

Model	Df	SS	MS	F-Calc.	F-Crit	Sig
Regression	1	0.700	0.700	3.75	3.94	0.055
Residual	163	30.438	0.187			
Total	164	31.138				

P > 0.05

Table 4 shows that F-calculated value, which is 3.75, is less than F-critical value of 3.94. The P-value of 0.055 is greater than 0.05 level of significance, thus the null hypothesis which says concept of accounting education in the digital era has no relevance on the prospect of Business Education program is retained.

Hypothesis Two: Objectives of accounting education has no relevance on the prospects Business Education program in the digital era

Table 5: Regression analysis of objectives of accounting on the prospect of business education program in the digital era [N = 165]

Model	df	SS	MS	F-Calc.	F-Crit	Sig
Regression	2	2.084	1.042	5.811	3.09	0.04
Residual	162	29.053	0.179			
Total	164	31.138				

P < 0.05

Table 5 shows that F-calculated value, which is 5.811, is greater than F-critical value of 3.09. The P-value of 0.04 is less than 0.05 level of significance, thus the null hypothesis which says Objectives of accounting education has no contextual relevance in Business Education program is rejected

Discussion of Finding

From table 4 the null Hypothesis which state that concept of accounting education in the digital era has no relevance on the prospect of Business Education program is retained this findings in consonance with Haslinah

and Sudin (2015) that accounting education should produce individuals who are well equipped intellectually to strengthen the sense of responsibility for professional and personal sense.

From Table 5 the null hypothesis which says Objectives of accounting education has no contextual relevance in Business Education program is rejected. This corroborate with Apostolou, Dull & Schleifer (2013) found out that through the pursuit of primary objective of accounting education the individual is encouraged to grow in technical accounting skills.

Conclusion

Based on the findings of the study, it was concluded that while the concept of accounting education in the digital era has no relevance on the prospect of Business Education program. The Objectives of Accounting education has contextual relevance in Business Education program.

Recommendation

Based on the finding of the study it was

therefore recommended among others that:

- I. National University Commission should not relent in its responsibility of constantly engaging the service of Business Educators and curriculum experts to review curriculum of Business Education accounting courses to fully capture the concept of accounting education so that graduate of Business education accounting programme can easily professional with accounting bodies like other accounting graduates
- II. National University Commission should engage the services of experts in developing the philosophy of Business Education accounting program to provide graduate students with broad accounting skills and knowledge for competency and competitiveness for global practice in the digital era

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ASSESSMENT OF THE LEVEL OF INDECENT DRESSING AND PROMISCUITY AMONG FEMALE UNDERGRADUATE STUDENT IN AMBROSE ALLI UNIVERSITY, EKPOMA

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Abstract

This study assessed the level of indecent dressing and promiscuity among female undergraduate students' undergraduates in Ambrose Alli University, Ekpoma. The study specifically sought to examine forms of indecent dressing and sexual promiscuity as well as determined the level of indecent dressing and sexual promiscuity among undergraduates in Ambrose Alli University, Ekpoma. This study employed the descriptive research design. The population covered all the 27,388 regular undergraduate students in Ambrose Alli University, Ekpoma. A sample size of 546 students was selected for the study. The instrument used for the collection of data was a questionnaire titled: "Students Indecent dressing and Sexual Promiscuity Questionnaire - SIDSEPO". The test-retest method was used to determine the reliability of the instrument. Research questions were analyzed using mean (\bar{x}) and standard deviation (S.D). A mean score of 2.50 was used as the benchmark for determining students' perception on the item statements while all the hypotheses tested at .05 level of significance using the Statistical Package for Social Science (SPSS23). The result showed that wearing of body exposing attires and excessive make-overs are the forms of indecent dressing among undergraduates in Ambrose Alli University, Ekpoma. It was recommended that the university management should institute policies on faculty dress code in other to ensure students are disciplined in their way of dressing.

Introduction

Universities are institutions established to contribute to national growth through the development of human capital. They are institutions of higher learning that are established to speed up the rate of human, socio-economic and political development of a nation. This is because a developed society is one that has quality manpower and each occupying his or her rightful position to enhance the growth of the society. Thus, the importance of universities at the tertiary level of education in any developing country

like Nigeria cannot be overemphasized.

The goals of university education as clearly spelt out by the Federal Republic of Nigeria (FRN) (2013) under the national policy on education are to: (a) contribute to national development through high level relevant manpower training; (b) develop and inculcate proper values for the survival of the individual and society; (c) develop the intellectual capability of individuals to understand and appreciate their local and external environment; (d) acquire both physical and intellectual skills which will

enable individuals to be self-reliant and useful members of the society; (e) promote and encourage scholarship and community service; (f) forge and cement national unity; and (g) promote national and international understanding and interaction. According to Odutayo and Ojo (2024), the attainment of the aforementioned goals has been bedeviled with a myriad of challenges such as incessant strike actions by university staff (academic and non-academic), cultism, indecent dressing, academic dishonesty, student riot and even sexual promiscuity among student.

Sexual promiscuity is the act of indulging or having sexual intercourse with several casual acquaintances. Nwikpo et al. (2022) opined that sexual promiscuity is the use of one's body for the purpose of sexual gratification, remuneration or any other form of consideration. Indecent dressing covers four basic forms namely: a) involvement in commercial sex; b) survival sex; c) casual/unprotected sex; and d) physical sexual assault. Involvement in commercial sex is common among undergraduates who trade their bodies in exchange for money to "sugar daddies and mummies", random men and itinerant people who travel from time to time to seek the company of young ladies or men in hotels, motels and other accommodation facilities. Survival sex in the Latin term is known as *quid pro quo* which literally means "give and take". In the university system, survival sex can be seen in instances of sex for grade, sex for gifts materials, connections or fame. Casual/unprotected

sex is one aspect of sexual promiscuity that often takes the form of having protected/unprotected sex with multiple sexual partners while physical sexual assault meted on the opposite sex such as unwelcome sexual harassments like grabbing, touching, caressing, and even extreme cases of date raping.

Discussing the level of sexual promiscuity, Odutayo and Ojo (2024) opined that sexual promiscuity is very rampant in our universities as most students stand outside their hostels and halls to solicit for "businesses". The hardened ones who see their campuses as too boring do not operate inside the university campuses. They brazenly take their trade directly to their customers at night to nearby cities, clubs or hot spots that would give them maximum exposure to men who will like to patronize them. According to Saheed et al. (2024) one of the causes is dereliction of parental responsibilities, peer influence on campus, insatiable desire for material things, moral decadence, lack of sexual control, and indecent dressing among others.

There is a high level of subjectivism in people's understanding of what indecent dressing is. However, in most public places like the university, Odutayo and Ojo (2024) submitted that the two forms of indecent dressing common among undergraduates include: a) wearing of heavy makeup/makeover; and b) wearing revealing apparels/clothing that does not conform with the dictates of the faculty/department. Most female students

wear heavy makeup such as artificial eye contact lens, perfumes, lipstick while the males sometimes have strange haircuts and dye their hair in awkward colours or things. In regards to wearing of sexual erosive dresses, many undergraduates wear clothe that exposes their chest, breast, cleavage, waistline and even buttocks. These forms of dressing pattern all constitute indecent dressing.

Dressing has lost most of its values in this age of unisex and gender cross over. Certain styles of dressing are regarded by many as a serious threat to cultural values of a society. Doubtlessly, in Nigeria, certain dressing styles/codes are alien. Some forms of indecent dressing are a product of modelling top movie stars. Sometimes, these movie stars dress to complement the parts they play in a movie. The trend in both local and foreign movies in terms of fashion has turned to be a model for many youths in Nigeria. This has constituted a menace among a greater proportion of Nigerian youths. From the religious perspective, people are expected to dress modesty especially the women. This is to avoid attracting unnecessary attention which in turn arouses sexual urge from other people in induces sexual promiscuity.

According to Odutayo and Ojo (2024) women that expose their private parts by wearing short skirts, sleeveless clothes, and transparent wears among others, stand the risk of being raped, being sexually harassed and being involved in indiscriminate sexual behaviour such as

having multiple sex partners and casual sex. According to them, this is because indecent dressing can be used to gratify internal sexual pressure that is present within individuals. Whether in private or public places, code of dressing tends to give a perception of one's ability to preserve specific heritage and social values in the midst of modern civilization and technology.

Studies on indecent dressing sexual promiscuity has been carried out by scholars recently. Obeta and Uwah (2015) examined determinants of dressing patterns of female undergraduate students in tertiary institutions in Abia State, Nigeria. The findings of the study showed among others that female students were fond of wearing transparent clothes, skimpy tops and heavy make ups to class. In another related study Gbadegbe and Quashie (2013) noted that not a day passes without some complaint or the other by colleague students, visitors, lecturers, non-teaching staff or some other persons about the provocative dressing of higher institution students, most especially the girls. Okafor and Duru (2013) examined the relationship between indecent dressing and sexual harassment amongst undergraduates of Nasarawa State University, Keffi. Result among others, showed that the level of sexual indecent dressing among undergraduates was low.

Gbadegbe and Quashie (2013) investigated the impacts or effects nudity or indecent dressing has on the academic performance of Ho Polytechnic students in Ghana. Result from the study showed that about 60% of Ho

Polytechnic students of Ghana dress indecently as many males wear saggy trousers, and many women wear clothes that reveal sensitive parts of their body. It was concluded that the level of indecent dressing was high. Udigwe et al. (2014) assessed factors influencing the sexual promiscuity behaviour among female adolescents in Onitsha, Anambra State, Nigeria. Results showed that the highest proportion of students who had ever had sex was found among the 16-17years age group while the modal age group was 18-19years for non-students. They concluded therefore that the prevalence of sexual promiscuity behaviour such as unprotected casual sex was found to be really high. Soboka and Kejela (2015) assessed sexual promiscuity behaviours among Arba Minch University Students, Ethiopia. Results among the 404 participants showed that majority (N=127, 31.4%) reported having at least one sexual promiscuity behaviour in their lifetime. Hence, the authors concluded that the prevalence of sexual promiscuity behavior among Arba Minch University students was high.

In universities today, most undergraduates have dropped their traditional clothing styles to foreign as many of them have dropped their cultural attires and adopted western dress styles for everyday wears. These dressing patterns or styles are regarded as sexy fashion which allowed a degree of display of the body for male appraisal and approval. These styles or patterns were not previously experienced in the streets because they were the ultimate in decadent behaviour. The female undergraduate students have completely

shifted to this crazy dressing pattern that makes them appear half naked most of the time.

Ku (2003) stated that indecent appearance has become the order of the day among many undergraduates in higher institutions of learning. The students of these campuses particularly the females sometimes dress provocatively and seductively; leaving much to be discussed. Female undergraduates try to dress as they see others dress or as a result of what is in vogue, not actually knowing the sexual implications of their dressing among the opposite sex. Although, some scholars have investigated the influence of indecent dressing on sexual promiscuity among undergraduates in tertiary institutions in several States of Nigeria like Abia State (Obeta &Uwah, 2015), Nasarawa State (Chukwudi &Gbakorun, 2011)and in Maiduguri (Abdullahi & Umar, 2013). Hence, to best of the researcher's knowledge know study on the forms and level of committal of indecent dressing and sexual promiscuity among undergraduates in universities is Edo State has been carried in other study, It is on this premise that this research work is set out to survey indecent dressing and sexual promiscuity among undergraduates in Ambrose Alli University, Ekpoma.

Research Questions

This study was guided by the following research questions:

1. What are the forms of indecent dressing among undergraduates in Ambrose Alli University, Ekpoma?

2. What is the level of indecent dressing among undergraduates in Ambrose Alli University, Ekpoma?
3. What are the forms of sexual promiscuity among undergraduates in Ambrose Alli University, Ekpoma?
4. What is the level of sexual promiscuity among undergraduates in Ambrose Alli University, Ekpoma?
5. Is there any sex difference in the level of indecent dressing among undergraduates in Ambrose Alli University, Ekpoma?
6. Is there any sex difference in the level of sexual promiscuity among undergraduates in Ambrose Alli University, Ekpoma?

Methods

This study employed the descriptive research design to examine indecent dressing and sexual promiscuity among undergraduates in Ambrose Alli University, Ekpoma. This research design has been considered appropriate for the study because a representative sample was drawn to describe the opinion of students from the population. Hence, inferences would be drawn on the population from a sample without manipulating the data collected from the survey. The population of this study covered all the 27,388 female undergraduate students in Ambrose Alli University, Ekpoma in the 2021/2022 academic session. A sample size of 546 students were selected for the study. The proportional random sampling technique was used to select 2% of the total number of students across each of the faculties in the institution. The proportionate random was used in other

to draw a sample from a homogenous group or stratum (which represented faculties in this study).

The instrument used for the collection of data was a questionnaire titled: “Students Indecent Dressing and Sexual Promiscuity Questionnaire (SIDSE PQ)”. The questionnaire LACOQ was divided into Sections A and B. Section A contains personal information of students such as sex of participants while Section B was used to collect information about undergraduates' perception on the forms and level of indecent dressing in the institution. Section B was divided into four parts of Part 1 to 4. Part 1 and 2 of Section B deals with the forms and level of indecent dressing among undergraduates while Part 3 and 4 of Section B covers the forms and level of sexual promiscuity among undergraduates in Ambrose Alli University, Ekpoma, respectively. All the items on forms of indecent dressing and sexual promiscuity were rated on a four-point scale of Strongly Agreed (SA) -4, Agreed (A) -3, Disagreed (D) -2 and Strongly Disagreed (SD) -1 while items on level of indecent dressing and sexual promiscuity were rated on a four-point scale of Always - 4, Often, 3, Sometimes -2, Rarely - 1.

Students are all expected to choose one of the options that best applies to them on each of the items in the questionnaire. The test-retest method was used to determine the reliability of the instrument. Research question 1 was analyzed using mean (\bar{X}) and standard deviation (S.D). A mean score of 2.50 was used as the benchmark for determining students' perception on the item

statements. This was obtained by adding up the four point responses (e.g Strongly Agreed -4, Agreed -3, Disagreed -2 and Strongly Disagreed -1) and dividing the sum of the scales 10 by the total number of scales

four to give 2.50. Hence, a score of 2.50 or higher represented positive perception or high involvement while means score of 0 to 2.49 was taken otherwise.

Results

Research Question 1: What are the forms of indecent dressing among undergraduates in Ambrose Alli University, Ekpoma?

Research Question 1 was analysed using mean (\bar{X}) and standard deviation (S.D) as shown in Table 1. A benchmark of 2.50 was used a criterion mean for decision making on the items and over mean.

Table 1: Mean and Standard score on forms of indecent dressing among undergraduates in Ambrose Alli University, Ekpoma Edo State

S/n	Items	N = 524		
		\bar{X}	SD	Remarks
Wearing of body exposing attires				
1	Wearing extremely tight clothing that show one’s body shape	2.71*	.969	Agreed
2	Wearing clothes that exposes one’s chest/breast	2.63*	.873	Agreed
3	Wearing trousers(shirts) that are below the waist line	2.59*	.932	Agreed
4	Wearing skimpy clothing	2.65*	1.015	Agreed
Overall mean = 2.65				
Excessive make-overs				
5	Spraying one’s hair cut or hair do	2.52*	.996	Agreed
6	Wearing too much body perfume	2.77*	1.102	Agreed
7	Wearing too much of face make up	2.45	.906	Disagreed
8	Wearing nose/eye piercings	2.41	1.066	Disagreed
9	Wearing artificial eye contacts/screes	2.46	1.099	Disagreed
10	Having tattoos/body paintings	2.41	1.069	Disagreed
Overall mean = 2.50				

* Significant mean ($\bar{X} \geq 2.50$)

Result in Table 2 showed that majority of the students agreed on items 1, 2, 3, 4, 5 and 6 at a mean score range of 2.52 to 2.77 and disagreed with items 7, 8, 9 and 10 at mean

score range of 2.41 to 2.46. The overall mean score of items 1-4 bordering on wearing of body exposing attires is 2.65 while that on items 5-10 bordering on excessive make-

overs is 2.50. Since the overall mean of wearing of body exposing attires and excessive make-overs are greater than the criterion mean of 2.50 ($\bar{X} = 2.65$ and $2.50 > 2.50$). Hence, this implies that wearing of

body exposing attires and excessive make-overs are the forms of indecent dressing among undergraduates in Ambrose Alli University, Ekpoma.

Research Question 2: What is the level of indecent dressing among undergraduates in Ambrose Alli University, Ekpoma?

Research Question 2 was analyzed using mean (\bar{X}) and standard deviation (S.D) as shown in Table 3. A benchmark of 2.50 was used a criterion mean for decision making on the items and over mean.

Table 2: Mean and Standard score on level of indecent dressing among undergraduates in Ambrose Alli University, Ekpoma, Edo State

S/n	Items	N = 524		
		\bar{X}	SD	Remarks
1	Wearing extremely tight clothing that show one's body shape	2.73*	.970	High
2	Wearing clothes that exposes one's chest/breast	2.64*	.876	High
3	Wearing trousers(shirts) that are below the waist line	2.60*	.935	High
4	Wearing skimpy clothing	2.66*	1.018	High
5	Spraying one's hair cut or hair do	2.53*	.999	High
6	Wearing too much body perfume	2.77*	1.106	High
7	Wearing too much of face make up	2.46	.911	Low
8	Wearing nose/eye piercings	2.41	.1.064	Low
9	Wearing artificial eye contacts/screes	2.46	.1.098	Low
10	Having tattoos/body paintings	2.41	1.067	Low
Overall mean score on level of indecent dressing = 2.57				

* Significant mean ($\bar{X} \geq 2.50$)

Result in Table 2 showed that majority of the students agreed on items 1, 2, 3, 4, 5 and 6 at a mean score range of 2.53 to 2.77 and disagreed on items 7, 8, 9 and 10 at mean score range of 2.41 to 2.46. The overall mean score on item 1-10 bordering on level of

indecent dressing of 2.57 is greater than the criterion mean of 2.50 ($\bar{X} = 2.57 > 2.50$). Hence, this implies that the level of indecent dressing among undergraduates in Ambrose Alli University, Ekpoma, Edo State was high.

Research Question 3: What are the forms of sexual promiscuity among undergraduates in Ambrose Alli University, Ekpoma?

Research Question 3 was analyzed using mean (\bar{X}) and standard deviation (S.D) as shown in Table 4. A benchmark of 2.50 was used a criterion mean for decision making on the items and over mean.

Table 3: Mean and Standard score on the forms of sexual promiscuity among undergraduates in Ambrose Alli University, Ekpoma, Edo State

S/n	Items	N = 524		
		\bar{X}	SD	Remarks
Involvement in casual/unprotected sex				
1	I have had sex with someone who have other sex partners that I know of	2.53*	1.000	Agreed
2	I have had sex without any protective such as condoms	2.36	1.075	Disagreed
3	I have had sex with someone who I know is contracted with Sexual Transmitted Infections (STIs) during the time(s) of sex	2.58*	1.092	Agreed
4	I have kept more than one sexual relationship at a time	2.82*	.989	Agreed
5	I have used sex pills to sleep with the opposite sex	2.39	1.151	Disagreed
Overall mean = 2.54				
Physical sexual assault				
6	I touch the private part of the opposite sex in a sexually seductive manner	2.52*	.957	Agreed
7	I lured a stranger into having sex with you	2.73*	.942	Agreed
8	Had sex with someone by drugging him/her	2.64*	.977	Agreed
9	Forcefully had sex with someone who you do not know his HIV status	2.50*	.947	Agreed
10	Paying a person some money to have sex with you	2.53*	1.119	Agreed
Overall mean = 2.58				

* Significant mean ($\bar{X} \geq 2.50$)

Result in Table 3 showed that majority of the students agreed on items 1, 3 and 4 at a mean score range of 2.53 to 2.82 and disagreed with items 2, and 5 at mean score range of 2.36 to 2.39. The overall mean score of items 1-4 casual/unprotected sex is 2.54 while that on items 6-10 physical sexual assault is 2.58. Since the overall mean of casual/ unprotected sex and physical sexual assault are greater than the criterion mean of 2.50 ($\bar{X} = 2.64$ and $2.58 > 2.50$). Hence, this implies that casual/unprotected sex and physical sexual assault are the forms of sexual promiscuity among undergraduates in Ambrose Alli University, Ekpoma.

Result in Table 3 showed that majority of the students agreed on items 1, 3 and 4 at a mean score range of 2.53 to 2.82 and disagreed with items 2, and 5 at mean score range of 2.36 to 2.39. The overall mean score of items 1-4 casual/unprotected sex is 2.54 while that on items 6-10 physical sexual assault is 2.58. Since the overall mean of casual/

unprotected sex and physical sexual assault are greater than the criterion mean of 2.50 ($\bar{X} = 2.64$ and $2.58 > 2.50$). Hence, this implies that casual/unprotected sex and physical sexual assault are the forms of sexual promiscuity among undergraduates in Ambrose Alli University, Ekpoma.

Research Question 4: What is the level of sexual promiscuity among undergraduates in Ambrose Alli University, Ekpoma?

Research Question 4 was analysed using mean (\bar{X}) and standard deviation (S.D) as shown in Table 4. A benchmark of 2.50 was used a criterion mean for decision making on the items and over mean.

Table 4: Mean and Standard score on the level sexual promiscuity among undergraduates in Ambrose Alli University, Ekpoma, Edo State

S/n	Items	N = 524		Remarks
		\bar{X}	SD	
1	Having had sex with someone who have other sex partners that I know of	2.52*	.990	High
2	Having sex without any protective such as condoms	2.39	1.066	Low
3	Having sex with someone who I know is contracted with Sexual Transmitted Infections (STIs) during the time(s) of sex	2.58*	1.083	High
4	keeping more than one sexual relationship at a time	2.81*	.980	High
5	Using sex pills to sleep with the opposite sex	2.39	1.141	Low
6	Touching the private part of the opposite sex	2.51*	.947	High
7	Luring a stranger into having sex with you to satisfy your sexual urge	2.74*	.939	High
8	Having sex with someone by drugging him/her	2.63*	.966	High
9	Forcefully having sex with someone who you do not know his HIV status	2.49	.937	Low
10	Paying a person some money to have sex with you	2.52*	1.109	High
Overall mean score on level of sexual promiscuity = 2.56				

* Significant mean ($\bar{X} \geq 2.50$)

Result in Table 4 showed that majority of the students agreed on items 1, 3, 4, 6, 7, 8 and 10 at a mean score range of 2.51 to 2.81 and disagreed with items 2, 5 and 9 at mean score range of 2.39 to 2.49. The overall mean score on item 1-10 bordering on level of sexual promiscuity 2.56 is greater than the criterion mean of 2.50 ($\bar{X} = 2.56 > 2.50$). Hence, this implies that level of sexual promiscuity among undergraduates in Ambrose Alli University, Ekpoma, Edo State was high.

Discussion

The result showed that wearing of body exposing attires and excessive make-overs are the forms of indecent dressing among undergraduates in Ambrose Alli University, Ekpoma. The result agrees with that of Obeta and Uwah (2015) that the female undergraduate students dressing patterns are greatly influenced by imitation of western dress styles, peer/social group pressure, mass media, imitation of film actresses and fashion in vogue.

The result is quite consistent with that of Gbenga (2013) that female students were fond of wearing transparent clothes, skimpy tops and heavy make ups to class in Abia State, Nigeria. The result agrees with that of Gbadegbe and Quashie (2013) that girls again wear very tight trousers called 'shinnies', thereby showing the contours of their body ostensibly to entice the opposite sex. They also wear very short and transparent tops called 'show your stomach' which exposes their abdomen and breasts.

The result showed that level of indecent dressing among undergraduates in Ambrose Alli University, Ekpoma, Edo State was high. The result agrees with that of Gbadegbe and Quashie (2013) that about

60% of Ho Polytechnic students of Ghana dress indecently as many males wear saggy trousers, and many women wear clothes that reveal sensitive parts of their body. It was concluded that the level of indecent dressing was high in Ho Polytechnic students in Ghana. Result of this study is quite consistent with that of Imaledo et al. (2012) that the level of indecent dressing among students has risen and also become a thing of concern for many administrators. Result of the study agrees with that of Obeta and Uwah (2015) that many school students wear clothes that are consistent with the television and internet stars that they adore.

The result showed that level of sexual promiscuity among undergraduates in Ambrose Alli University, Ekpoma, Edo State was high. The result supported that of Chukwudi and Gbakorun (2011) that the prevalence forms of sexual promiscuity among female undergraduates were involvement in casual and survival sex with multiple sexual partners in tertiary institutions in Imo State. The result is line with that of Imaledo et al. (2012) that involvement in commercial sex, was at the low ebb but unprotected casual sex with multiple sexual partners, addiction to pornographic materials were high among the undergraduates in University of Port-Harcourt, Rivers State.

Conclusion

The level of sexual promiscuity and indecent dressing is on the increase among undergraduates in Ambrose Alli University, Ekpoma. Based on findings, it is concluded that wearing of body exposing attires and excessive make-overs are the forms of indecent dressing among undergraduates

while casual/unprotected sex and physical sexual assault are the forms of sexual promiscuity among undergraduates in Ambrose Alli University, Ekpoma.

Recommendations

Arising from the findings, are the following recommendations:

1. Parents should try as much as possible to set good examples on sexuality for their children to follow. This they could do by encouraging the development of a set of religious values in the

adolescents' students that would guide their sexual behaviour.

2. Health practitioners should intensify efforts to give adequate sexuality information to the youths especially among the undergraduate in universities through awareness by organizing seminars on the health consequences of indulging in sexual promiscuity.
3. University management should institute policies on faculty dress code in other to ensure students are discipline in their way of dressing.

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EFFECT OF FLIPPED CLASSROOM STRATEGY ON SECONDARY SCHOOL STUDENT ACADEMIC ACHIEVEMENT IN BIOLOGY IN DELTA STATE

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Abstract

This study evaluates the effect of the flipped classroom strategy on secondary school students' academic achievement in biology in Delta State, Nigeria using Quasi-experimental research design with pre-test and post-test control groups. A total of 200 Senior Secondary School II (SS II) students from four public secondary schools participated in the study, with 100 students in the experimental group and 100 in the control group. The experimental group was taught using the flipped classroom strategy, while the control group received traditional instruction. Data were collected using a Biology Achievement Test (BAT), an Engagement and Participation Scale (EPS), and an Observation Checklist. Descriptive and inferential statistical analyses revealed that students in the experimental group achieved significantly higher post-test scores (mean = 78.45, SD = 6.32) than their counterparts in the control group (mean = 60.89, SD = 7.45). The flipped classroom strategy also significantly enhanced students' engagement and participation during lessons. However, challenges in implementing the strategy, including limited access to technology, insufficient teacher training, and inadequate classroom infrastructure, were identified as significant barriers. The study concludes that the flipped classroom strategy is an effective teaching approach for improving students' academic achievement and engagement in biology. To optimise its implementation in Delta State schools, policymakers and educational stakeholders must address infrastructural and technological barriers and invest in teacher training programs. Recommendations for future research include exploring the long-term effects of the flipped classroom model and its applicability to other subjects and educational levels.

Keywords: Flipped Classroom, Academic Achievement, Biology Education, Delta State, Secondary School, Teaching Strategies, Student Engagement

Introduction

The flipped model supports the tenets of social constructivism. The model supported by the constructivist social learning theory enables learners to engage in interactive, creative, and collaborative activities during knowledge construction (Kim & Bonk, 2006). The flipped classroom model is also poised on peer support while constructing knowledge, members of the class are all actively involved. Constructive controversy is based on the idea that discussions and controversies can serve as a good starting point in trying to understand complex problems (Daniel & Canjander, 2020). Students will improve their skills to constructively and innovatively think and find solutions to complex problems. When one person's ideas, information, conclusions, theories, or opinions are incompatible with those of another and the two seek to reach an agreement (Cimpian, Kim & McDermott, 2020). This then is the ultimate goal of the constructive controversy theory. The learners help one another out in the process of knowledge construction under the leadership and support of the teacher. The teacher here is more like a guide and a coach rather than a disseminator in the process of knowledge acquisition.

Different articles documented an increase in academic performance within the flipped classroom itself, such as Davies et al. (2023), and Talley and Scherer (2023). Davies et al. (2023) compared a traditional introductory spreadsheet skills course to a flipped model and found the flipped model of instruction to be more effective. The flipped classroom students demonstrated higher motivation levels and improved academic performance compared to the

traditional students. In traditional large-lecture introductory biology classes at the University of California at Irvine that were switched to an inverted classroom format, there was an average increase of 21% on exam questions that were formerly covered in lecture but moved to pre-recorded videos watched outside of class and followed up by interactive exercises. (Moravec, et. al., 2010). This shows that once comprehension is improved achievement is likely to be improved. In spring 2010, Stone (2012) checked the impact of flipped classroom on undergraduates' general Biology course and find out that students perform over 10% better on assignment and as well or slightly better in harder, higher level thinking examinations. Many students agreed with statements that indicated the positive influence flipping the class had on their learning and performance in class. The flipped classroom strategy is basically a pedagogical model that flips the traditional learning model of students.

Instead of delivering lectures in class and assigning homework, teachers provide instructional materials (such as pre-recorded videos, reading assignments, or online resources) for students to study at home, while the classroom time is utilized for interactive and practical learning activities like discussions, problem-solving, and collaborative projects (Bergmann & Sams, 2022). This model aims to engender deeper learning and active engagement by catering to different learning needs. Biology, being a core science subject, poses some special challenges in learning.

It requires an understanding of the concepts, application of knowledge, and execution of practical skills. Traditional teaching methods, often relying on rote

memorization, may not adequately prepare students for these demands (Tanner & Allen, 2004). The flipped classroom model holds promise for improving outcomes by promoting active participation and personalized learning, both of which are critical for mastering biological concepts and practices (O'Flaherty & Phillips, 2021). Research has demonstrated that flipped classrooms can positively affect academic achievement. Studies show that this strategy enhances students' understanding of content, fosters critical thinking, and improves their overall academic performance (Bishop & Verleger, 2023; Karaca & Ocak, 2017). In science education, flipped classrooms have been related to increased conceptual clarity and more effective practical skills development than those of traditional lecture-based methods (Lage et al., 2000). Similarly, Talley and Scherer (2023) flipped an undergraduate psychology course, comparing it to previous semesters of the traditional format, and found that retention and engagement were greater in the flipped model of instruction.

Increased retention and engagement led to higher performance on the midterm and final exams. Davies et al. (2013) and Talley and Scherer (2023) also agreed that students valued the flexibility of being able to access course materials, most especially course lectures, from different mobile devices at a time suitable for them. In addition, flipped classrooms contribute to encouraging and improving skills in the domains of application, analysis, synthesis and evaluation which are all mental skills and processes not covered by traditional curricula. It also contributes to what is known as ownership for learning, where students can watch a video or lecture several

times. This model led to building confidence and enjoying the content and it provided more chances for interaction, learning, positive change and responsibility towards education (Akinyemi, 2014). Memler (2017) in their study on the efficacy of flipped classrooms on students' academic achievement and gender gap, observed that students' achievements did not differ by gender because there is no significant difference in achievement of males and females, when exposed to flipped classrooms,

Likewise, Gambari, Bello, Agboola and Adeoye (2021) in their study finds out that both males and female exposed to the flipped classroom method performed equally better. On the contrary, Chiquito, Castedo, Santos Lopes and Alarcon (2019) in their study found that female students performed higher than their male counterparts on their exposure to flipped classrooms and there was a significant difference in their achievement. In Delta State, Nigeria, secondary school education faces significant challenges, including large class sizes, limited instructional resources, and varying levels of student readiness (Akinyemi, 2014).

These are some of the issues that always seem to get in the way of traditional teaching methods, especially in subjects like biology, where practical application is necessary. The Flipped Classroom strategy offers a potential solution by optimizing the use of limited classroom time and providing students with more opportunities to engage with learning materials at their own pace. However, the actual implementation of this flipped classroom strategy in Delta State requires several preconditions: teacher training, access to technology, and student

adaptability. The evaluation of its effect on academic achievement in biology is highly essential in understanding its practicality and effectiveness in this region. This appraisal shall provide evidence for educators and policymakers in adopting innovative teaching methods that enhance learning outcomes.

Theoretical framework

The flipped classroom strategy aligns closely with constructivist theories of learning, particularly those proposed by Jean Piaget and Lev Vygotsky. According to constructivist theory, learners actively construct their own knowledge through experiences and reflection (Bergmann & Sams, 2017). The flipped classroom creates opportunities for learners to engage in active, hands-on activities during class time (e.g., discussions, problem-solving), thereby supporting deeper learning through social interaction and collaborative activities. Piaget emphasizes that learners should be active participants in their learning process, and that cognitive development happens through interaction with the environment. The flipped classroom supports this by allowing students to explore content independently at home (constructing knowledge at their own pace), and then apply it in real-world contexts during classroom activities. Vygotsky's concept of the Zone of Proximal Development (ZPD) suggests that learning is most effective when students are guided by peers or teachers in tasks just beyond their current ability (Freeman, et al., 2014). The flipped classroom model allows for such peer-supported learning during class time, where students can collaborate and apply knowledge with scaffolding from peers or

instructors.

Purpose of the study

The study aims to investigate the effect of flipped classroom strategy on secondary school students' academic achievement in biology in Delta State. The specific objectives:

1. determine the effect of the flipped classroom strategy on students' understanding of biology concepts compared to traditional teaching methods.
2. assess how the flipped classroom strategy influences students' performance in practical biology tasks.
3. evaluate the role of the flipped classroom strategy in enhancing students' engagement and participation in biology lessons.
4. identify the challenges associated with implementing the flipped classroom strategy in Delta State schools.

Hypotheses

This study was guided by the following hypotheses which were tested at 0.05 level of significance:

- H01:** There is no significant difference in the academic achievement of students taught using the flipped classroom strategy and those taught using traditional teaching methods.
- H02:** The flipped classroom strategy has no significant effect on students' engagement and participation in biology lessons.

H03: There are no significant challenges in implementing the flipped classroom strategy in Delta State schools.

Methods

This study adopted a quasi-experimental research design to examine the effect of the flipped classroom strategy on secondary school students' academic achievement in biology in Delta State. Specifically, a pre-test and post-test control group design was employed. The experimental group was taught using the flipped classroom strategy, while the control group was taught using traditional teaching methods.

The population for this study consisted of all senior secondary school students (SS II) offering biology in public secondary schools in Delta State, Nigeria. The sample for this study included 200 SS II students drawn from four randomly selected public secondary schools in Delta State. The schools were stratified based on location (urban and rural) to ensure a representative sample. A purposive sampling technique was used to select intact classes for the experimental and control groups, with 100 students in each group (50 per school). The instruments for data collection were:

- 1. Biology Achievement Test (BAT):** This is a researcher-developed test consisting of 40 multiple-choice questions covering selected topics in the SS II biology curriculum.
- 2. Engagement and Participation Scale (EPS):** This is a structured questionnaire designed to assess students' engagement and participation during biology lessons. It includes Likert-scale items ranging from "Strongly Agree" to "Strongly Disagree," focusing on classroom interaction, motivation, and active

learning behaviours.

- 3. Observation Checklist:** This was used to record classroom activities and monitor the implementation of the flipped classroom strategy.

Procedure

- 1. Pre-Test:** Both Flip and conventional groups took the BAT before the commencement of the teaching intervention to assess their baseline knowledge.
- 2. Intervention:** The experimental group received flipped classroom instruction, including pre-class materials (videos, readings) and in-class active learning sessions. The intervention lasted for six weeks, covering the same biology topics in both groups.
- 3. Post-Test:** Both groups took the BAT again to measure the impact of the teaching strategies on their academic achievement.
- 4. Data Collection:** Data from the BAT, EPS, and observation checklists were collected for analysis.

Descriptive Statistics of Mean and standard deviation were used to describe the performance of students in the experimental and control groups, while Independent Samples t-test was used to compare the post-test scores of the experimental and control groups, determining the significance of the flipped classroom strategy on academic achievement. A paired Samples t-test was used to assess the pre-test and post-test performance within each group.

Results

H01: There is no significant difference in the academic achievement of students

taught using the flipped classroom strategy and those taught using traditional teaching methods.

Table 1: Descriptive Statistics of Pre-Test and Post-Test Scores

Group	N	Pre-Test Mean (SD)	Post-Test Mean (SD)	Mean Difference
Experimental Group	100	45.32 (8.45)	78.45 (6.32)	33.13
Control Group	100	44.98 (7.92)	60.89 (7.45)	15.91

The pre-test mean scores for both groups are similar, indicating that students in both groups had comparable baseline knowledge in biology. After the intervention, the post-test mean score of the experimental group (78.45) is significantly higher than that of the control group (60.89). The mean

difference in scores for the experimental group (33.13) is more than double that of the control group (15.91), suggesting a substantial effect of the flipped classroom strategy on students' academic performance.

Table 2: Independent Samples t-test for Post-Test Scores

Variable	t-value	df	p-value	Interpretation
Post-Test Scores	9.68	198	< 0.001	Significant difference

The t-test result shows a statistically significant difference between the post-test scores of the experimental and control groups ($p < 0.001$). This indicates that the flipped classroom strategy significantly improved students' academic achievement compared to traditional teaching methods.

H02: The flipped classroom strategy has no significant effect on students' engagement and participation in biology lessons.

Table 3: Engagement and Participation Scores

Group	Mean Engagement Score (SD)	t-value	p-value	Interpretation
Experimental Group	4.25 (0.52)	7.84	< 0.001	Significant difference
Control Group	3.15(0.68)			

Engagement and participation scores are significantly higher for the experimental group (mean = 4.25) compared to the control group (mean = 3.15). This supports the hypothesis that the flipped classroom

strategy enhances students' engagement and participation during biology lessons.

H03: There are no significant challenges in implementing the flipped classroom strategy in Delta State schools.

Table 4: Perception of Challenges in Implementing the Flipped Classroom Strategy

Challenges	Mean Score (SD)	t-value	p-value
Access to technology	3.85 (0.74)	7.12	< 0.001
Teacher training and preparedness	4.12 (0.58)	9.45	< 0.001
Student adaptability	3.25 (0.68)	5.45	< 0.001
Parental support for pre-class learning	2.98 (0.89)	1.45	0.15
Classroom infrastructure	3.67 (0.81)	6.22	< 0.001

Access to technology, teacher training and preparedness, student adaptability, and classroom infrastructure were identified as significant challenges, with mean scores above the midpoint (3.0) and p-values below 0.05. These factors are critical in determining the successful implementation of the flipped classroom strategy in Delta State schools. However, parental support for pre-class learning had a mean score close to the midpoint (2.98) and a p-value above 0.05, indicating it is not perceived as a significant challenge.

Discussion

The results of this study provide evidence that the flipped classroom strategy significantly improves academic achievement and engagement in biology among secondary school students compared to the traditional teaching methods. These findings are discussed below in detail.

The experimental group taught through the flipped classroom strategy showed a significantly higher post-test score as compared to the control group. A mean difference of 33.13 in the experimental group against 15.91 in the control group suggests that the flipped classroom strategy is more effective in enhancing students' understanding of biology concepts. This improvement can be attributed to several factors inherent in the flipped classroom model. Pre-class materials allowed students

to learn at their own pace, which is particularly beneficial for complex biology topics. Furthermore, in-class activities provided time for interactive learning to understand better and clear the misunderstandings through discussions and problem-solving exercises. These findings correspond to other studies showing flipped classrooms to be effective for improved academic performance in science education by Bishop and Verleger (2023) and Karaca and Ocak (2017).

The study also showed that the students in the experimental group had significantly higher engagement and participation scores than those in the control group. The flipped classroom model encourages active participation during class time, with students coming prepared with foundational knowledge from the pre-class materials. This is most likely to have contributed to their improved performance. Research supports the fact that active learning environments, such as those fostered by the flipped classroom, enhances motivation and critical thinking (O'Flaherty & Phillips, 2021).

While the flipped classroom strategy has been effective, Delta State has its challenges during implementation. Inaccessibility to technologies such as computers and good internet access creates barriers in accessing pre-class materials by students. Thirdly, teachers may still need adequate training to

support them in developing and maintaining flipped classroom content. Closing these gaps is paramount for this teaching strategy. Despite these challenges, significant opportunities were also noted in the same study. The flipped classroom approach helps to overcome some of the challenges of large class sizes by maximizing classroom time use for interactive learning. Furthermore, it allows the integration of technology into teaching, thus responding to trends within a globalized world. From the result of this study, significant challenges face the implementation of the Flipped Classroom strategy in public secondary schools in Delta State. These challenges are very important in understanding the feasibility of adopting the approach on a wider scale. One of the major challenges identified was access to technology, with a mean score of 3.85 ($p < 0.001$). This means that students and schools face considerable barriers in accessing the digital tools needed for the flipped classroom model, such as computers, smartphones, and reliable internet connectivity. These findings support earlier studies that identify a lack of technology as a significant obstacle to the incorporation of new teaching approaches in developing countries (Tondeur et al., 2017). Inadequate access to technology limits the ability of students to go through pre-class learning material, hence undermining the effectiveness of the flipped classroom approach.

The second most serious challenge identified was that of training and preparedness of teachers, with a mean score of 4.12 ($p < 0.001$). Many teachers in Delta State may lack the skills and knowledge to create and deliver high-quality pre-class instructional materials or facilitate active learning in the classroom. This finding

echoes studies emphasizing the need for professional development programs to equip teachers with the competencies required for modern teaching strategies (OECD, 2019). Addressing this gap is essential for ensuring that the flipped classroom model is implemented effectively. With an average of 3.25, another significant problem was the students' adaptability ($p < 0.001$). Students who are used to traditional, lecture-based methodologies may struggle with the idea of independent learning in a flipped classroom. This addresses the issue of gradual implementation and providing support mechanisms to help students develop the requisite skills for independent learning and managing their time accordingly (Bishop & Verleger, 2023). The physical facilities, including the facility for collaborative and practical activities in the classroom, were also a big challenge = 3.67, $p < 0.001$. Most schools in Delta State lack the physical resources to support the interactive learning activities central to the flipped classroom approach. This finding is consistent with studies indicating that inadequate infrastructure can hinder the adoption of innovative teaching strategies (Akinyemi, 2014). Improving classroom environments is crucial for the full realization of the benefits of this model. Surprisingly, the lack of parental support for pre-class learning was not seen as a major challenge by the instructors (mean = 2.98, $p = 0.15$). This indicates that parents are either supportive or neutral about their children engaging in pre-class materials at home. However, this does not rule out the fact that parent-focused interventions may be necessary to ensure that they provide necessary encouragement and monitoring.

Conclusion and Recommendations

The flipped classroom strategy enhances academic achievement and engagement in biology among secondary school students in Delta State. This study reiterates the potential of innovative teaching strategies to enhance learning outcomes, especially in resource-poor settings. In adopting this innovative approach, schools in Delta State can create an environment that is more engaging and effective for learning, preparing students with the knowledge and skills necessary for academic success. While the flipped classroom strategy offers immense promise for enhancement in academic achievement and engagement, there are also some striking challenges in its implementation in Delta State. The effort to overcome these barriers will be highly needed from schools, policymakers, and

communities. It would be an avenue for opening up the education system in Delta State to more effective and innovative teaching methodologies.

Based on these findings, the following recommendations were made:

1. Schools should adopt the flipped classroom strategy as a complement to traditional teaching methods.
2. Educational stakeholders should address infrastructure and training gaps to ensure the effective implementation of flipped classrooms.
3. Further research should explore the long-term effects of the flipped classroom strategy on students' academic achievement and its applicability to other subjects.

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EXPLORING THE INTERSECTIONALITY OF GADA AND UBUNTU PRINCIPLES IN EDUCATIONAL LEADERSHIP

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Abstract

The intersectionality of the Gada System and Ubuntu offers a compelling avenue for research in educational leadership. Rooted in African cultural heritage, these indigenous knowledge systems have profoundly influenced leadership practices, community governance, and societal well-being across the continent. The Gada System, originating from the Oromo people of Ethiopia, exemplifies democratic governance through cyclic leadership roles, including the Abba Gada (supreme leader), Luba (council members), and Bokku (judges). Similarly, Ubuntu, a Nguni Bantu term, emphasizes interconnectedness, compassion, and shared responsibility. The phrase “I am because we are” underscores Ubuntu's core principle. The intersectionality of these systems highlights elements such as democratic and rotational leadership, ethical and compassionate governance, community participation, balanced power distribution, and accountability. This explorative study reveals practical implications for educational leaders: inclusive decision-making processes, ethical leadership development, and power distribution mechanisms. By weaving Gada and Ubuntu principles into educational leadership, the great memories and values of African traditional systems are not only honoured and respected but the weaving of a more compassionate and effective leadership landscape for a more transformational educational leadership engagement is accentuated.

Keywords: Gada System, Ubuntu, educational leadership, African indigenous knowledge, community governance, societal well-being

Introduction

The Gada System and Ubuntu represent two intertwined strands of African indigenous knowledge systems, each contributing unique insights to leadership, community governance, and societal well-being. Rooted in centuries-old traditions, these principles offer valuable guidance for contemporary educational leaders (Wakwabubi, 2019).

The Gada System is a traditional form of democratic governance that originated with

the Oromo people of Ethiopia. It is a well-organized system that ensures leadership roles are rotated systematically within approximately eight-year cycles. This system stands as a testament to democratic governance deeply embedded in cultural practices (Legesse, 2000).

In the Gada System, specific leadership roles are defined and rotated. The Abba Gada, or supreme leader, oversees the entire community. The Luba, or council members, assist in decision-making and governance,

while the Bokku, or judges, ensure justice and fairness within the community. Every eight years, these leadership roles rotate, meaning new individuals are selected to take on these roles. This rotation ensures that power is shared and no single person or group holds onto power indefinitely (Legesse, 2000).

The Gada System is deeply embedded in the cultural practices of the Oromo people, emphasizing community participation, accountability, and transparency in governance. This system finds resonance in Nigerian traditions as well. For instance, the Yoruba people of Nigeria have a similar system called "Oro." Like Gada, Oro operates in cycles and involves distinct leadership roles. The Yoruba's Oro system involves various leadership roles that ensure the community's welfare and governance. The Oluwo is the spiritual leader and plays a central role in the Oro system. He is responsible for overseeing religious ceremonies, maintaining spiritual order, and ensuring the community's welfare. The Oluwo's decisions are made with the community's best interests in mind, emphasizing consensus and collective well-being (Atanda, 1972). The Iyalode is a female leader responsible for women's affairs within the community. She ensures that women's voices are heard in decision-making processes and that their needs are addressed. The Iyalode's role highlights the importance of gender inclusivity in leadership (Olishe, 2020). The Otun (Right-Hand Man of the King) is a key advisor to the king and plays a significant role in governance. He assists the king in making important decisions and ensures that the king's directives are implemented effectively (Atanda, 1972). The Osi (Left-

Hand Man of the King) and Asipa are other key advisors who support the king in governance. They provide counsel on various matters and help maintain order within the community (Olishe, 2020). The Balogun (War Chief) is responsible for the community's defense and security. He leads the community's warriors and ensures that the community is protected from external threats (Atanda, 1972).

The Oro system demonstrates democratic leadership through its emphasis on community participation, accountability, and consensus-based decision-making. Leadership roles are not held indefinitely but are rotated, ensuring that power is shared and that no single individual or group dominates the community. This rotation of leadership roles promotes inclusivity and prevents the concentration of power (Legesse, 2000). The Oro system also values secrecy and accountability, ensuring that leaders are held responsible for their actions and decisions. Community participation is encouraged, with leaders seeking input from various members of the community before making decisions. This participatory approach ensures that the community's needs and concerns are addressed, fostering a sense of collective responsibility and unity (Asafa, 2015).

In summary, the Gada and Oro systems are democratic governance models that rotate leadership roles, ensuring shared power and community involvement. By understanding and appreciating these indigenous knowledge systems, contemporary leaders can draw valuable lessons in governance and community engagement.

On the other hand, Ubuntu, a Southern African philosophy, emphasizes communal relationships, mutual respect, and collective

well-being. It is encapsulated in the phrase "I am because we are," highlighting the interconnectedness of individuals within a community (Mbiti, 1990). Ubuntu promotes values such as empathy, compassion, and social harmony, which are essential for effective leadership and community development (Nussbaum, 2003).

Nigerian communities often exemplify Ubuntu values. For instance, the Igbo people emphasize communal well-being, sharing, and interconnectedness through their concept of "Omenala." Their proverbs reflect Ubuntu ideals, such as "Onye aghalanwanneya" (Be your brother's keeper). Similarly, Yoruba folklore and proverbs emphasize empathy, respect, and collective responsibility. Ubuntu resonates in expressions like "Eniyan laso mi" (Humans are my clothing) (Tutu, 1999). Yoruba kings rule together with their chiefs, and women are given responsibilities in their administration. Among the chiefs is *iyalode*, who is in charge of women affairs. The 'Otun' is the right-hand man of the king, and there are other titles like 'Osi' and 'Asipa'; *Balogun* is the one in charge of wars (Atanda, 1972; Olishe, 2020).

Research Objectives

The exploration of Gada and Ubuntu principles in educational leadership presents a unique opportunity to delve into the rich tapestry of African indigenous knowledge systems. By analyzing the alignment and divergence of these systems, we can uncover the distinct contributions each makes to leadership practices and community governance. Examining the interactive elements of Gada and Ubuntu leadership systems allows us to understand how these

principles can complement each other, fostering effective and inclusive leadership. Investigating the challenges of integrating these systems highlights potential obstacles and provides strategies for overcoming them. Ultimately, developing a comprehensive framework for integrating Gada and Ubuntu principles in educational leadership offers practical guidelines for creating culturally relevant, ethical, and transformative leadership models. This research aims to bridge traditional wisdom with contemporary educational practices, ensuring a holistic approach to leadership that honours and leverages the strengths of both systems. Specifically, the research explores the following four objectives:

- 1. To analyze the alignment and divergence of Gada and Ubuntu systems:** This objective aims to explore the similarities and differences between the Gada and Ubuntu systems, highlighting how each system contributes uniquely to leadership practices and community governance.
- 2. To examine the interactive elements of Gada and Ubuntu leadership systems:** This objective focuses on identifying and understanding the key elements that interact within the Gada and Ubuntu leadership systems, emphasizing how these elements can complement each other in fostering effective leadership.
- 3. To investigate the challenges of integrating the combination of Gada and Ubuntu systems in leadership:** This objective seeks to identify the potential obstacles and difficulties that may arise when attempting to combine Gada and Ubuntu principles in leadership practices, and to propose strategies for overcoming these

challenges.

- 4. To develop a framework for integrating the combined principles of Gada and Ubuntu in educational leadership:** This objective aims to create a comprehensive framework that incorporates the combined principles of Gada and Ubuntu, providing practical guidelines for educational leaders to implement these indigenous knowledge systems in their leadership practices.

Methodology

To explore the intersectionality of Gada and Ubuntu principles in educational leadership, a qualitative research design was adopted. This approach facilitated an in-depth understanding of these systems by considering their cultural context, historical perspectives, and lived experiences.

Research Design

The qualitative research design was chosen to delve into the nuances of Gada and Ubuntu principles. This method allowed for a comprehensive exploration of the cultural and historical contexts that shape these indigenous knowledge systems. By focusing on qualitative methods, the study aimed to capture the richness and complexity of the Gada and Ubuntu systems, providing a detailed understanding of their application in educational leadership.

Data Collection

Data collection involved two primary methods: literature review and document analysis.

Literature Review

An extensive review of scholarly articles, books, and dissertations related to Gada, Ubuntu, and educational leadership was conducted. This review aimed to synthesize key themes, theoretical frameworks, and empirical evidence to inform the analysis. By examining a wide range of academic sources, the study was able to identify the foundational principles and practical applications of Gada and Ubuntu in leadership contexts.

Document Analysis

Historical texts, oral traditions, and community documents related to Gada and Ubuntu were analyzed. This analysis provided insights into the evolution of these systems and their practical implications. By examining primary sources, the study enriched its understanding of how Gada and Ubuntu principles have been historically implemented and how they continue to influence contemporary leadership practices.

Data Analysis

The data analysis followed an inductive approach a thematic coding and a comparative framework. In thematic coding, textual data were coded using thematic analysis. This process involved identifying emergent themes (origin, leadership roles, decision making, accountability, power distribution, ethical values and application) related to leadership principles, community well-being, and challenges. By systematically coding the data, the study was able to uncover patterns and insights

that highlighted the core elements of Gada and Ubuntu leadership. A comparative framework was developed to juxtapose Gada and Ubuntu principles. This framework mapped the similarities, differences, and areas of convergence between the two systems. By comparing these principles, the study aimed to identify how Gada and Ubuntu can complement each other in the context of educational leadership, providing a holistic understanding of their intersectionality.

In summary, the methodology employed in this study combined qualitative research design, literature review, document analysis, and a comparative framework to explore the intersectionality of Gada and Ubuntu principles in educational leadership. This comprehensive approach ensured a thorough examination of these indigenous knowledge systems, highlighting their relevance and application in contemporary leadership contexts.

Results and Discussions

The exploration of Gada and Ubuntu principles in educational leadership reveals valuable insights and practical implications. Analyzing their alignment and divergence uncovers unique contributions to leadership and governance. Examining their interactive elements highlights complementary aspects

for effective leadership. Investigating integration challenges provides strategies for overcoming obstacles. Developing a comprehensive framework offers practical guidelines for culturally relevant, ethical, and transformative leadership models. This section delves into the findings and discussions based on these research objectives, providing a holistic view of how Gada and Ubuntu can shape contemporary educational leadership.

Alignment and Divergence of Gada and Ubuntu Systems

The Gada and Ubuntu systems, two pillars of African indigenous knowledge, offer profound insights into leadership and community governance. While both systems share a commitment to ethical leadership and communal well-being, they also exhibit distinct characteristics shaped by their unique cultural contexts. The Gada System, with its structured and cyclic leadership roles, contrasts with the more fluid and interconnected approach of Ubuntu. By examining the alignment and divergence of these systems, we can uncover valuable lessons for contemporary leadership practices, highlighting how these ancient principles can inform and transform modern governance (Table 1).

Table 1: Alignment and Divergence of Gada and Ubuntu Systems

Aspect	Gada System	Ubuntu System
Origin	Originates from the Oromo people of Ethiopia [Aliye, 2020]	A Nguni Bantu term prevalent across various African cultures [Tutu, 1999]
Leadership Roles	Involves specific leadership roles (e.g., Abba Gada, Luba, Bokku) that rotate cyclically [Legesse, 973]	Emphasizes interconnectedness; leadership roles are less formalized
Decision-Making	Collective decision-making by consensus; community participation [Aliye, 2020]	Prioritizes empathy, compassion, and understanding; decisions consider communal well-being
Accountability	Leaders are held accountable to their communities; guided by moral principles [Aliye, 2020]	Accountability through shared responsibility; leaders recognize their impact on the community
Power Distribution	Rotation of leadership roles prevents concentration of power [Legesse, 1973]	Emphasizes interconnectedness; power is diffused across the community
Ethical Values	Morality, integrity, and adherence to customary laws [Aliye, 2020]	Compassion, respect, and humanity; Ubuntu’s core principle: “I am because we are” [Tutu1999]
Application	Relevant to Oromia, Ethiopia, and Africa; connects with societal values and cultures [Aliye, 2020]	Widely applicable across African contexts; fosters ethical leadership and community well-being [Ogunyemi, 2018]

Table 1 shows the convergence and divergence of Gada and Ubuntu systems. The Gada System originates from the Oromo people of Ethiopia and is deeply embedded in their cultural practices (Aliye, 2020). In contrast, Ubuntu is a Nguni Bantu term prevalent across various African cultures, emphasizing the interconnectedness of all beings (Tutu, 1999). Despite their different origins, both systems share a common goal of promoting

communal well-being and ethical leadership.

In the Gada System, leadership roles are well-defined and rotate cyclically. Key positions include the Abba Gada (supreme leader), Luba (council members), and Bokku (judges) (Legesse, 1973). This structured approach ensures that leadership is shared and prevents the concentration of power. On the other hand, Ubuntu

emphasizes interconnectedness, and leadership roles are less formalized. Leaders in Ubuntu communities are often chosen based on their ability to demonstrate empathy, compassion, and understanding.

Both Gada and Ubuntu prioritize collective decision-making and community participation. In the Gada System, decisions are made by consensus, with active involvement from the community (Aliye, 2020). Similarly, Ubuntu values decisions that consider the well-being of the entire community, emphasizing empathy and compassion. This alignment underscores the importance of inclusive and participatory governance in both systems.

Accountability is a core principle in both Gada and Ubuntu systems. In the Gada System, leaders are held accountable to their communities and are guided by moral principles (Aliye, 2020). Ubuntu also emphasizes accountability through shared responsibility, with leaders recognizing their impact on the community. This shared value of accountability ensures that leaders act with integrity and prioritize the community's interests.

The Gada System prevents the concentration of power through the rotation of leadership roles (Legesse, 1973). This cyclical approach ensures that no single individual or group dominates the community. In contrast, Ubuntu diffuses power across the community, emphasizing interconnectedness and collective responsibility. Both systems promote a balanced distribution of power, fostering a sense of unity and cooperation.

Ethical values are central to both Gada and Ubuntu systems. The Gada System upholds morality, integrity, and adherence to

customary laws (Aliye, 2020). Ubuntu's core principle, "I am because we are," highlights the importance of compassion, respect, and humanity (Tutu, 1999). These ethical values guide leaders in creating supportive and harmonious communities.

The Gada System is particularly relevant to Oromia, Ethiopia, and other African regions, connecting with societal values and cultural practices (Aliye, 2020). Ubuntu, on the other hand, is widely applicable across African contexts and fosters ethical leadership and community well-being (Ogunyemi, 2018). Both systems offer valuable insights for contemporary educational leadership, promoting inclusive, ethical, and effective governance.

Briefly, the Gada and Ubuntu systems provide complementary perspectives on leadership and community governance. While they originate from different cultural contexts, their shared values of collective decision-making, accountability, ethical leadership, and balanced power distribution offer valuable lessons for contemporary educational leaders. By integrating these indigenous knowledge systems, educational leadership models can become more culturally relevant, ethically grounded, and effective in promoting the well-being of both individuals and communities.

Integrating Gada and Ubuntu Indigenous Knowledge Systems in Contemporary Leadership

This aspect of the paper encapsulates the essence of the essay, highlighting the integration of Gada and Ubuntu principles into modern leadership practices. The interaction and combination of Gada and Ubuntu principles in leadership bring

together unique elements that enhance governance and community well-being. These elements include:

Democratic and Rotational Leadership: The Gada System emphasizes democratic governance through the rotation of leadership roles. This ensures that power is shared and no single individual or group dominates the community. Similarly, Ubuntu promotes collective decision-making and shared responsibility, ensuring that leadership is inclusive and participatory (Legesse, 2000; Tutu, 1999).

Ethical and Compassionate Leadership: Ubuntu's core principles of empathy, compassion, and humanity guide leaders to act with integrity and prioritize the well-being of the community. The Gada System also upholds moral principles and accountability, ensuring that leaders are guided by ethical values and are accountable to their communities (Nussbaum, 2003; Aliye, 2020).

Community Participation and Engagement: Both Gada and Ubuntu stress the importance of community involvement in decision-making processes. The Gada System involves the community in collective decision-making by consensus, while Ubuntu emphasizes the interconnectedness of individuals and the need for communal well-being. This fosters a sense of unity and cooperation within the community (Aliye, 2020; Wakwabubi, 2019).

Balanced Power Distribution: The Gada System prevents the concentration of power through the systematic rotation of leadership roles. Ubuntu, on the other hand, diffuses power across the community, emphasizing interconnectedness and collective responsibility. Both systems promote a balanced distribution of power, ensuring that leadership is not centralized (Legesse, 2000; Tutu, 1999).

Accountability and Transparency: Leaders in both Gada and Ubuntu systems are held accountable to their communities. The Gada System ensures accountability through adherence to moral principles and customary laws, while Ubuntu promotes accountability through shared responsibility and recognition of the impact of leaders' actions on the community (Aliye, 2020; Nussbaum, 2003).

Cultural Relevance and Ethical Grounding: The principles of Gada and Ubuntu are deeply rooted in African cultural practices and values. By integrating these principles into contemporary leadership models, leaders can develop governance systems that are culturally relevant, ethically grounded, and effective in promoting the well-being of both individuals and communities (Ogunyemi, 2018; Asafa, 2015).

In summary, the combination of Gada and Ubuntu principles in leadership brings together democratic governance, ethical values, community participation, balanced power distribution, accountability, and cultural relevance. These elements provide a robust framework for developing leadership models that are inclusive, compassionate,

and effective in addressing contemporary challenges

Challenges and Opportunities of Adapting the Combination of Gada-Ubuntu Systems

The following six major challenges face Gada-Ubuntu integration: First is the **conflicting expectations**: Merging Gada and Ubuntu may face challenges due to differing decision-making processes. Therefore, leaders must navigate conflicts arising from these distinct systems and find harmonious solutions.

Second challenge concerns **strategies for integration**: These strategies are still rare. Therefore, research should explore practical strategies for adapting Gada and Ubuntu principles in educational leadership. In addition, training programmes equip leaders with skills to navigate potential conflicts and harmonize these systems.

The third challenge is about **timing and context**: There are challenges faced as a result of the following two conflicting nature of Gada and Ubuntu respectively: (a) **the cyclical nature of Gada is discontinuous** - considering the cyclical nature of the Gada System, leaders must align decisions with specific phases. This cyclical nature has implication on timing as it affects leadership effectiveness. Timing influences leadership effectiveness, especially during transitions between leadership roles (b) **Ubuntu's continuous emphasis** - Ubuntu's continuous focus on relationships transcends cycles. Leaders must therefore, balance temporal aspects while maintaining relational integrity and community well-being.

The fourth challenge involves **leadership development programmes**. Educational institutions and policymakers in African countries appear to be at the infancy stage of integrating Gada and Ubuntu principles into leadership development programmes. This can be done by incorporating training modules that emphasize both collective decision-making (Gada) and empathy (Ubuntu), aspiring educational leaders can develop a holistic skill set. These programmes can foster a new generation of leaders who prioritize community well-being while making informed decisions (Aliye, 2020).

The fifth challenge is in respect of **low inclusive decision-making processes**. School boards, university committees, and educational management teams can adopt inclusive decision-making processes inspired by the Gada System. By involving diverse stakeholders—teachers, students, parents, and community members—leaders can tap into collective wisdom. Ubuntu's emphasis on relationships ensures that these processes are respectful, empathetic, and consensus-driven (Aliye, 2020).

The sixth challenge relates to **the low ability to explore the opportunity of conflict resolution strategies using Gada and Ubuntu**. Leaders often encounter conflicts within educational settings. Integrating Gada and Ubuntu principles provides a framework for effective conflict resolution. Leaders can draw from Gada's accountability mechanisms while applying Ubuntu's compassionate approach. Mediation, dialogue, and restorative justice practices align with Ubuntu values and can transform conflicts into opportunities for growth (Aliye, 2020).

By addressing these challenges and adapting

to the unique features of both systems, educational leaders can create a harmonious blend that honours tradition while fostering effective leadership in contemporary contexts.

Developing a Framework for Integrating Gada and Ubuntu Principles in Educational Leadership

There are three main implications of adopting the combination of Gada and Ubuntu in an education system. Firstly, the interaction can boost inclusive school environments. Integrating Ubuntu's emphasis on relationships can foster inclusive and collaborative educational settings. Leaders who prioritize Ubuntu principles may enhance student engagement and teacher development (Tutu, 1999). Secondly, Gada-Ubuntu nexus can lead to better institutional effectiveness. Applying Gada and Ubuntu principles can positively impact institutional effectiveness. Educational leaders can draw from both systems to create supportive learning environments (Aliye, 2020).

Thirdly, the combined application of both systems could impact on community well-being. Leadership transformation through Gada-Ubuntu integration contributes to community cohesion and well-being

The integration of Gada and Ubuntu principles in educational leadership offers a unique opportunity to create a comprehensive framework that is both culturally relevant and ethically grounded. This framework aims to provide practical guidelines for educational leaders to implement these indigenous knowledge systems in their leadership practices, thereby enhancing the effectiveness and

inclusivity of educational institutions.

Democratic and Rotational Leadership

One of the core principles of the Gada System is its emphasis on democratic governance through the rotation of leadership roles. This approach ensures that power is shared and no single individual or group dominates the community. By incorporating this principle into educational leadership, schools can foster inclusive and participatory decision-making processes. For instance, leadership roles within educational institutions can be rotated among staff members, allowing for diverse perspectives and preventing the concentration of power (Legesse, 2000). This rotational leadership model can also be applied to student governance, encouraging students to take on leadership roles and participate actively in school decision-making processes.

Ethical and Compassionate Leadership

Ubuntu's core principles of empathy, compassion, and humanity guide leaders to act with integrity and prioritize the well-being of the community. Educational leaders can integrate these principles by creating supportive and nurturing learning environments. This involves promoting a culture of empathy and understanding among staff and students, ensuring that the needs and concerns of all members of the school community are addressed (Nussbaum, 2003). By fostering a compassionate leadership style, educational leaders can build trust and cooperation within the school, leading to a more harmonious and effective educational environment.

Community Participation and Engagement

Both Gada and Ubuntu stress the importance of community involvement in decision-making processes. Educational leaders can enhance community engagement by involving parents, local leaders, and other stakeholders in school governance. This can be achieved through regular community meetings, collaborative projects, and open forums where community members can voice their opinions and contribute to school decisions (Aliye, 2020; Wakwabubi, 2019). By fostering strong community ties, educational institutions can create a supportive network that enhances student learning and well-being.

Balanced Power Distribution

The Gada System prevents the concentration of power through the systematic rotation of leadership roles, while Ubuntu diffuses power across the community, emphasizing interconnectedness and collective responsibility. Educational leaders can adopt these principles by ensuring that decision-making power is distributed among various stakeholders within the school. This can involve creating committees or councils that include representatives from different groups, such as teachers, students, and parents, to participate in school governance (Legesse, 2000; Tutu, 1999). By promoting a balanced distribution of power, educational leaders can ensure that all voices are heard and that decisions are made in the best interest of the entire school community.

Accountability and Transparency

Leaders in both Gada and Ubuntu systems are held accountable to their communities. Educational leaders can integrate this principle by establishing clear accountability mechanisms and promoting transparency in school governance. This can include regular reporting on school performance, open communication channels, and mechanisms for feedback and evaluation (Aliye, 2020; Nussbaum, 2003). By fostering a culture of accountability and transparency, educational leaders can build trust and ensure that the school operates with integrity and fairness.

Cultural Relevance and Ethical Grounding

The principles of Gada and Ubuntu are deeply rooted in African cultural practices and values. By integrating these principles into contemporary leadership models, educational leaders can develop governance systems that are culturally relevant and ethically grounded. This involves recognizing and valuing the cultural heritage of students and staff, incorporating indigenous knowledge and practices into the curriculum, and promoting cultural awareness and sensitivity within the school (Ogunyemi, 2018; Asafa, 2015). By honouring and respecting the cultural traditions of the community, educational leaders can create an inclusive and supportive learning environment that fosters a sense of belonging and pride among students.

Summarily, the integration of Gada and Ubuntu principles in educational leadership provides a robust framework for creating inclusive, ethical, and effective governance

systems. By incorporating democratic and rotational leadership, ethical and compassionate leadership, community participation and engagement, balanced power distribution, accountability and transparency, and cultural relevance and ethical grounding, educational leaders can enhance the effectiveness and inclusivity of their institutions. This framework not only honours the rich cultural heritage of African indigenous knowledge systems but also promotes a more compassionate and transformational approach to educational leadership.

Conclusion

The intersectionality of Gada and Ubuntu principles offers a holistic approach to educational leadership. By analyzing the alignment and divergence of these systems, educational leaders can gain a deeper understanding of how each system contributes uniquely to leadership practices and community governance. Examining the interactive elements of Gada and Ubuntu leadership systems allows for the

identification of key components that can complement each other in fostering effective leadership.

Addressing the challenges of integrating the combination of Gada and Ubuntu systems in leadership is crucial for developing strategies that overcome potential obstacles and difficulties. By recognizing and addressing these challenges, educational leaders can create a more inclusive and supportive leadership framework.

Finally, developing a comprehensive framework for integrating the combined principles of Gada and Ubuntu in educational leadership provides practical guidelines for implementation. This framework not only honours the rich cultural heritage of African indigenous knowledge systems but also promotes a more compassionate and transformational approach to educational leadership. By embracing these principles, leaders can create transformative educational environments that prioritize both community well-being and effective decision-making.

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MANAGEMENT SKILLS UTILISATION AND BUSINESS GROWTH IN 'SOUTHWEST' NIGERIA

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Abstract

The study examined the influence of management skills utilisation on business growth in 'Southwest' Nigeria. Three research questions guided the study. A correlational research design was used in this study. Population comprised 6,206 staff from International Breweries PLC in 'Southwest' and 'Southeast' Nigeria. Using purposive sampling, four plants were selected, and a sample of 1,563 staff participated. Questionnaires used comprised: Management Skills Questionnaire (MSQ) with a reliability coefficient of $r = .71$ and Business Growth Questionnaire (BGQ) with $r = .72$. Research question 1 was answered using descriptive statistics. Hypotheses 1 and 2 were tested using simple and multiple regression analyses respectively. The findings revealed that creativity skills ($3.09 > 2.50$), effective planning and execution skills ($3.01 > 2.50$), leadership skills ($3.29 > 2.50$), problem solving skills ($2.99 > 2.50$), innovative-strategic skills ($2.97 > 2.50$) and effective decision-making skills ($2.99 > 2.50$) were among the needed management skills for business growth in post-covid-19 era. There was significant influence of management skills utilization on business growth ($\beta = .155$, $t = 10.28$, $p < .05$). There was composite contribution of the independent variables (management skills) on business growth ($R = .334$, $p < .05$). It was recommended that the company should prioritize creative thinking and problem-solving skills among its employees. This can be achieved through regular workshops, brainstorming sessions, and collaborative projects that encourage the free exchange of ideas.

Keywords: Management Skills, Utilisation, Business Growth, International Breweries

Introduction

Nowadays, business growth is germane in an economy in promotion of real gross domestic product of the country as well as for direct utilization of local raw materials. No country can achieve meaningful development, without consistent business growth, most especially, in real sector of the economy. Again, the growth of business organizations is crucial for generation of employment opportunities, creation of

wealth, sustainability and the progress of any economy in the recent time. Entrepreneurs and small businesses contribute significantly to radical breakthrough ideas (Oginnet *al.*, 2023). Achieving these goals requires specific skills essential for firms to succeed beyond their initial stages. The success of a business relies significantly on the implementation of effective methods for assessing growth rates and adopting beneficial practices in areas such as business culture, strategy, risk

management, and change management. This approach ultimately fosters outcomes that are profitable, efficient, and sustainable (Oguanobi & Joel, 2024; Chatterjee et al., 2024; Rane et al., 2023).

Appiah *et al.*, (2021) emphasized that business growth is influenced by the nature of the investment portfolio, along with the practices, policies, and strategies employed in planning, prioritization, personnel management, pacing, processes, and controls. This shows that business growth should not be taken for granted but should involve carefully weighing the advantages and disadvantages of expanding or remaining small (Okijie & Effiong, 2024; Al Bakri & Kisswani, 2024). It emphasizes the need for a strategic approach that considers factors such as market demand, resource availability, and operational capabilities. Business leaders must engage in thorough analysis and planning to ensure that growth initiatives align with their long-term objectives and sustainability. These roles could be better performance through human resource of the organization; Oginnet al., (2023) supported this claiming that manager or human resource manager needs to have acquired management skills and adopt such in a way that will aid organization success and growth. Management skills in terms of effective management of resources and revenue of the organization.

Management skills mean the ability of a company to efficiently and effectively manage as well as direct its activities towards achieving its goals. For an organization to succeed, it must be creative and possess excellent management skills, focusing on managerial abilities and necessary skills for expansion. The body of research relating to the pattern of skills that

organization must ensue in the face of obstacles is expanding in the recent time. Managers must have different skills to accomplish a wide range of tasks essential for the business's survival. A diverse set of talents is useful for commercializing fresh ideas, bringing innovations to market, and overcoming obstacles (Jolanda et al., 2014). The issue of skills has received significant attention recently due to changes in the global economy. Peterson and Van Fleet (2004) argued that a good manager with managerial skills must have a diverse set of fundamental skills, essential for organizing, leading, and evaluating work. Orieno *et al.*, (2024) noted that talent, which combines innate ability with education and experience, is crucial for performance. Key skills in the formal economy include administrative, leadership, technical, and interpersonal abilities. These skills help individuals adapt to modern technology and cultural norms, innovate, and improve work processes (Tether *et al.*, 2005; Ajayi & Udeh, 2024).

Ajayi and Udeh, (2024) as well as Oguanobi and Joel (2024) no company can experience performance and productivity if management skills such as creativity skills in such organization do not stand. These authors defined creativity skills the capability of thinking ahead goal in form of task oriented or a problem in a new of different way. Ajayi and Udeh, (2024) reiterated that creativity skills entailed capability to develop novel solutions or alternative to product development. However, Hua, Morgan and Kilos (2015) believed that management skills in organization can also take the form planning skills which refers to the abilities that directly contribute to firm productivity, accuracy and effectiveness in the workplace.

Apart planning skills, leadership skills as management skills also played prominent role in organization productivity. Okijie and Effiong (2024) defined leadership skills as the abilities or strengths shown by people in management roles that guide and encourage a group of people and their team toward achieving a common goal or set of goals. According to Gondwe (2020), problem solving skill is another management skill needed for organization productivity. The author further stated that problem-solving skills are categories of skills managers need to possess in determining the cause of the problem, identifying, prioritizing and selecting alternatives for a solution and implementing a solution. Orieno *et al.*, (2024) saw innovative skills as one of management skills that drove organization goal attainment. According to the author, innovative skills generate ideas that create value and improve processes, from inventing a machine to finding a faster route to work while Adeyemo and Bello (2019) believed that management skill such as decision-making skill drove all other skills for goals attainment in any organization. However, the authors defined decision-making skill refers to the qualities that help company make confident choices based on advice, research and experience.

Management skills, surrounding planning, organizing, staffing, leading, and controlling, are crucial for utilizing resources effectively to achieve organizational goals (Rezaeian, 2004). The success of a business often hinges on how well resources are managed, affected by different market price instability as well as management practices (Isaacs & McAllister, 2005). Effective managers are expected to perform diverse roles, from setting goals and organizing activities to leading and

controlling performance (Rue & Byars, 2004). Despite the complexities of human management, which can be the most challenging aspect of production management (Papulova & Mokro, 2007), personal traits such as creativity, goal-setting, confidence, and problem-solving are essential for future managerial success. In addition to management skills, technological skills are also critical to the study's focus.

Despite extensive studies on the achievement of business growth, this study addresses this area not covered by existing studies by investigating how the utilization of management skills in the post-Covid -19 era affect business growth within International Breweries Plc in Southwest Nigeria.

Statement of the Problem

The emergence of the novel COVID-19 in Nigeria took many business owners, industries, and companies by surprise, forcing them into a survival mode to keep their operations running amidst unprecedented challenges. However, as the pandemic continues to affect global operations, many businesses are still struggling to stabilize their practices, while others are attempting to establish a solid footing with the resources at hand. Government of Nigeria have taken step to help business not to collapse, the government with the support of the Central Bank of Nigeria (CBN) initiated support measures by providing loans to enterprises. However, despite this step taken so far, it seems to have not yielded desirable outcomes as many businesses were reported to have short down within this challenging

period in the global economy. This study is an attempt to examine management skills utilisation influence on business growth in Southwest Nigeria.

Objectives of the Study

The main objective of the study was to examine the influence of management skills utilisation on business growth in Southwest Nigeria. The specific objectives are to:

- i. identify needed management skills for business growth in post-covid-19 era.
- ii. investigate influence of management skills utilisation on business growth in post-covid-19 era;
- iii. determine the composite contribution of management skills utilisation on business growth.

Research Questions

- i. What are the needed management skills for business growth in post-covid-19 era?

Hypotheses

H₀₁: There is no significant influence of management skills utilisation on business growth in post-covid-19 era.

H₀₂: There is no significant composite contribution of management skills utilisation on business growth.

Theoretical Framework

Unicist Theory of Business Growth

The theory was initially proposed by Penrose (1959), is integrated into this study

through the Unicist Theory, which is applied in research to analyze and identify the foundational elements supporting both macroeconomic and microeconomic growth. Consequently, Unicist theories of macroeconomic and microeconomic growth were formulated and merged into a unified framework. This framework facilitates the development of scenarios, future projections, and specific strategies that promote growth. The Unicist Theory of company growth helps identify the necessary conditions and strategies for promoting corporate expansion, considering the constraints posed by available resources and prevailing cultural and institutional perspectives. Elisifa and Gerald (2013) stated that this approach is grounded in conceptual anthropology, conceptual economics, and conceptual management. Growth, defined as an increase in size or improvement in quality, results from a developmental process involving a series of interconnected internal changes leading to size increases and character transformations within a business. Growth is a prevalent corporate strategy, contributing to increased sales, assets, and net profits. Strategists may have different views on whether companies need to define broad strategies, but they generally agree on the importance of growth plans. These growth plans, provides essential direction for different strategical activities and form the foundation for efficient efforts aimed at achieving long-term organizational goals. These strategies are instrumental in a company's expansion, evolution, stability, and success, enabling firms to have a large market share and come up with a new product and services.

Various growth strategies are available to business strategists, particularly those resulting from changes in the product,

market, or both (Pearce, Robinson, & Mital, 2008). Businesses unable to attain the necessary economies of scale for mass production frequently encounter substantial losses unless they identify and excel in a specific, lucrative niche. In such cases, elevated prices can be warranted due to the distinct attributes of their products or services. Growth plans differ across firms and finding the most suitable plan for a business and its specific market demands careful consideration. It is crucial to decide whether to sell a new product or existing one in new or existing markets, as an incorrect strategy can lead to the organization's downfall (Elisifa & Gerald, 2013). The theory points out the necessity of implementing appropriate strategies for organizational growth.

However, the theory states the regulations that must be taken into account while creating expansion strategies. To help a firm flourish, two simultaneous acts must be developed. The theory maintains that speculative activities must be undertaken to take advantage of opportunities. It develops a business's structural growth through structural measures. The idea outlines the prerequisites for both conjectural and structural company growth. We approach the procedure by taking into account: a) The context for growth, b) The critical mass for growth, c) The growth-oriented operation. The pattern of business development integration of a specific context, required critical mass, and functioning are crucial for business growth. When considering the conceptual framework, it can be said that producing a suitable environment is the ultimate goal to be attained, the operational

framework for growth enables it to be completed, and the critical mass facilitates energy savings throughout the process. Since context changes happen extremely slowly and a project cannot be implemented if the context is insufficient, context analysis is essential for firm growth.

Methodology

A correlational research design was used in this study. This design is chosen because it gives a better and detailed systematic investigation relating to current practices and outcomes inside the company, providing a clear picture of how these skills are being applied and their impact on breweries business growth. The study consists of 6,206 staff members from various plants of International Breweries (IB). Specifically, Plant A (Lawrence Omole Way, Omi-Asoro, Ilesa, Osun State) has 1,929 staff, Plant B (Niger Bridge Head, Onitsha, Anambra State) has 874 staff, Plant C located at 186/187 Trans Amadi Industrial Layout in Oginigba, Port-Harcourt, Rivers State has 651 staff, and Plant D (Km3 Flowergate Industrial Scheme, Sagamu-Abeokuta Motorway) has 2,752 staff. This population is chosen because it provides a comprehensive representation of the company's diverse operational contexts and management teams, making it possible to make a thorough investigation of the impact of management and technological skills and breweries business growth across different settings within the same organization. The compilation of the industries is reported in Table 1.

Table 1: Representation of Population

Location/Plant	Total (N)
Plant A (Omi-Asoro, Ilesa, Osun State)	1,929
Plant B (Onitsha, Anambra State)	874
Plant C (Oginigba, Port-Harcourt, Rivers State)	651
Plant D (Sagamu-Abeokuta Expressway)	2,752
Total	6,206

A total of 1,563 staff members of International Breweries in Nigeria, representing 25% of the population (1,563 out of 6,206) was used as the sample size. The sample size was selected using proportional random sampling so as to ensure that selected plant was adequately represented. Specifically, 509 (26.4%) respondents were chosen from Plant A (1,929 staff), using purposive sampling technique, 212 (24.3%) from Plant B (874 staff), 166 from Plant C (679 staff), and 826

from Plant D (2,752 staff). Within each plant, respondents were drawn from seven divisions: management, packaging, brewing, energy and fluid, marketing, logistics, and finance/accounts. This approach ensured a comprehensive and representative sample, facilitating reliable and valid conclusions on how management skills affect the breweries business growth across different operational contexts within the company.

Table 2: Sample Representation

Departments	Plant A (Omi-Asoro, Ilesa, Osun State) (N = 1,929)	Plant B (Onitsha, Anambra State) (N = 874)	Plant C (Oginigba, Port-Harcourt, Rivers State) (N = 651)	Plant D (Sagamu-Abeokuta Expressway) (N = 2,752)	Total
Management level	36	9	5	39	89
Packaging department	90	63	46	122	321
Brewing department	135	33	33	156	357
Energy & Fluid department	51	12	15	76	154
Marketing department	92	66	35	175	368
Logistics department	66	5	12	69	152
Finance/Accounts department	39	24	20	39	122
Total	509	212	166	676	1563

Collection of data for this study was carried out using two questionnaires namely Management Skills Questionnaire (MSQ) and Business Growth Questionnaire (BGQ). Each consisting of two sections. The first section provides questions relating to demographic characteristics of respondents. The second section contained items specifically designed to address research questions for the study. The questionnaire was validated by the panel of experts Departments of Business Education, Technical Education, and Educational Management as well as by several lecturers from related departments within the university. These experts conducted a thorough review after which the items included in the study were directly related to the study's objectives. They assessed the content to guarantee that it effectively covered all necessary aspects of management skills as they relate to business growth in the post-COVID-19 era.

In addition to content relevance, the experts ensured that the instrument adhered to a structured format, which is crucial for consistency and clarity in responses. They scrutinized the instrument for any grammatical errors and ambiguities that could potentially affect the respondents' understanding of the questions. It is believed that by incorporating their extensive feedback and suggestions, the instrument was refined to enhance its clarity, coherence, and overall effectiveness. Their rigorous validation process not only confirmed the instrument's relevance and appropriateness but also bolstered its credibility and reliability. This comprehensive validation ensured that the instrument was well-equipped to gather accurate and meaningful data for the study. The reliability test was

conducted once to ensure the instrument's consistency. To test the reliability, 60 copies of the questionnaire were distributed to employees of other branch of the company that does not take part in this study. After collecting the responses, the data was collated and analyzed using the Cronbach Alpha technique to measure reliability. The results demonstrated satisfactory reliability for each questionnaire: Management Skills Questionnaire (MSQ) with a reliability coefficient of $r = .71$ and Business Growth Questionnaire (BGQ) with $r = .72$.

To administer the instruments to staff members at their respective workplaces, five trained research assistants was used to ensure a smooth and efficient data collection process. Prior to administration, the necessary approvals were obtained from the relevant International Breweries offices at the selected plants: Plant A (Omi-Asoro, Ilesa, Osun State), Plant B (Onitsha, Anambra State), Plant C (Oginigba, Port-Harcourt, Rivers State), and Plant D (Sagamu-Abeokuta Motorway). The research assistant helped in the distribution of the questionnaire and collection, who ensured that the respondents filled them out and returned them promptly. Ethical considerations were strictly adhered to throughout the study. Participation was entirely voluntary, and respondents provided informed consent. Measures were taken to ensure anonymity and confidentiality, minimize potential harm, and communicate the results transparently. This careful approach guaranteed that the data collection process was conducted ethically and professionally, enhancing the reliability and integrity of the study's findings. Mean, standard deviation and bar-chart were used in presenting answers to the

research question 1. Hypotheses 1 and 2 were tested using simple and multiple regression analyses respectively.

Results

Research Question 1: What are the needed management skills for business growth in post-covid-19 era?

Table 3: Mean and standard deviation responses on the needed management skills for business growth in post-covid-19 era

S/N	Statements	Mean	STD	Remark
1.	Creativity skills	3.09	.908	Positive
2.	Effective planning and execution skills	3.01	.972	Positive
3.	Leadership skills.	3.29	.497	Positive
4.	Problem solving skills	2.99	.982	Positive
5.	Innovative-strategic skills.	2.97	.982	Positive
6.	Effective decision-making skills.	2.99	.980	Positive

Average Mean = 3.06

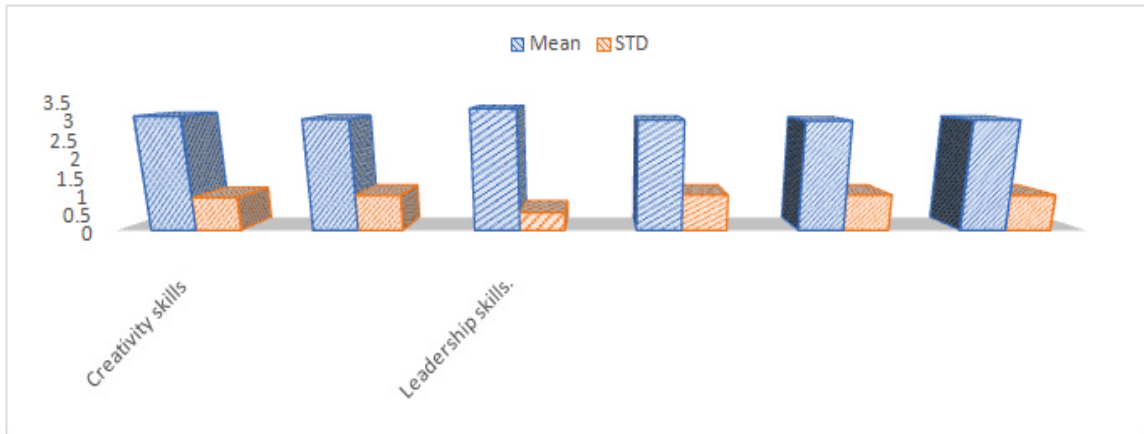


Figure 1: Bar-chart showing the needed management skills for business growth in post-covid-19 era

Result from Table 3 revealed that average mean was 3.06 and the bench mark value of 2.50. Since, average mean value $3.06 > 2.50$, this implied that creativity skills ($3.09 > 2.50$), effective planning and execution skills ($3.01 > 2.50$), leadership skills ($3.29 > 2.50$), problem solving skills ($2.99 > 2.50$),

innovative-strategic skills ($2.97 > 2.50$) and effective decision-making skills ($2.99 > 2.50$). The implications of this result were that these aforementioned skills were the needed management skills for business growth in post-covid-19 era.

H0₁: There is no significant influence of management skills utilisation on business growth in post-covid-19 era

Table 4: Influence of Management Skills Utilisation on Business Growth in Post-Covid-19 Era

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	28.835	.358		80.439	.000
1 Management skills	.233	.023	.155	10.281	.000

a. Dependent Variable: Business growth

Table 4 showed that the sign of the coefficient of management skills were positive which implied that an increase or improvement in management skills will increase business growth. The independent variables were found to be significant and strongly determine business growth with the p-value less than .05 and magnitude of management skills ($\beta = .155$, $t = 10.28$, $p < .05$). This implied that null hypothesis was

rejected and the researcher concluded that there was significant influence of management skills utilisation on business growth in post-covid-19 era.

H₀: There is no significant composite contribution of management skills utilisation on business growth.

Table 5: Significant Composite Contribution of Management Skills Utilisation on Business Growth

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.334 ^a	.112	.111	3.33611

a. Dependent variable: Business Growth

b. Predictors: (Constant), Management skills

Table 5 showed that there was significant composite contribution of management skills utilization on business growth $R = .334$, $p < .05$. The Table further indicated

that {11.1% (Adj. $R^2 = .111$)} that about 11% of the variance in business growth were accounted for by the linear combination of the independent variables.

Discussion of Findings

The findings of the study revealed that creativity skills, effective planning and execution skills, leadership skills, problem solving skills, innovative-strategic skills and effective decision-making skills were the needed management skills for business growth in post-covid-19 era. The findings

align with the studies of Vahdat (2022) and Elenwoet *al.*, (2024), who emphasized the critical role of management skills such as leadership and planning skills particularly in fostering business growth. The findings further corroborated with Chatterjee, Johnson and Cooney (2012) who found that the greatness of management in any

company depend on the skills of the management team as well as Al Bakri and Kisswani (2024) concluded that management skills possessed serious benefits to the growth and development of the organization.

The findings further indicated that there was significant influence of management skills utilisation on business growth in post-covid-19 era, this correlate with Adeyemo and Bello (2019), who identified management skills to directly relate with the business growth in organization. Furthermore, the findings tandem with Ekechi, Chukwurah, Oyeniyi, and Okeke (2024) that argued that no company can experienced growth without strongly management team with viable skills and Adeyemo and Bello (2019) submitted that management skills are the factors driving organization innovative products and services for growth.

Furthermore, the findings of the study showed that there was significant composite contribution of management skills utilisation on business growth. This finding tandem with Ekechiet *al.*, (2024), as well as Popoola et al., (2024) who found that strong management skills are vital for navigating the challenges and opportunities in the business environment. Likewise, Gondwe (2020) found that management skills jointly impacted organization expansion and performance in a market.

Conclusion and Recommendations

The landscape of the brewing industry has undergone significant changes in the aftermath of the COVID-19 pandemic, necessitating a reassessment of the skills that drive business growth. In this context, it

becomes crucial for breweries to harness management skills. Based on that, the study concluded that effective management skills play a positive and significant role in enhancing business growth for breweries. Strong creativity skills, effective planning and execution skills, leadership skills, problem solving skills, innovative-strategic skills and effective decision-making skills are essential components that enable breweries to recover from challenges and capitalize on new opportunities.

Based on the findings, the study recommended as follows:

- i. Considering the strong influence of creativity skills on breweries business growth, the company should prioritize creative thinking and problem-solving skills among its employees. This can be achieved through regular workshops, brainstorming sessions, and collaborative projects that encourage the free exchange of ideas.
- ii. Given the substantial role of management skills in driving breweries business growth, International Breweries (PLC) should enhance its management training programs. This includes leadership development initiatives that focus on strategic planning, decision-making, and interpersonal skills. Mentorship programs can also be established, pairing less experienced managers with seasoned executives to facilitate knowledge transfer and professional growth. Regular assessments and feedback mechanisms should be in place to continuously improve management effectiveness.

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PREDICTIVE VALIDITY OF MATHEMATICS AND INTEGRATED SCIENCE JUNIOR SCHOOL CERTIFICATE EXAMINATIONS ON STUDENTS' PERFORMANCE IN SENIOR SECONDARY SCHOOLS CHEMISTRY IN ONDO STATE

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Abstract

The study examined the predictive validity of Junior Secondary School Certificate Mathematics and Integrated Science examinations on academic performance of Senior Secondary School Chemistry students in Ondo State. Three research hypotheses were generated to guide the study. The study employed ex-post-facto research design. Thirty-six secondary schools were purposively selected from six Local Government Areas of the three Senatorial Districts in Ondo State, namely, Ondo North, Ondo Central and Ondo South. Two Local Government Areas were selected from each of the Senatorial Districts using simple random sampling technique. A total of 1,826 from the entire 2020/2021 SSS3 Chemistry students that came in by JSSCE and had complete record from SSS1 to SSS3 and also sat for Chemistry in SSS classes and 2020/2021 WAEC/NECO SSCE were involved in the selected secondary schools. Data collected were analyzed using correlation analysis and regression analysis. All the results revealed that JSSC Mathematics examinations and JSSC Integrated Science examinations significantly predict academic performance of students at the SSS2 unified examination in Chemistry; WAEC SSC examinations in Chemistry; and NECO SSC examinations in Chemistry. Based on the findings of this study, it was therefore recommended among others, that JSSCE results should remain a yardstick for admitting Chemistry students into senior secondary schools as a way of achieving and maintaining quality Chemistry education.

Keywords: Academic, Correlation, Predictive, Performance, Validity

Introduction

The Junior Secondary School Certificate Examination (JSSCE) is a public examination in Nigeria, conducted by each State of the Federation through their respective Ministries of Education for final year students of the Junior Secondary School (JSS) at the end of the third year of Junior Secondary Schooling. The National Examination Council (NECO) is a national examination body responsible for the

conduct of JSSCE to all JSS3 students of the Federal Government Colleges and some Private Secondary Schools in Nigeria who are willing to register their students for NECO examinations. The JSSCE is the system adopted in admitting students to senior secondary schools and the admission is controlled by the various States' Ministries of Education in Nigeria.

The unified examination is the examination conducted by Ministries of Education for

senior secondary school two (SSS2) at the end of third term in Ondo State. Results of this examination serve as promotion examination to SSS3. While the senior secondary school certificate examination (SSSCE) on the other hand is a national examination for all Senior Secondary School three (SSS3) students in all secondary schools in Nigeria. It is being conducted and administered by West African Examinations' Council (WAEC) and National Examinations' Council (NECO). The two examination agencies conduct parallel or equivalent Senior Certificate Examinations in the country. The WASCE was first conducted in 1958 by WAEC and its validity has been ascertained by many researchers like Olatunde (2017) and Olagbade (2019).

The academic performance of students depends to a great extent on certain factors. These factors include type of school attended, sex and age Olatunde (2017); Oyinola, 2021; Adelana, 2020; Robert; 2019 Ogunboyede, 2017). There is considerable research evidence to show that previous knowledge will affect academic performance (Oyinola, 2021; Wilson and Thompson, 2020; James, 2018; Ololade, 2019; obiano, 2020; Akinola, 2021; Ogunwole, 2016. This is perhaps, one of the major reasons for the adoption of JSSCE as a yardstick for admitting students to senior secondary schools in Nigeria. Hence, a student is admitted with the assumption that he or she possesses the ability and skills necessary to cope with the academic challenges at the Senior Secondary School (level) level.

However, despite the unique position of examinations in educational system, there have been conflicting reports on the

predictive strength of the JSSCE at predicting performance in the senior secondary school examinations (Ondo State Ministry of Education, 2016; Gideon, 2016; Ojuola, (2018); Olusola, (2020) and Daniel, (2020). Some educational researchers such as Olagbade (2019), Donald (2017) and Zainab (2022), have advocated for the cancellation of the junior secondary school certificate examinations on the ground that its predictive value is in doubt.

The above inconsistent reports and findings leave one with doubt as to whether JSSCE may have reliable validity. It is therefore necessary in this study to examine the predictive validity of the JSSC Mathematics and Integrated Science examinations. The study was designed to examine the validity of Junior Secondary School Certificate Mathematics and Integrated Science Examinations for predicting Chemistry students' academic performance in senior secondary schools in Ondo State.

The study was specifically designed to:

- a) examine predictive strength of JSSC Mathematics examination scores and JSSC Integrated Science examination scores on academic performance of students at the SSS2 unified Chemistry examination.
- b) determine predictive strength of JSSC Mathematics examination scores and JSSC Integrated Science examination scores on academic performance of students at WAEC SSC Chemistry examination
- c) assess predictive strength of JSSC Mathematics examination scores and JSSC Integrated Science examination scores on academic performance of students at NECO SSC Chemistry examination.

Hypotheses

The following hypotheses were generated to guide the study:

- H₀₁. JSSC Mathematics examination scores and JSSC Integrated Science examination scores will not significantly predict academic performance of students at the SSS2 unified Chemistry examinations.
- H₀₂. JSSC Mathematics examination scores and JSSC Integrated Science examination scores will not significantly predict academic performance of students at the WAEC SSC Chemistry examinations.
- H₀₃. JSSC Mathematics examination scores and JSSC Integrated Science examination scores will not significantly predict academic performance of students at the NECO SSC Chemistry examinations.

Methodology

The study was descriptive research of the ex-post-facto research design. The target population consisted of the entire 2020/2021 SSS3 students that were admitted into senior secondary schools through JSSCE results. The sample for the study comprised of 1,826 SSS3 Chemistry students selected through multistage sampling technique. The selected Chemistry students were the students that wrote Mathematics and Integrated Science in JSSCE, offered Chemistry as a subject at the senior secondary school level and wrote 2020/2021 WAEC/NECO SSCE. These constituted the subjects for the study. The geographical areas of Ondo State were

stratified into three Senatorial Districts, namely; Ondo North, Ondo Central and Ondo South, using stratified sampling technique. A simple random sampling technique was then used to select two Local Government Areas from each of the Senatorial Districts. Six secondary schools from each of the selected Local Government Areas were then selected using purposive random sampling technique. These schools were purposively selected because they are the top six oldest secondary schools from each of the selected Local Government Areas and have been presenting students for WASCE and NECO for over 20 years. Therefore, they were expected to have well-equipped laboratories and libraries for effective teaching and learning of Integrated Science, Mathematics and Chemistry. Hence, their choice for the study.

An inventory titled "Students JSSCE and SSSE Academic Performance Proforma" was used to collect the relevant data for the study. The Proforma consisted of items that captured information about the students such as name of school, Local Government Area, students' JSSCE scores in Mathematics and Integrated Science for 2017/2018, the students' scores in Chemistry for 2019/2020 unified examinations and 2020/2021 SSC examinations. The pattern of grading students' scores in JSSCE are such that the distinction grade is represented by "A" (60 – 100). The credit grade is represented by "c" (50 – 59). The ordinary pass is represented by "P" (40 – 49) while the failure grade is represented by "F" (0 – 39). The pattern of grading students' scores in senior secondary school examinations (internal and external) are such that the distinction grade is represented by B3 to A1(65 – 100). The

credit grade is represented by C6 to C4 (50 – 64). The ordinary pass grade is represented by E8 to D7 (40 – 49) and the failure grade is represented by F9 (0 – 39). For the purpose of scoring, therefore, JSSCE grades of A, C, P and F were awarded 3, 2, 1 and 0 points respectively while SSE grades of (B3 - A1), (C4 – C6), (D7 – E8) and F9 were also awarded 3, 2, 1 and 0 points respectively.

The researchers used the proforma in each of the selected schools to collect students'

grades in Mathematics and Integrated Science for 2016/2017 JSSCE, as well as students' grades in Chemistry for 2019/2020 SSS2 unified examinations and 2020/2021 SSC examinations. Data collected were analyzed using correlation analysis and regression analysis. All the null hypotheses postulated for the study were tested at 0.05 level of significance.

Results

Testing of Hypotheses

H₀₁: JSSC Mathematics examination scores, and JSSC Integrated science

examination scores, will not significantly predict academic performance of students at the SSS2 unified Chemistry examinations.

Table 1: Regression Analysis: SSS2 Unified Chemistry Examination Results as Criterion

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Beta	Constant
1. JSSCS	0.151	0.023	0.022	0.529	0.151	1.411
2. JSSCMTH	0.176	0.031	0.030	0.527	0.092	1.225

Table 2: Summary of ANOVA of the Goodness of Fit of the Regression Equation

Model		Sum of squares	Df	Mean squares	F	Sig
1. JSSCS	Regression	11.841	1	11.841	42.319	.000
	Residual	510.373	1824	.280		
	Total	522.215	1825			
2. JSSCMTH	Regression	16.185	2	8.092	29.153	.000
	Residual	506.030	1823	.278		
	Total	522.215	1825			

$P < 0.05$

Table 1 shows that in SSS2 unified Chemistry examinations, JSSC Integrated Science examinations predicted 2.3% of the variance, while the JSSC Mathematics examinations predicted 3.1% of the

variance. Beta values shows that JSSC Integrated Science examination results and JSSC Mathematics examination results had negligible predictive strength for SSS2 unified Chemistry examinations.

From Table 2, the F calculated were significant at 0.05 level of significance. Thus, the null hypothesis that states that JSSC Mathematics examination scores and JSSC Integrated science examination scores would not significantly predict academic performance of students at the SSS2 unified Chemistry examinations was therefore rejected. This means that JSSC Mathematics examination scores and JSSC Integrated science examination

scores significantly predicted academic performance of students at the SSS2 unified Chemistry examinations.

H₀: JSSC mathematics examination scores and JSSC Integrated Science examination scores will not significantly predict academic performance of students at the **WAEC SSC Chemistry examinations**

Table 3: Regression Analysis: WAEC SSC Chemistry Examination Results as Criterion

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Beta	Constant
1. JSSCMTH	0.353	0.124	0.124	0.471	0.353	1.272
2. JSSCS	0.416	0.173	0.172	0.458	0.223	0.825

Table 4: Summary of ANOVA of the Goodness of fit of the Regression Equation

Model	Sum of squares	Df	Mean squares	F	Sig.
1. JSSCS					
Regression	57.740	1	57.740	260.308	.000
Residual	404.589	1824	.222		
Total	462.329	1825			
2. JSSCMTH					
Regression	80.045	2	40.023	190.857	.000
Residual	382.283	1823	.210		
Total	462.329	1825			

P < 0.05

Table 3 shows that in WAEC SSC Chemistry examinations, the JSSC Mathematics examinations predicted 12.4% of the variance while JSSC Integrated science examinations accounted for 17.3% of the variance. Beta values shows that JSSC Mathematics examination results and JSSC Integrated science examinations results had low predictive strength for WAEC SSC Chemistry examinations.

In table 4, the F calculated were significant at 0.05 level of significance. Thus the null hypothesis that states that JSSC Mathematics examination scores and JSSC Integrated science examination scores would not significantly predict academic performance of students at the WAECSSC Chemistry examinations was therefore rejected. This means that JSSC Mathematics examination scores and JSSC Integrated

science examination scores significantly predicted academic performance of students at the WAEC SSC Chemistry examinations.

H₀₃: JSSC Mathematics examination scores and JSSC Integrated Science examination scores will not significantly predict academic performance of students at the NECO SSC Chemistry examinations.

Table 5: Regression Analysis: NECO SSC Chemistry Examination Results as Criterion

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Beta	Constant
1. JSSCS	0.183	0.034	0.033	0.330	0.183	1.710
2. JSSCMTH	0.254	0.064	0.063	0.325	0.068	0.825

Table 6: Summary of ANOVA of the Goodness of Fit of the Regression Equation

Model	Sum of squares	Df	Mean squares	F	Sig
1. JSSCS					
Regression	6.922	1	6.922	63.434	.000
Residual	199.043	1824	.109		
Total	205.965	1825			
2. JSSCMTH					
Regression	13.253	2	4.418	41.767	.000
Residual	192.712	1823	.106		
Total	205.965	1825			

$P < 0.05$

Table 5 shows that in NECO SSC Chemistry examinations, JSSC Integrated science examinations predicted 3.4% of the variance while the JSSC Mathematics examinations predicted 6.4% of the variance. Beta values shows that JSSC Integrated Science examination results and JSSC Mathematics examination results had negligible predictive strengths for NECO SSC Chemistry examinations.

In table 6, the F calculated were significant at 0.05 level of significance. Thus the null hypothesis that states that JSSC Mathematics examination scores and JSSC Integrated science examination scores would not significantly predict academic

performance of students at the NECO SSC Chemistry examinations was therefore rejected. This means that JSSC Mathematics examination scores and JSSC Integrated Science examination scores significantly predicted academic performance of students at the NECO SSC Chemistry examinations.

Discussion of Findings

Findings from the study reveals that the academic performances of students in the JSSC Mathematics examinations and JSSC Integrated Science examinations were significant predictors of the academic performance of students in the SSS2 unified

Chemistry examinations. This was in contrary to the findings made by Gideon (2016), who reported that the JSSC Mathematics and Integrated Science examinations could not predict the academic performance of students at the SSC Chemistry examination.

It was also revealed from the study that academic performances of students in the JSSC Mathematics examinations and JSSC Integrated Science examinations were significant predictors of the academic performance of students at the WAEC and NECO SSC Chemistry examinations. This was in consonance with the findings made by Ojuola (2018), who reported that the JSSC Mathematics examinations and JSSC Integrated Science examinations were significant predictors of the academic performance of students at the SSC Chemistry examinations. However, this is at variance with the findings of Akinola (2021), who claimed that JSSC Mathematics examinations was not a significant predictor of students' performance at the SSC Chemistry examinations and found no significant relationship between the performance of students in the JSSC Integrated Science and the SSC Chemistry examinations.

The JSSCE is a yardstick for admitting students into SSS in Ondo state. Student who is hereby selected must have possessed the abilities and skills necessary to cope effectively with the academic challenges / rigours in the SSS, since such a student would have acquired and completed the content of the JSS curriculum. A student that performs brilliantly in the JSSCE in Mathematics and Integrated Science should have the ability to cope also perform brilliantly in the SSS2 unified examination

SSCE Chemistry. All things been equal, a student with good grades in Mathematics and Integrated Science JSSCE should also obtain the same grades in SSS2 unified examination SSCE Chemistry.

Conclusion

Based on the findings of the study, it was concluded that the academic performance of Chemistry students in the JSSC Mathematics examinations and JSSC Integrated Science examinations were low predictors of the academic performance of Chemistry students at SSS2 unified examinations, NECO and WAEC SSC examinations. However, the low prediction was significant.

Recommendations

Based on the findings of this study, the following recommendations are made for improvement:

1. The JSSCE results should remain as a yardstick for admitting Chemistry students into senior secondary schools as a way of achieving and maintaining good quality Chemistry education.
2. Parents and teachers should also provide the much-needed conducive atmosphere to learn Mathematics, Integrated Science and Chemistry among others subjects.
3. Teachers, students, parents and guardians should get fully prepared for the challenges of Mathematics and Integrated Science so that the students could do well in SSS2 unified Chemistry examinations and SSC Chemistry examinations conducted by WAEC and NECO

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SCHOOL PUBLIC RELATION: A TOOL FOR ENHANCING STUDENTS' ENROLLMENT INTO TECHNICAL EDUCATION PROGRAMME IN NIGERIA

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Abstract

The Federal Government of Nigeria through its national policy on education gave prominence to education for self-reliance in its educational structure. This policy can best be achieved through Technical Education programme. Technical Education is an aspect of the education whose main objective is to prepare its recipients for employment in a recognized occupation through the acquisition of skills, knowledge and attitude required for utilization of natural resources needed for economic development of the nation and for their own personal betterment. Although Technical Education contributes significantly to the development of the nation's economy, it has been observed that there is persistent low enrolment into the programme. The paper therefore, aims to examine the strategies for enhancing students' enrollment in technical education programme through school public relations with the view of highlighting factors responsible for low enrolment into technical education programme. The paper recommended among others, regular meetings with guardians, regular orientation programme for both guardians and students, organization of career guidance and occupational awareness programme, public private partnership programme, voluntary and collaborative relationship between various participants in education industry, sharing of workshop and physical facilities with host community, provision of scholarships programme, participation of school management in community development service and carrying out intensive awareness campaign in the media as suitable measures of enhancing students' enrolment in technical education programme.

Keywords: *School Public Relation, Enrollment and Technical Education*

Introduction

Education is one of the greatest tools for national development. It is the strongest force that could be used to achieve desirable change of a nation's economic, political and sociological development. Shomirzayev (2020) stated that education is the greatest

force for bringing about positive changes in the society. It involves a learning environment with teachers and students at the centre of the activity. The interaction between the teachers, students and curriculum content brings about permanent change in behavior gained through learning

activities. However, the current educational system needed in this new age especially in Nigeria, is the educational system that trains its recipient to acquire skills to earn a living. In line with this direction, Agwi(2016) stated that the educational programme that provide this kind of training is regarded as Technical Education.

Technical Education also known as Industrial Technology Education, Technology Education or Industrial Technical Education is one of the vocational education programme. The main objective is to prepare its recipient for the acquisition of practical skills, attitude, understanding and knowledge that lead to occupational field for effective participation in the world of work. It is a comprehensive term referring to those aspects of the educational process involving, in addition to general education, the study of technologies and related science, the acquisition of knowledge, practical skills and attitudes relating to occupations in various sectors of economic and social life (UNESCO, 2016). In essence, Technical Education is meant to prepare beneficiaries for employment in recognized occupation through acquisition of skills, knowledge and attitude required for utilization of natural resources needed for economic development of the nation. It is designed to prepare individual learner to be self-reliant and increase earnings (Adetola, 2021). Corroborating his view, Abdulahi (2016) stated that technical education is a planned programme of learning experiences that begins with exploration of career options, supports basic academic and life skills, and enables achievement of high academic standards, leadership, preparation for industry-defined work and advanced and continuing education.

The objectives of the programme as obtained in the national policy on education, Federal Republic of Nigeria (2013), is aimed at preparing the recipient to become craftsmen, master craftsmen, technicians and technologist's' in different occupational trade for employment in the world of work, to prepare the recipients become teachers of technical subjects and effectively occupies leadership positions in secondary schools, technical colleges and trade centres. It also prepares the recipients for employment in training schemes of technical and industrial establishments and cooperative colleges, as well as in the various government rural development schemes including an opportunity for advanced studies such as Masters and Doctoral degrees. In order to achieve this goal, Technical Education curriculum was split into different trades with corresponding modules so as to enable learners choose and accomplish trade of their interest successfully. The programme according to Auta (2022), is therefore concerned with the acquisition of skills and knowledge for sustainable livelihood and employment through the production of skilled workforce to revitalize and sustain the economy and reduce unemployment. It is a veritable tool for national development strategies in many societies because of the impact on human resource development, productivity and economic growth (Wordu et al., 2018).

Although, Technical Education contributes significantly to the development of the nation's economy, it has been revealed by many researchers that there is persistent low enrolment of students into the programme. For instance, a study by Oviawe (2017) revealed that technical education has remained detested to a greater extent by the

majority of Nigerian parents and even students which resulted to low enrollment rate of students into Technical Education programme. In line with this, Smith (2021) noted that lack of qualified skilled manpower in Nigeria society today is evidence of the decreasing enrolment rate of

students into Technical Education programme. Moreso, Auta, et al. (2023) revealed that an intermitted negative fluctuation in enrolment rate of students in Technical Education programme as shown in Table 1.

Table 1: Enrolment Trend into Technical Education Programme in Relation to the Approved Carrying Capacity

Session	N	NUC approved Carrying Capacity	% of Carrying Capacity (X)	% of Enrollment (Y)	Ratio of X & Y
2013/2014	44	100	100	44	100:44
2014/2015	36	100	100	36	100:36
2015/2016	16	100	100	16	100:16
2016/2017	41	100	100	41	100:41
2017/2018	14	100	100	14	100:14
2018/2019	19	100	100	19	100:19
2019/2020	6	100	100	6	100:6
2020/2021	29	100	100	29	100:29
2021/2022	23	100	100	23	100:23
2022/2023	93	100	100	93	100:93
Total	321	1000	1000	32.1	100:32.1

Source: Auta et al. (2023)

From Table 1, it can be clearly seen that there is relatively empirical evidence to support the visible inconsistent enrollment trends into Technical Education programmes in relation to the approved carrying capacity especially at the university level which indicated that the enrollment trends into Technical Education programmes have witness an intermitted negative fluctuation in the last ten years to the extent that only 6% enrollment quota was filled in a particular academic year (2019/2020).

Some of the obvious reasons of the low enrolment of students into Technical Education programme according to Adeosun (2015), is that Nigeria does not seem to accord Technical Education programme the attention it deserves despite

its proven contributions in national development. This could be attributed to many factors such as misconceived notion that Technical Education is meant for the academic weaklings, societal perception of the programme as being exclusively for men folks (Auta, 2023, Dokubo & Deebom,2017). The average Nigerian parent will prefer professions like Medicine, Law, and Engineering, etc. to Technical Education for their children and wards (Auta, 2023). This negative stigma which society places on Technical Education programme might have contributed in no small measure to the low enrollment of students into the programme. There is need for schools to create awareness to the public on the importance of enrolling their wards in technical education programme. School

public relations is a business of creating and maintaining public understanding and support through effective communication.

In addition, Abiodun-Oyebanji and Michael (2016) revealed that many other factors such as school location, family background, social economic status, peer influence, environmental factors, economic factors and government/political factors also influence enrolment rate of students into Technical Education programme. The effects of this low enrolment of students in Technical Education programme according to Smith (2021), is that most primary, post-primary, technical and vocational schools in Nigeria now lack the quality and quantity of technical teachers for implementing the Technical Education curriculum at all levels of Education. If this trend of low enrolment is not checked, the dream of having more trained craftsmen, technicians, technologist's or technical educators to meet manpower needed for science and technological growth and development of the nation may not be achieved. It is in line with this that the study seeks to address the strategies of enhancing the enrolment rate of students into Technical Education programme through the school public relation programme.

School Public Relations

School public relation has been widely identified as one of the best ways to increase awareness in schools. Therefore, the need for effective school public relation has become increasingly important for Technical Education programme. In order to understand the role public relation plays in improving students' enrolment in Technical Education programmes, it is first important

to understand the concept of public relations.

In a broad sense, Omorodion et al. (2022) defined public relations as management functions which evaluate public attitudes, identifies the policies and procedures for an organization with the public interests. Public relation is also viewed as the planned and sustained effort to establish and maintain goodwill and mutual understanding between an organization and its public (Ibeneme & Okwelle, 2008). According to Onwumere and Modebelu (2020), public relations is a management function that seeks to identify, build and maintain mutually beneficial relationships between an organization and all of the public on whom its success or failure depends. These definitions project public relations as systematic efforts by an organization to gain public supports which are found on evaluative data, planned activities and public interest. Public relation therefore helps an organization and its public adapt mutually to one another.

School public relations can therefore be referred to as public information, community relations, or communications that enhance school management. Gowon et al. (2019) defined school public relations as a planned, systematic management function, designed to help improve the programs and services of an educational organization. It relies on a comprehensive, two-way communication process involving both internal and external public with the goal of stimulating better understanding of the role, objectives, accomplishments, and needs of the organization.

School public relations programs assist in interpreting public attitudes, identify and help shape policies and procedures in school in the interest of public and carry on

involvement and information activities which earn public support and understanding in school (Çoruk, 2018). School public relation encompasses all interactions and communications with the public by everyone in your school district, from school secretaries to maintenance workers to teachers, principals, board members, and students. Good public relation is something everyone involved with a school should be practicing every day (Çoruk, 2018). A cursory look at the above definitions show that school public relations rely on a comprehensive two-way communication process involving both internal public (students and staff) and external public (parents, government and general public) with a common goal of stimulating a better understanding of the roles, objectives, accomplishments and needs of the school. Today, school public relations are not all about conveying information to the public rather, it is about establishing and promoting partnerships within the community.

Role of Internal Public in Enhancing Students' Enrolment into Technical Education Programmes

The internal public in a school public relation programme refers to the students and staff (school secretaries to maintenance workers to teachers, principals, board members, and students) in the school. Gowon et al. (2019) revealed that one of the best ways of increasing students' enrolment in technical schools is through the teachers and the students. The school is an environment with staff and students from various social cultural and ethnic background. Some of the staff and students live inside the school during the school

session for schools with hostel facilities while others come from their various home for schools without hostel facilities. Irrespective of their residence, they share information with other people who are not in their school either during the school session or during the holidays. Therefore, as they meet with people who are not part of their internal public relation, they should take up the responsibilities of advertising the school programme. As they tell their school stories by sharing the mission, vision as well as the objectives of the school programmes to the people they meet, they are advertising the school. This will in no small measure enhance the enrolment rate of students into the school programme especially in Technical Education programme.

Also, sharing success stories and testimonials of alumni who have excelled in their career after completing technical education programme can inspire prospective students. Testimonials can serve as real-life example of a successful education programme. National Association of State Directors of Career Technical Education Consortium (NASDCTEC) (2019) stated that students testimonials can be an effective marketing tool for technical education programme. Teachers can serve as ambassadors for technical education, sharing their own experiences and the benefits of technical education with students. To this, Okwelle (2011) stated that teachers of technology education in tertiary institutions have major roles to play in school public relation's activities in other to attract students into TVET programmes.

The school management which is a core aspect of the internal school public relation could as well enhance the enrolment of students into Technical Education

programme. According to Çoruk (2018), some of the ways the school management could enhance the enrolment of students into Technical Education programme are stated as follows:

- i. Regular orientation programme for both guardians and students.
- ii. Organizing of career guidance and occupational awareness programme in schools.
- iii. Public private partnership between schools and private organizations.
- iv. Voluntary and collaborative relationship between various participants in education industry.
- v. Sharing of physical and instructional facilities with host community.
- vi. Active participation of school management in community development service.
- vii. Creation of website to tell own story, about the mission and vision of the programme as well opportunities that about for recipient of the programme.
- viii. Link website to other national and international organization such as AVTEN, UNESCO, UNEVOC and ILO e-platform to access opportunities.
- ix. Regular exhibitions programme of products from schools.
- x. Regular awareness campaign programme in the media for public awareness on school programme

Role of External Public in Enhancing Students' Enrolment into Technical Education Programmes

The external public in a school public relation programme refers to those people who are outside the school or who have an indirect relationship with the school. Such people include: the parents, government, agencies and companies/businesses. This group of people plays a significant role in enhancing the enrolment of students into Technical Education programmes. Brown (2022) stated that some of the ways to enhance the enrolment of students in school programme is through funding. The general Public especially the government is supposed to take the major responsibility of funding schools. Funding could be in form of the following among others, intervention programmes, provisions of physical and instructional facilities, provision of scholarship, training and retraining of teachers, provisions of funds for workshop and seminars for staff training programmes, recruitment of adequately qualified manpower. Once these things are continuously done for Technical Education programme, the programme will become more viable and the quality of the graduates from the programme will be improved. This will attract more applicants and in turn increase the enrolment rate of students into the programme.

Conclusion and Suggestions

There is no doubt that school public relation is a good alternative to improving student enrolment in Technical Education programme. School public relation activities are needed in every level of Technical Education programme to

effectively communicate the missions, goals, vision, accomplishments and challenges of the school to the public. This is important to correct the poor societal attitude about Technical and Vocational Education programme which has not encouraged enrolment into the programme. However, for Vocational and Technical Education institutions to initiate, develop and engage in public relation's activities successfully, a lot of sensitization, advocacies and capacity development among the stakeholders are required. A collective involvement will make a difference.

Based on the issues discussed in the preceding paragraphs, the study therefore, suggests the following:

- a. School management should as a matter of urgency have in place a well-coordinated public relation unit with responsibilities of both staff and students well defined.
- b. Budgetary provision should be made for public relation unit in Technical Education programmes by school

management.

- c. School public relation should be included in the curriculum of Technical Education programmes by curriculum planners.
- d. School management with Technical Education programmes should be actively involved in community development service.
- e. Schools should create website to tell their own story and also link to other national and international organizations such as AVTEN UNESCO, UNEVOC and ILO e-platform to access opportunities.
- f. Schools should endeavor to share facilities with the host community to enhance mutual relationship between the school and the general public.
- g. Government should also encourage stability in educational policies by introducing and maintaining a curriculum which will cater for learners' interest and make them self-employed after school.

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EFFECT OF VIRTUAL LABORATORY INSTRUCTIONAL STRATEGY ON SECONDARY SCHOOL STUDENTS' LEARNING OUTCOMES IN PHYSICS IN NIGERIA

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Abstract

This study examined the effect of Virtual Laboratory Strategy (VLS) on secondary school Physics students' academic achievement and interest in Benue State adopting the non-equivalent pre-test, post-test, and control group quasi-experimental survey research designs. The target population for the study comprised all the Secondary School II (SSII) Physics students in Benue State. Using the multi-stage sampling procedure, the study sample consisted of 79 SSS II students in two intact Physics classes. Two research instruments titled: Physics Practical Achievement Test (PPAT) and Physics Students' Interest Questionnaire (PSIQ) were employed for data collection. Science education experts validated the instruments and the reliability coefficient for PPAT was found to be .79 while that of PSIQ was .86 respectively using the Pearson Product Moment Correlation and Cronbach Alpha. The results showed that VLS ($t = 16.684$, $\text{Sig.} = .000$ at $p < .05$) significantly improved the secondary school Physics students' academic achievement in Benue State. The findings also showed that the VLS ($t = 12.65$, $\text{Sig.} = .000$ at $p < .05$) effectively improved secondary school Physics students' interest. The findings also revealed that the VLS was gender-friendly and not gender biased in improving achievement and interest in Benue State. Based on the findings of the study, it was concluded that the VLS is effective in enhancing the male and female secondary school Physics students' academic achievement and interest in Physics in Benue State. It is therefore recommended that science teachers especially Physics should explore the potentials of VLS in the teaching and learning process in and out of the classroom.

Keywords: Virtual Laboratory Strategy, Teacher Demonstration Strategy, Academic Achievement, Interest in Physics, Learning Outcome

Introduction

Education is a life process that encompasses the growth of one's knowledge, abilities, expertise, and attitudes. It is a continual process that can be triggered by a wide range of formal and informal experiences. It is

expected that when an individual passes through the process, he/she must readily become a person that is well developed in physical, mental, moral, and social faculties, allowing them to become more civilized, polished, and educated. As such, being

certificated in the process may not necessarily translate to being educated. Who is then an educated person? According to a report by Ramp and Smith (2014) in a study, being an educated person denotes attaining a certain level of what Bourdieu and Passeron (1977) called 'cultural capital,' which includes the display of personal refinement, literacy and verbal skills, knowledge of manners and cultural conventions, and personal autonomy. All of these factors contribute to the educated person's social and economics standing in society. In consequence, education should provide the ability to be autonomous or self-sufficient in terms of skills, and expertise, as well as the ability to function productively in society.

The education of a child in Nigeria is divided into levels corresponding to the age of the child; from pre-primary, basic, senior secondary, and tertiary. Secondary school is an important level of education that comes after primary and before university education. It is three years for junior secondary and three years for senior secondary. At the end of senior school, students take external examinations to earn the Senior School Certificate (SSC), which will allow them to attend University and other tertiary institutions.

Science education as a major field of study in senior secondary school exposes students to the contents as well as the processes of acquiring scientific knowledge for practical application in relevant and applicable areas of life endeavours such as life on the planet, production of essential human needs such as soaps and creams, among others (Babajide, 2015). Meanwhile, Okeke (2007) described science education as an integrated field of study that includes both the subject matter (Biology, Physics, Chemistry) and the

processes of learning and teaching science. Science education is provided in a structured school setting by a certified educator who uses appropriate pedagogies to manage scientific activities in the classroom. Science education at the secondary school level seem to be a primary source of technical and vocational skills needed to drive the economic engines of the nation. Science education not only teaches young learners problem-solving skills that will help them throughout their schooling, but it also engages them in science from the start.

According to Ogunleye (2016), science is a dynamic human activity that seeks to comprehend how our world works. This insight allows man to learn more about the nature of the universe. Teaching and learning science is a requirement for success in today's environment. The rise of a highly competitive and integrated economy, rapid scientific and technical advancements, and an expanding knowledge base will all have a significant impact on our lives. In order to meet the challenges presented by these changes. Physics, like other science subjects, will serve as a platform for the development of scientific literacy, attitude, problem-solving as well as the acquisition of important scientific knowledge and skills for lifelong scientific and technological relevance.

Physics is recognized as the foundation of modern technical advancements (Akinwumi, 2019). It is sometimes called the science of measurements because without observation and measurement it would not exist. In order to develop and test theories it is important to make measurements that are precise and accurate. This might be why students often cite Physics as being cumulative, difficult and

abstract. Subject-related reasons are often attributed to factors such as the need to master a multitude of concepts, the use of technical terminology, and the requirement for a strong foundation in mathematics.

Also, Physics is an experimental science that teaches theoretical concepts in classrooms which could be complemented by carefully observing and analyzing actual experiments in the laboratory. A genuine grasp of Physics includes being able to relate the observations and analyzes to these abstract notions, which is why the Physics Laboratory is a vital element of learning Physics.

A laboratory in science education is a one-of-a-kind learning environment that contributes to the nation's scientific and technological advancement. It has also shown the ability to increase mastery and improve students' attitudes about science subjects. The laboratory is an equally important tool for effective Physics learning. It provides an experimental framework for the learner to link and validate what they have learned in class. It broadens the understanding of Physics concepts and principles, acting as a link between theory and practice. Aside from broadening knowledge, the laboratory introduces the learner to apparatus, the scientific method, and methods of data presentation, collation, and analysis, as well as teaching the learner to make attentive observations and develop logical conclusions with critical thinking. It helps the learner gain skills and experience in planning, observation, evaluation, and analysis. As a result, they perform better in other disciplines that require these skills, which improves overall learning, and the skills developed in the Physics laboratory are transferable to other fields. Another significant advantage of working in the

laboratory is interaction.

These interactions allow the learner to develop soft skills such as being careful and accountable for apparatus and experiments, as well as enhancing communication, teamwork, and safety, all of which are valued in the workplace. Sitting in the classroom for hours on end to understand Physics theories may be exhausting and lead to boredom in even the most diligent student. Working in the laboratory, on the other hand, engages the student and gives them hands-on experience with the subject. The numerous unusual and entertaining experiments offer a visceral and engaging experience that piques curiosity in physics itself. Meanwhile, interest has been a crucial factor influencing students' achievement in Physics.

Ultimately, the Physics practical paper currently accounts for 50% of the learners' final grade in the external examinations. This suggests that if students perform well on the Physics practical paper, they have a better probability of receiving a good overall score. As a result, time and practice in a well-equipped Physics laboratory will help train practical execution abilities and provide an advantage in examinations.

The Ordinary Level Physics Practical course should prepare students to conduct experiments on important laws and principles encountered in theoretical studies, such as Hooke's law, Snell's law, and the Principle of Moments, among others. Measure a wide range of physical constants, such as gravity's acceleration, the refractive index of glass or liquid, the mass of a metre rule, the density of a substance, the internal resistance of a cell, the focal length of a lens or mirror, and the resistance per metre of a wire.

It is regrettable to note according to Adolphus and Aderounmu (2013) that there is insufficient Physics equipment in schools that has hampered students from grasping the instructions during Physics practical exercises. It has also made the Physics students lack the requisite skills to tabulate the obtained value effectively with little knowledge of scale selection and plotting of graphs which are fundamental challenges encountered by students while interpreting data graphically with attendant far-reaching implications on students' performance and interest in the subject.

Mamuda and Abubakar (2022) also noted that several issues were identified as inhibiting students from gaining adequate knowledge of Physics practical, including difficulties in identifying and setting up Physics equipment, making observations, taking readings, and plotting graphs, as well as a lack of standard laboratory equipment, supervision, and adequate time allocation for practical. The state of science education infrastructure impacts the sector's ability to develop the essential human capital for competitiveness and social transformation. Developing skilled technical personnel is a significant concern in Nigeria's education sector. Nigeria's education industry faces hurdles in developing infrastructure, improving quality, and increasing access. The government often times put in place policies that tends to expand educational infrastructure by building classrooms, lecture halls, laboratories, and staff quarters, as well as providing water and electricity, to enhance education quality and workforce productivity.

According to Nwachukwu (2024), a well-equipped scientific laboratory can improve learning outcomes. Science laboratories

play a crucial role in STEM education, with educators citing numerous benefits to learning through laboratory activities.

Research reports on laboratory infrastructure in Nigeria showed that there are inadequacies in the number of laboratories in schools and equipment. The result of the study conducted by Nwachukwu (2024) show that 45% of the schools surveyed in selected States in Nigeria indicated insufficient laboratories apparatus which validated the report of Alebiosu (2000) and Onipede (2013) in that many schools in Nigeria do not have laboratory with minimum standard facilities. The findings were also consistent with those of Babajide (2016 who found that science education is faced with the problem of lack of resources with half of existing schools having no real laboratory. It is pertinent to note that shortages of laboratory facilities could have serious implications on the quality of schools' output and national technological output.

The result of the study conducted by Nwachukwu (2024) on the state of science and technology education in Nigeria shows that an important determinant of economic growth and development is human capital outlay. Three elements: qualification of teachers of secondary schools; quantity and level of experience of teachers; and the ratio of teachers to students provided some insights into the human capital outlay in the Nigeria educational sector. Also, there are inadequate teachers, laboratories, and necessary equipment for teaching Science and Technology related subjects in most of the secondary schools in Nigeria. Also, electricity supply from the national grid to secondary schools is poor because only 30% of them have light at most 4hours a day.

Virtual laboratories (VLs) and hands-on labs (HOLs) are both computer-based alternatives to real labs that can be used to teach science and other subjects. The activities in both VLs and HOLs can enhance the learning environment and make it more constructive, but there are differences between them based on the nature of students' learning situations. For example, students in HOLs focus on how to use the physical equipment and the outcomes, whereas VLs focus students' attention on factors and the interactions between variables that cause outcomes (Toth, 2016).

The significance of using virtual laboratories in science education stems from the fact that they provide the most cost-effective and efficient way for students to conduct laboratory activities. Additionally, VLs enable students to repeat an experiment multiple times without risk of harm. VLs also assist students in examining anomalous data that contradicts prior knowledge, theories, and expectations, which are difficult to find. In a study of 16 virtual Chemistry activities to assess students' achievements and discovered that using the virtual environment raised students' interest in Chemistry and improved their grasp of the topic (Tuysuz, 2010).

VLs have also been used successfully in specialized sciences, such as biology, engineering, computing, etc. An excellent example of using VLs in the pedagogical approach is My DNA VSL. This is used for developing the concept and process of DNA fragment separation within the biomedical topic of the Cellular Machinery course, which is taught at an engineering faculty in a large research university in the United States. Toth (2016) in MyDNA VSL found

that students can efficiently run repeated Chemistry experiments and study the effects of different variables.

Virtual laboratories are to be designed to overcome problems encountered in conventional classes and to conduct dangerous chemical experiments. The virtual laboratory has been observed as a new teaching approach with less financial constraint and less demanding, but capable of retaining the students' interest in learning, improve their attitude and up scaling the students' achievement (Mark & Marris, 2006).

Another example of VLs being used efficiently is SensorDB, which is a web-based sensor that uses a state-of-the-art cloud to gather, analyze, and visualize data. This VL can manage large volumes of biological time series sensor data in five stages of data queries through real-time user interaction. SensorDB also supports powerful stream data processing tools, such as "do it yourself," which enables users to manipulate their data without the need for rapid programming. Furthermore, SensorDB allows the adoption of various applications without having to directly interact with the core development team, which empowers the community of users (Salehi, et al. 2015).

Usmanet al. (2019) investigated the effects of Physical and Virtual Laboratories on the Achievement of secondary school Geography students in North Central Nigeria. The study adopted a quasi-experimental research design a sample size of 768 students from twelve secondary schools in North Central States of Nigeria the results of the study revealed that physical laboratory enhances secondary school students' achievements in Chemistry but

Virtual laboratory could be used to complement physical laboratory. Also, Alexander, et al. (2022) determined the effect of Virtual Laboratory (VL) on student teachers' achievement in Integrated Science in Bagabaga College of Education, Tamale using the pre-test and post-test quasi experimental design. The results from the study showed that for the cognitive achievement test, the mean score of the post-test was significantly greater than the mean pre-test score indicating that the VL had a positive effect on the cognitive achievement of student teachers before and after the implementation of the intervention.

Omoedu et al. (2022) examined the effect of computer simulation on students' academic achievement in chemistry in senior secondary schools in Ahoada-East Local Government Area, Rivers State. The study which also adopted the Quasi-experimental research design using a sample size of 82 students from two selected secondary schools out of all the public senior secondary schools where the findings showed that students taught with the computer simulation technique performed better than those taught with the traditional lecture method.

The extent to which this approach influences the students' performance and interest in Physics along the gender continuum need to also be examined. Akanbi (2016) explained that the disparity in enrolment between males and females is more pronounced in science classes which involve laboratory which have fewer female enrolments till date. While female enrolment outnumbered that of the male in Biology, computer studies, commerce, humanities, business studies, typing and shorthand. This trend must be halted if Nigeria is willing to attain

and sustain the sustainable development goals. Akanbi (2016) has also shown that there are gender differences in academic ability and that females generally outperform males in verbal abilities and GPA, however, no gender differences were found in terms of quantitative skills. Likewise, Gambari et al. (2017) found that there was no significant difference in the mean achievement scores of male and female students taught Chemistry using virtual laboratory in collaborative learning setting. Also, the effectiveness of Virtual laboratory strategies in a large class as the case of Benue State in particular is yet to be very clear. There is therefore the need to launch a study that will investigate the effectiveness of virtual laboratories in improving Physics students learning outcomes in Benue State.

Also, the level at which this method will influence the students' abilities across the taxonomy of cognitive, affective, and psychomotor continuum must be considered. As such, this study is therefore necessary to examine not only their effectiveness in practical aspects of Physics at raising performance (cognitive) but also examined the extent to which it could be effective in enhancing the students' interest (Affective) considering the abstract nature and technicalities involved in the subject.

Methodology

The design adopted for this study was the non-equivalent pre-test, post-test and control group quasi experimental and survey research designs. The target population for the study comprised all the Secondary School II (SSII) Physics students in all the secondary schools in Benue State. Using the

multi-stage sampling procedure, the study sample consisted of 79 SSS II students in two intact Physics classes in the State.

In the course of the study, two research instruments were employed for data collection which are the Physics Practical Achievement Test (PPAT) and Students Interest Questionnaire (PSIQ). The Virtual Laboratory instructional package was a Physics Computer Practical Simulation Software package. The package was PraxiLabs which contains over 250 self-directed Physics experiments. The researchers subscribed to about 50 experiments where Optics, Mechanics, and Current Electricity were treated. The package was programmed with questions in terms of practical instructions that are followed sequentially. Each student on a computer was provided with the user's name and password to log into the package. The students completed one experiment per day and recorded the observations. The Teacher Practical Chemistry Demonstration strategy was directed by the teachers in the Physics laboratory which is the normal practical chemistry in the schools.

The two research instruments and instructional packages were validated by science education experts. The items in the instruments were thereafter modified based on the observations of these experts.

Pilot testing was carried out on the research instruments to determine the reliability of the instruments. The responses were analyzed using the Pearson Product Moment Correlation (PPMC) and Cronbach Alpha. The reliability coefficient for PPAT was found to be .79 while that of PSIQ was .86 respectively. There were three stages involved in this research: the administration of the pre-test, the intervention stage, and the post-test stages.

Results

Research Question 1: What is the difference in academic achievement of secondary school Physics students taught using Virtual Laboratory and Teacher Demonstration Instructional Strategies in Benue State?

Towards answering this research question, the post-test scores of students taught using VLS, and TDS were subjected to descriptive analyses and the results were presented in Table 1.

Table 1: Descriptive analysis of post-test scores of students taught using VLS and TDM

	n	\bar{x}	s^2
Post-test VLS	43	26.8696	3.52013
Post-test TDS	36	22.1667	2.73100

The results from Table 1 revealed that the mean score of students taught using V ($\bar{x} = 26.8696$) is higher than the mean scores of students taught using TDS ($\bar{x} = 22.1667$). This indicated that there was a clear difference between the mean scores of students taught by a teacher using VLS and TDS. This indicated that VLS is a learning

strategy that can improve students' academic achievement in Physics.

Research Question 2: What is the difference in the interest of secondary school Physics students taught using the virtual and demonstration laboratory instructional strategies?

Towards answering this research question, the post-test attitudinal scores of students taught using VLS and TDS were subjected to

descriptive analyses and the results are presented in Table 2.

Table 2: Descriptive Analysis of Post-test Attitudinal Scores of Students Taught Using VLS and TDS

	N	Mean	Std. Deviation
Post-test Attitude VLS	43	43.9130	7.70427
Post-test Attitude TDS	36	26.7500	5.23963

The results from Table 2 showed that the post-test mean attitudinal score of VLS ($\bar{x} = 43.9130$) is higher than that of TDS ($\bar{x} = 26.7500$). This depicts that there is clear difference in attitudinal gain of students when taught practical Physics using VLS and TDS in favour of the VLS. This indicated that VLS appear to be the best teaching strategy for improving the Physics students' interest among secondary schools in Benue State when compared to TDS.

Research Question 3: Would there be a difference in academic achievement of male and female secondary school Physics students taught using the Virtual Laboratory Strategy?

To answer this research question, the post-test scores of male and female Physics students taught using VLS and TDS were subjected to descriptive analysis and the results are presented in Table 3.

Table 3: Descriptive Analysis of Post-test Achievement Scores of Male and Female Physics Students Taught Using VLS and TDS

		Total N	Mean	Standard Deviation
VLS	Male	20	24.15	3.34
	Female	23	23.56	3.84
TDS	Male	20	13.60	2.64
	Female	16	12.38	2.08

Research Question 4: Would there be a difference in the interest of male and female secondary school Physics students taught using the Virtual Laboratory Strategy?

To answer this research question, the post-test attitude scores of male and female Physics students taught using VMI and TLM were subjected to descriptive analysis, and the results are presented in Table 4.

Table 4: Descriptive Analysis of Post-test Attitude Scores of Male and Female Physics Students Taught Using VLS and TDS.

		N	Mean	Standard Dev.
VLS	Male	20	44.7273	6.60441
	Female	23	43.4545	9.19090
TDS	Male	20	26.6000	5.22084
	Female	16	27.5000	5.28291

The results from Table 4 there is no significant difference in the mean attitude scores of male and female students taught using VLS (male: $\bar{x} = 44.7273$, female: $\bar{x} = 43.4545$) and TDS (male: $\bar{x} = 26.600$, female: $\bar{x} = 27.5000$). This showed that the VLS instructional strategy was not gender biased in terms of improving students' interest to Physics among secondary school students in Benue State.

Hypotheses Testing

Hypothesis 1: There is no significant difference in in academic achievement of secondary school Physics students taught using Virtual Laboratory and Teacher Demonstration Instructional Strategies in Benue State.

To test this hypothesis, the post-test scores of Physics students taught using VLS and TDS were subjected to paired t-test analysis and the results are presented in table 5.

Table 5: Paired t-test Analysis of the Academic Achievement of Students Taught Using VLS and TDS

	Treatment	N	Mean	Std. Deviation	T	Df	Sig. (2-tailed)
Post-test scores	VLS	43	24.86	3.52	8.363	77	.000
	TDS	36	22.16	4.73			

The results from Table 5 showed that ($t = 16.684$, Sig. = .000 at $p < 0.05$). This implies that there was a significant difference in the academic achievement of secondary school Physics students taught using the VLS and TDS in Benue State. Therefore, the hypothesis that states that there is no significant difference in the academic achievement of secondary school Physics students taught using the VLS and TDS in Benue State is hereby rejected. This signified that the students in the experiment

gained scores in Physics when taught using VLS than TDS.

Hypothesis 2: There is no significant difference in the interest of secondary school Physics students taught using the virtual and demonstration laboratory instructional strategies.

To test this hypothesis, the post-test scores of Physics students taught using VLS and TDS were subjected to paired t-test analysis and the results are presented in Table 6.

Table 6: Paired t-test Analysis of the Students Taught Using VLS and TDS

	Treatment	N	Mean	Std. Deviation	T	df	Sig. (2-tailed)
Post-test scores	VLS	43	43.91	7.70	12.65	82	.000
	TDS	36	26.75	5.23			

The results from the Table showed that ($t = 12.65$, Sig. = .000 at $p < 0.05$). This implies that there was a significant difference in the academic achievement of secondary school Physics students taught using the VLS and TDS in Benue State. As such, the hypothesis stating that there is no significant difference in the interest of secondary school Physics students taught using the VLS and TDS in Benue State is hereby rejected. This indicated that the students in the experiment gained interest scores in Physics when taught using VLS rather than TDS.

Discussion of Findings

The findings of the study indicated that VLS is a learning strategy that can improve students' academic achievement in Physics among secondary school students. The findings corroborated the findings of Tuysuz (2010) where he found that VLs also assisted students in examining anomalous data that contradicts prior knowledge, theories, and expectations, which are difficult to find. It is also in line with a study of 16 virtual Chemistry activities to assess students' achievements and discovered that using the virtual environment raised students' interest in Chemistry and improved their grasp of the topic (Tuysuz, 2010).

The findings of the study seeking to examine the differences in interest of secondary school Physics students taught using the virtual and demonstration laboratory instructional strategies indicated that VLS appear to be the best teaching strategy for improving the Physics students' interest among secondary schools in Benue State when compared to TDS. This finding is in tandem with Mark and Marris (2006) where it was discovered that the virtual laboratory has been observed as a new teaching approach with less financial constraint and

less demanding, but capable of retaining the students' interest in learning, improve their attitude and up scaling the students' achievement.

The findings of the study that examined if there is any difference in academic achievement of male and female secondary school Physics students taught using the Virtual Laboratory Strategy found that VLS as an instructional strategy was not gender biased in terms of improving academic achievement in Physics. This findings corroborated the earlier study of Akanbi (2016) where it was explained that the disparity in enrolment between males and females is more pronounced in science classes which involve laboratory which have fewer female enrolments till date.

The findings of the study which sought to determine if there will be a difference in interest of male and female secondary school Physics students taught using the Virtual Laboratory Strategy found that the VLS instructional strategy was not gender biased in terms of improving students' interest to Physics among secondary school students in Benue State. The findings of the study corroborated that of Usman, et al. (2019) who investigated the effects of Physical and Virtual Laboratories on the Achievement of secondary school Geography students in North Central Nigeria and reported that physical laboratory enhances secondary school students' achievements in Chemistry but Virtual laboratory could be used to complement physical laboratory.

Conclusion and Recommendations

Based on the data analysis and interpretation of the study's findings, it can be concluded that the Virtual Laboratory Strategy (VLS) is

beneficial in improving the academic achievement of secondary school Physics students in Benue State. It may also be argued that the VLS technique improves the Physics Students' interest at the secondary school chemistry students in Benue State. Furthermore, it is possible to conclude that VLS is gender-neutral and not biased when adopted in teaching Physics Practical.

Based on the findings and conclusions from this study, the following recommendations were made:

1. Secondary school Physics teachers in Benue State should adopt and incorporate VLS into their classroom instruction to increase academic achievement and interest.
2. The Benue State government should create VLS for Physics to improve student achievement and interest in the subject.
3. Parents might consider purchasing VLS to help their children learn Physics more effectively.

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CONCEPT MAPPING AND VISUAL IMAGERY TECHNIQUES AS DETERMINANTS OF SENIOR SECONDARY SCHOOL STUDENTS' ACHIEVEMENT AND PRACTICAL SKILLS IN BIOLOGY IN DELTA STATE, NIGERIA

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Abstract

This study used a pretest-posttest control group quasi-experimental design to evaluate the effects of concept mapping and visual imagery techniques on senior secondary school students' achievement and practical skills in Biology. It also explored gender and learning styles as moderating factors. The study involved six public high schools selected from three Senatorial Districts in Delta State, Nigeria, with intact senior secondary II biology classrooms. Randomization allocated the schools to three groups: concept mapping (46 students), visual imagery (38 students), and control (49 students). Data were collected using the Biology Achievement Test, the Students' Learning Style Questionnaire, and the Biology Practical Test. The intervention lasted six weeks, and analyses included covariance and post-hoc tests at a 0.05 significance level. Results showed that visual imagery techniques led to a significant improvement in academic performance, especially for female students and visual learners. The visual imagery group had the highest mean achievement score (16.70), followed by the concept mapping group (14.57) and the control group (9.47). Gender also influenced practical skills, with females scoring higher (23.47) than males (20.27). Learning styles affected achievement, with visual learners achieving the highest mean score (15.27), followed by tactile learners (14.32) and auditory learners (12.95). The findings suggest that integrating visual imagery and concept mapping techniques in the biology curriculum can improve student performance and skills, particularly for visual learners and female students.

Keywords: Concept mapping, Achievement in biology, Visual imagery technique, Biology achievement, Learning styles in biology

Introduction

In secondary biology education, students gain essential critical thinking, analytical reasoning, and inquiry skills (Jack, Danjuma, & Gbadamosi, 2018; Ekasari & Maulidina, 2023). Raymond (2010) emphasized that biology is a fundamental

scientific field focused on understanding the universe's basic elements, interactions, and outcomes. Biology's significance extends to technological advancement, reinforcing its relevance across modern disciplines. In Nigeria, secondary biology has been a core part of the curriculum since pre-

independence (Adeyemo, 2010), aiming to teach foundational biological literacy for practical life, prepare students for advanced studies, and cultivate scientific skills and problem-solving abilities necessary for technological applications (Ogunleye & Babajide, 2010; Okeke & Ukoh, 2020).

Biology is central to technological innovation and the foundation of many applied sciences. Through the principles of biology, advancements like integrated circuits, machinery, energy systems, telecommunications, and ICT have emerged. Nigerian universities further recognized biology as essential for entry into science and engineering programs (Jack, Danjuma, & Gbadamosi, 2018). Despite these contributions, biology performance among Delta State students has fluctuated, partly due to pedagogical and curriculum challenges, including extensive content, abstract concepts, and limited practical skills (Ukoh, 2013; Asubiojo, 2015).

Concept maps, defined by Ahmad (2018) as visual tools for organizing and representing ideas, help students develop cognitive structures by linking concepts hierarchically. Concept mapping aligns with Ausubel's Assimilation Theory, which suggests that meaningful learning occurs when new information is integrated with existing cognitive structures. As graphic organizers, concept maps begin with a central idea and branch into related sub topics, supporting students in visualizing and connecting knowledge (Ahmad, 2018). By fostering these connections, concept maps aid in critical thinking and problem-solving—core skills in biological sciences.

Previous studies show that concept mapping can enhance cognitive processes by promoting active learning, thereby

supporting students in visualizing and concretizing abstract concepts (John, 2016; Vintzileos & Ananth, 2010). It serves as a diagnostic tool, allowing teachers to gauge students' understanding and misconceptions. Research supports concept mapping as a method for encouraging self-regulation.

Traditional teaching methods like lecturing, while efficient for content delivery, tend to result in passive learning, which may not align with the constructivist and inquiry-based approaches necessary in science education (Kalmakis, 2016; Sims, 2015). The shift towards active learning, incorporating activities like concept mapping, discussion, and group work, has been shown to develop deeper understanding and retention (Nabors, 2018). The California Department of Education (2015) emphasized that a variety of instructional strategies are essential for effective teaching, encouraging teachers to adapt their methods to facilitate learning across diverse student needs and backgrounds.

By constructing mental images of biology concepts, these techniques can foster cognitive engagement and problem-solving abilities, essential for meaningful learning. Concept mapping and visual imagery have shown promise in improving academic outcomes, fostering curiosity, and helping students create mental models that concretize abstract biological principles.

This study further investigated the effect of concept mapping and visual imagery on biology performance and practical skills, examining the moderating role of gender and learning style on these outcomes. By evaluating the efficacy of these strategies, this research aimed to provide insights into

enhancing biology instruction in secondary schools, potentially influencing instructional practices that support diverse learner profiles and improve educational outcomes in scientific subjects.

Hypotheses

- Ho1: There is no significant difference in the effect of concept mapping and visual imagery strategies on Students' achievement in biology.
- Ho2: There is no significant difference in the effect of concept mapping and visual imagery strategies on Students' Practical skills in biology.
- Ho3: There is no significant effect of gender on Students' achievement in biology.
- Ho4: There is no significant effect of gender on Students' Practical skills in biology.
- Ho5: There is no significant effect of learning style on Students' achievement in biology

Methodology

Research Design

The study adopted a pretest-posttest control group quasi-experimental design.

Selection of Participants

Three Local Government Areas were randomly selected from the three senatorial districts that make up Delta State. Two schools were purposively selected from each local government making a total of six schools. Intact class of senior secondary school II students in each of the six schools were randomly assigned to each of the experimental and control groups.

Research Instruments

Biology Achievement Test (BAT)

The researchers developed the Biology Achievement Test (BAT) and contained 30 multiple-choice questions. Section A gathered students personal data, including gender, while Section B consisted of 30 multiple-choice items on topics such as mendelian principles, genetics, heredity, evolution, mitosis, meiosis, and enzyme action. Students were asked to circle the correct answer from options A to D. The reliability of the instrument was established using the Kuder-Richardson 20 (KR20) formula, which yielded a reliability coefficient of 0.75.

Table 1: Table of specification for Biology Achievement Test (PAT)

Topic	Achievement						Total
	Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation	
Reproduction	(1) 21	-	(8) 1,2,11,12,13, 20,25, 26	(1) 10	-	-	10
Mendelian principles	(2) 5, 16	(1) 27	(1) 8	-	-	(1) 17	5
Heredity	-	-	(6) 3, 6, 14, 15, 19, 28	-	-	(1) 4	7
Mitosis and meiosis	(1) 9	-	(1) 24	-	-	-	2
Digestion	-	(1) 22	(4) 7, 23, 29, 30	-	-	(1) 18	6
Total	4	2	20	1	-	3	30

Biology Practical Test (PBT)

The PBT instrument contained two practical questions developed by the researchers. Section A of the instrument consisted of the personal data of the subjects. It sought to find information on personal data on gender. Section B consisted of two practical questions. The reliability indices were ascertained as 0.70.

Students' Learning Style Questionnaire (SLSQ)

Students' Learning Style Questionnaire (SLSQ) was adapted from modified Barsch's Learning Style Questionnaire. The SLSQ contains 24 items, to elicit proper response from the respondents. Students' responses were used to classify the students into any of

the three learning styles considered in this study, Auditory, Visual and Tactile. After the instrument was trial tested, Cronbach alpha was utilized to ascertain the reliability of the instrument which gave reliability index of 0.78.

Instructional Guide for Concept mapping Strategy

This was an instructional guide for research assistants who participated in the experimental group one. It contained the statement of topic, instructional objectives and the procedures expected to be adhered to by the teachers in teaching the lessons. The concepts taught using this guide were motions, momentum, elasticity, momentum, projectile and equilibrium.

Instructional Guide for Visual Imagery Strategy

This was an instructional guide containing the statement of topic, instructional objectives and the procedures expected to be followed by the teachers in teaching the lesson. The concepts taught using this guide are motions, momentum, elasticity, momentum, projectile and equilibrium. It consisted of various steps which the teacher followed when teaching.

Instructional Guide for Conventional method

The instructional guide contained items guiding the conventional method of teaching by the teacher (i.e. the control group). It contained steps guiding the conventional strategy of teaching. This instructional guide contained the statement

of topic, objectives, instructional materials and the procedure followed by the teachers in teaching of biology topics in the classroom using the conventional teaching method. The reliability coefficient was obtained using inter-rater Scott's pi.

Method of Data Analysis

The collected data were analysed utilizing descriptive statistics (mean, percentage, standard deviation). Also, inferential statistics such as Analysis of covariance (ANCOVA) were utilized to determine the significant main.

RESULTS

Ho1: There is no significant difference in the effect of concept mapping and visual imagery strategies on Students' achievement in biology

Table 2: Analysis of Covariance (ANCOVA) of Post-Achievement by Treatment, Gender and Learning Styles

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1355.761	17	79.751	5.104	0.000	0.430
Intercept	1832.675	1	1832.675	117.280	0.000	0.505
Pre-achievement	106.628	1	106.628	6.824	0.010	0.056
Treatment	485.200	2	242.600	15.525	0.000*	0.213
Gender	10.604	1	10.604	0.679	0.412	0.006
Learning style	107.512	2	53.756	3.440	0.035*	0.056
Treatment x Gender	26.765	2	13.383	0.856	0.427	0.015
Treatment x Learning style	34.192	4	8.548	0.547	0.702	0.019
Gender x Learning style	9.968	2	4.984	0.319	0.728	0.006
Treatment x Gender x Learning style	53.912	4	13.478	1.150	0.332	0.029
Error	1797.051	115	15.627			
Total	26496.000	133				
Corrected Total	3152.812	132				

R Squared = 0.43 (Adjusted R Squared = 0.35) * denotes significant p<0.05

Table 2 revealed that there was a significant effect of treatment on students' achievement in biology ($F_{(2,131)} = 15.53; p < 0.05$, partial $\eta^2 = 0.21$). Therefore, the hypothesis was not accepted. To explore the magnitude of the

significant effect across treatment groups, the estimated marginal means of the treatment groups was carried out and the result is presented in Table 3.

Table 3: Estimated Marginal Means for Post-Achievement by Treatment and Control groups

Treatment	Mean	Std. Error	95% Confidence Interval Lower Bound	Upper Bound
Concept mapping technique	14.57	0.95	12.69	16.44
Visual imagery technique	17.70	0.84	16.03	19.37
Conventional Strategy (CS)	9.47	0.97	7.55	11.40

Table 3 revealed that students exposed to Visual imagery technique treatment group 2 had highest adjusted mean score in their post-achievement in biology (17.70) followed by those taught by the Concept mapping technique treatment group 1 (14.57) and the Conventional Strategy (CS)

control group (9.47). To determine which of the groups caused this significant effect of treatment on students' achievement in biology, the Bonferroni post-hoc test was carried out across the groups, while the result is presented in Table 4.

Table 4: Bonferroni Post-hoc Analysis of Post-Achievement by Treatment and Control Groups

(I) Treatment	(J) Treatment	Mean Difference (I-J)	Sig.
Concept mapping technique	Visual imagery technique	-3.131*	.046
	Conventional Strategy (CS)	5.091*	.001
Visual imagery technique	Concept mapping technique	3.131*	.046
	Conventional Strategy (CS)	8.222*	.000
Conventional Strategy (CS)	Concept mapping technique	-5.091*	.001
	Visual imagery technique	-8.222*	.000

Table 4 indicated that students' post-achievement mean scores in biology in the Visual imagery technique was significantly different from those taught by Concept Mapping-based (CMbS) and Conventional (CS) strategies, respectively. This implies that the significant difference indicated by the ANCOVA result was due to the difference between the treatment groups

(visual imagery and concept mapping-based strategies) and also between the treatment and the control groups.

Ho2: There is no significant difference in the effect of concept mapping and visual imagery strategies on Students' Practical skills in biology

Table 5: Analysis of Covariance (ANCOVA) of Post-Practical skills by Treatment, Gender and Learning Styles

Source	Type III Sum of Squares	df	MS	F	Sig.	Partial Eta Squared
Corrected Model	654.121	17	38.478	1.743	0.045	0.205
Intercept	2092.042	1	2092.04	94.763	0.000	0.452
Pre-Practical skills	83.694	1	83.694	3.791	0.054	0.032
Treatment	45.432	2	22.716	1.029	0.361	0.018
Gender	146.294	1	146.294	6.627	0.011*	0.054
Learning style	45.421	2	22.711	1.029	0.361	0.018
Treatment x Gender	50.999	2	25.500	1.155	0.319	0.020
Treatment x Learning style	23.482	4	5.870	0.266	0.899	0.009
Gender x Learning style	62.507	2	31.253	1.416	0.247	0.024
Treatment x Gender x Learning style	39.311	4	9.828	0.594	0.620	0.015
Error	2538.812	115	22.077			
Total	70232.000	133				
Corrected Total	3192.932	132				

R Squared = 0.21 (Adjusted R Squared = 0.09) * denotes significant $p < 0.05$

Table 5 showed that the effect of treatment on students' practical skills in biology was not significant ($F_{(2,131)} = 1.03$; $p > 0.05$, partial $\eta^2 = 0.02$). Hence, hypothesis which was not rejected. This mean that treatment had no effect on students' practical skills in biology.

Although, there was no significant difference across treatment groups, the estimated marginal means of the treatment groups was carried out in order to establish the performance across the groups and the result is presented in Table 6

Table 6: Estimated Marginal Means for Post-Practical Skills by Treatment and Control Group

Treatment	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Concept mapping technique	20.82	1.19	18.46	23.17
Visual imagery technique	22.95	1.09	20.79	25.11
Conventional Strategy (CS)	22.17	1.27	19.65	24.69

Table 6 revealed that students exposed to the Visual imagery technique treatment group had highest adjusted post-practical skills mean score in biology (22.95) followed by Conventional Strategy (CS) control group

(22.17) and Concept mapping technique treatment group (20.82). This difference is not statistically significant.

Ho3: There is no significant effect of gender on students' achievement in biology

There was no significant effect of gender on students' achievement in biology ($F_{(1, 132)} = 0.68$; $p > 0.05$, partial $\eta^2 = 0.01$). Therefore, hypothesis which was not rejected. This means that students' gender had no effect on their achievement in biology.

Ho4: There is no significant effect of gender on students' practical skills in biology

Table 2 showed that the effect of gender on students' practical skills in biology ($F_{(1, 132)} = 6.63$; $p < 0.05$, partial $\eta^2 = 0.05$) was

significant. Table 3.4 which showed the effect size of 5.0%, this means that 5.0% of the total variation in students' post-practical skills scores in biology in this ANCOVA model was as a result of the significant effect of gender on students' practical skills in biology. Hence, hypothesis was rejected. In order to determine the extent of the significant effect across gender, the estimated marginal means of gender group was carried out and the result is presented in Table 7.

Table 7: Estimated Marginal Means for Post-Practical Skills by Gender

Gender	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Male	20.27	0.97	18.36	22.19
Female	23.47	0.84	21.81	25.14

Table 7 revealed that female students had the higher adjusted post-practical skills mean score in biology (23.47) followed by their male counterparts (20.27). This difference is statistically significant.

Ho5: There is no significant effect of learning styles on students' achievement in biology

Table 2 indicated that there was a significant effect of learning styles on students'

achievement in biology ($F_{(2, 131)} = 3.44$; $p < 0.05$, partial $\eta^2 = 0.06$). It revealed an effect size of 6.0%, this implies that 6.0% of the total variation in students' post-achievement scores in biology was due to the significant effect of the learning styles on students' achievement in biology. Hence, hypothesis 5 was rejected.

Table 8: Estimated Marginal Means for Post-Achievement by Learning Styles

Learning Styles	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Visual	15.27	0.66	13.97	16.57
Auditory	12.95	0.61	11.74	14.16
Tactile	14.32	1.45	11.45	17.19

Table 8 indicated that visual learning style students had the highest adjusted mean score in their post-achievement in biology (15.27) followed by tactile learning style (14.32) and auditory learning style (12.95). To determine which of the groups caused this

significant effect of learning styles on students' achievement in biology, the Bonferroni post-hoc test was carried out across the groups, while the result is presented in Table 9

Table 9: Bonferroni Post-hoc Analysis of Post-Achievement by Learning styles

(I) Learning styles	(J) Learning styles	Mean Difference (I-J)	Sig.
Visual	Auditory	2.321*	0.033
	Tactile	0.952	1.000
Auditory	Visual	-2.321*	0.033
	Tactile	-1.369	1.000
Tactile	Visual	-0.952	1.000
	Auditory	1.369	1.000

Table 9 revealed that the visual learning style students' post-achievement mean score in biology was not significantly different from their counterparts with tactile learning style but was significantly different from those with auditory learning styles. Table 9 also revealed that the difference in the post-achievement mean scores of tactile learning style students were not significantly different from those with auditory learning style. This means that the significant difference in students' post-achievement scores observed in the ANCOVA result was due to the difference between the visual and auditory learning styles.

Discussion of Findings

The results of hypothesis one indicated that there was a significant difference in the effect of concept mapping and visual imagery strategies on students' achievement in biology. The efficacy of both strategies was attributed to their ability to engage students actively in the learning process. This is in line with Syamsu et al. (2020), who emphasized the importance of using diverse stimuli to help students encode and recall information more effectively. Visual imagery, in particular, proved effective as it encouraged students to form mental pictures during the learning process, facilitating

better understanding and retention. This finding is consistent with studies by Syamsu et al. (2020) and Küssner and Eerola (2019), which highlighted the role of visual imagery in cognitive processes. Furthermore, visual imagery supports better memory retention, as indicated by Nemati (2009) and Zahedi and Abdi (2012), who showed that memory strategies like visual imagery can improve learning outcomes. The results underscore the importance of integrating visual-based teaching strategies in the biology curriculum to boost student performance.

The results of hypothesis two revealed that the effect of treatment on students' practical skills in biology was not statistically significant. Although students exposed to the visual imagery strategy had the highest adjusted mean score for practical skills, this difference was not significant when compared to the concept mapping and control groups. Studies such as Buzan (2020) and D'Antoni & Thomas (2022) have shown that concept maps are more effective in cognitive learning, aiding memory and comprehension but not necessarily fostering practical skill development. This limitation can be attributed to the fact that concept mapping does not focus on skill-based, hands-on learning, which is crucial for developing practical skills in fields like

biology. Visual imagery, though effective in supporting cognitive learning, also did not significantly affect practical skills. The study suggests that the nature of practical skills, which requires manual manipulation and hands-on experience, may not be directly influenced by these strategies. This indicates that while these cognitive strategies may enhance understanding and recall, they do not replace the need for direct engagement in practical, laboratory-based activities.

The result of hypothesis three revealed that gender did not have a significant effect on students' achievement in biology. These results support previous studies by Agommuoh and Nzewi (2003), Arigbabu and Mji (2014), and Ogunleye and Babajide (2011), which also found no significant gender difference in achievement in science and mathematics. However, this finding contradicts the results of Sabatinelli et al. (2014), which suggested that gender differences in the brain's visual cortex may influence how students visualize concepts, potentially affecting achievement.

The result of hypothesis four revealed that gender had a significant effect on students' practical skills in biology, with female students outperforming their male counterparts. This finding aligns with Sabatinelli et al. (2014), which suggests that gender differences in the visual cortex may influence how students visualize concepts, potentially enhancing females' acquisition of practical skills. This is further supported by Njoku (2022), who found that gender influenced practical skills development in biology, with females performing better in some contexts. However, this finding contradicts the results of Adeoye (2020) and Raimi (2022), who reported that male

students performed better in practical skills. The significant effect of gender on practical skills suggests that female students may possess an advantage in tasks requiring precision or attention to detail.

The result of hypothesis five indicated that learning styles significantly influenced students' achievement in biology. Visual learners showed the highest achievement scores, followed by tactile learners and auditory learners. This suggests that students perform better when instructional methods align with their preferred learning styles, as students can better understand and retain information when teaching methods match their cognitive preferences. This finding is consistent with studies by Ha (2021) and Senol and Ayham (2012), which highlighted the positive correlation between learning styles and academic performance.

Conclusion

In summary, the findings of this study reveal that both visual imagery and concept mapping strategies can significantly improve students' achievement in biology compared to conventional teaching methods. However, while these strategies enhanced cognitive learning, they did not significantly affect practical skills, which require more hands-on, kinesthetic learning experiences. Gender had no significant effect on students' achievement but did influence practical skills, with female students performing better. Additionally, learning styles had a significant impact on achievement, with visual learners benefiting the most from the instructional strategies used.

The study highlights the importance of incorporating visual and cognitive strategies into biology instruction while also

recognizing the need for practical, hands-on learning experiences. Teachers should adapt their methods to accommodate diverse learning styles and provide equitable opportunities for all students, regardless of gender. Future research could explore how to combine cognitive strategies like visual imagery and concept mapping with more practical, kinesthetic learning approaches to enhance both academic performance and practical skills in biology.

Recommendations

In light of the findings of this study, the following recommendations are therefore made:

- (i) Teachers should employ concept mapping-based and visual imagery strategies in the teaching of mechanics in biology in order to improve learners' achievement in biology.
- (ii) Parents and teachers should put the

learning styles of the learners into consideration in order to improve their achievement in biology.

- (iii) Curriculum planners could also gain by emphasizing that whenever the concept mapping-based and visual imagery strategies are to be utilized, there should be incorporation of activities that will translate what forms in the mind of learners into practice.
- (iv) Government should organise training and re-training programmes for in-service teachers on the effective utilization of concept mapping-based and visual imagery strategies through the organization of seminars, workshops and conferences for biology teachers in secondary school levels. This would help them to effectively and adequately employ these strategies in teaching biology.

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INSTITUTIONAL SUPPORT SERVICES AND SECONDARY SCHOOL TEACHERS' JOB PERFORMANCE IN OGUN EAST SENATORIAL DISTRICT, OGUN STATE

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Abstract

The poor job performance of teachers in secondary schools in the country has become a matter of serious concern to education stakeholders. The study therefore established the relationship between institutional support services and secondary school teachers' job performance in Ogun East senatorial district. The population of the study comprised all the 3095 teachers in Ogun East Senatorial District. The sample of the study was 540 secondary school teachers. Multistage random sampling technique was used in selecting the sample. Two researcher's developed instruments were used in gathering the data and the instruments are tagged "Institutional Support Services Questionnaire (ISSQ) and Teachers' Job Performance Questionnaire (TJPQ)" while the reliability coefficient were $a = .72$ and $a = .77$ respectively. The data collected were analysed using Pearson Product Moment Correlation (PPMC) and the hypotheses were tested at .05 level of significance. The result of the study revealed that there was a significant relationship between ICT services and secondary school teachers' job performance, that there was a significant relationship between in-service training and secondary school teachers' job performance, that there was a significant relationship between welfare services and secondary school teachers' task performance and that there was a significant relationship between library services and secondary school teachers' job performance. The study therefore concluded that institutional support services such as ICT service, In-service training, welfare service and library service had significant relationship with secondary school teachers' job performance in Ogun East senatorial district. It is therefore recommended that educational institutions should invest in comprehensive ICT infrastructure and provide regular ICT training for teachers. Access to modern technological tools and digital resources will help teachers improve their lesson delivery, engage students more effectively, and manage classrooms more efficiently

Keywords: Support services, teachers' job performance, ICT services, in-service training, welfare services, library services.

Introduction

The poor job performance of teachers in secondary schools in the country has become a matter of serious concern to education stakeholders. Previous studies have observed that teachers are not committed and dedicated to their professional responsibilities. Some of them do not adequately prepare their lesson plan for instructional delivery while others do not have a good grasp of the subject matter they intend to teach. Also, some teachers do not have the competence in classroom management and behavioural control of students during teaching. These problems culminate into ineffective task performance which is evident in poor academic performance of students in both internal and external examinations.

It is essential to note that the performances of teaching staff largely determine whether an education system will be successful or otherwise. Kukuru (2011) and Omolayo and Oluwafemi (2012) asserted that, the effectiveness of employees (secondary school teachers inclusive) determines the level of an organization's success. Job performance is hence, a critical variable that could influence the realization of organizational goals and objectives. Effective job performance by teachers is quite essential to a school as an organization because it leads to the achievement of both short and long term educational goals and objectives. Teachers' job performance could therefore be described as how effective a teacher discharges the assigned duties and responsibilities in the school system (Faremi, 2021). Faremi (2021) asserted that the job performance of a teacher manifests in his/her effectiveness in teaching, classroom management, students'

discipline, motivating and creating leadership roles in the school system, among others.

Adeyemi (2018) described teachers' job performance as the ability of the teachers to combine relevant inputs for the enhancement of teaching and learning process. It is also described as the duties performed by teachers such as teaching, assessing and marking students' test and examinations, records keeping and participation in school disciplinary committee at a particular period in the school system in achieving organizational goals. Teachers' job performance is the measurement of the quality of instruction given to learners by teachers in the school which is the rightly intended accomplishment of the school. Teachers' job performance refers to the degree to which a teacher(s) executes a particular role/responsibility, in accordance with specified standards (Nayyar, 2019). Teachers' job performance is intricately connected to the quality and availability of institutional support services. When institutions provide robust support systems, such as professional development programmes, adequate teaching resources, and effective administrative backing, teachers are empowered to perform their tasks more efficiently and effectively.

Institutional support services are those services provided to facilitate the implementation of educational policies, attainment of educational goals and promote the effectiveness and efficiency of the educational system. They are services that can promote teachers' effectiveness in the discharge of their professional responsibilities and also improve students'

learning. Egwu et al. (2021) described institutional support services as those specialized functions that are not typically educational themselves but are aimed at improving teaching and learning in a particular educational system. Therefore, institutional support services are provided to help schools to be effective and improve upon teaching and learning. Institutional support services provided in the secondary schools could go a long way in improving teachers' job performance. Information and communication technology services, in-service training, welfare services and library services are the institutional support services indices that were addressed in this study.

Information and communication technology service is one of the institutional support services that could enhance secondary school teachers' job performance. Worldwide, the advent of information technology communication (ICT) was seen by many practitioners and policymakers as being important for improving performance of teachers (Olokoba et al., 2014). Ogwo (2020) noted that the use of ICT in teaching and learning in senior secondary school today can assist in reducing the teachers' workloads through its use for lesson preparation, instructional delivery as well as teaching and learning evaluation. He further buttressed that secondary school teachers will become learning facilitator, collaborator, coach, mentor, knowledge navigator and co-learner and not only a dispenser of knowledge. The educational reform policies were aimed at integrating the use of ICT tools in the Nigerian school system. Wadi and Sonia (2020) opined that proper and effectiveness of information and

communication technology tools in Imo State secondary schools will definitely improve the quality of education in several ways such as increasing teachers' motivation and engagement, facilitating the acquisition of learner's basic knowledge and skills and also to enhance teachers training. Fajama (2020) stressed that the effectiveness and success of an institution lies on the quality of people (teachers/learners) who form and work within the institution. This is an exciting method of technological developments incorporated into the Nigeria classroom so well implemented as to enable teachers and students to do what has been impossible in the educational system (Osuala, 2019).

In-service training is another indicator of institutional support services expected to be provided by the management of institutions in order to enhance teachers' job performance. In-service training plays a pivotal role in promoting teachers' task performance by equipping them with updated knowledge, skills, and innovative teaching strategies. This training programme provide teachers with opportunities to improve their pedagogical techniques, adapt to evolving curriculum requirements, and incorporate modern technology into their classrooms. Aitken (2014) described in-service training as the ongoing training of practicing teachers. This is typically arranged by school boards that employ them. Training of teachers is an essential means through which they can improve on their previous knowledge thereby making them more productive. In-service also enables them to perform effectively as well as be versatile in skills utilization. It provides opportunities to retain employed workers to perform new

and changed jobs. Akudo (2023) posited that inadequate provision of in-service training in educational institutions could reduce their enthusiasm in the teaching profession and this could affect their morale, attitude to work, commitment and satisfaction.

Welfare service is one of the ways through which the institution provides support services to their personnel for optimum performance. Welfare services are critical in influencing teachers' job performance by directly impacting their motivation, job satisfaction, and overall well-being. When teachers are provided with adequate welfare services, such as competitive salaries, health benefits, housing allowances, and retirement plans, they feel valued and supported, which enhances their commitment and performance. Manzini and Gwandure (2011) argued that, welfare services can be used to secure the labour force by providing proper human conditions of work and living through minimizing the hazardous effect on the life of the workers and their family members. Welfare services may be provided by supplementing the income of the workers by providing services such as housing, medical assistance, canteens and recreation facilities (Mishra & Manju, 2007).

Library service is another indicator of support services that could be rendered by an institution. Library services play a significant role in boosting teachers' job performance by providing access to a wealth of resources and information essential for effective teaching and professional growth. A well-equipped library supports teachers by offering textbooks, journals, research publications,

and digital resources that aid in lesson preparation, curriculum development, and staying updated with current trends in education. With these resources, teachers can deliver more comprehensive and engaging lessons, ultimately improving students' understanding and performance. Ogunshola (2008) cited in Atanda and Abikoye (2023) opined that the development of education is synonymous with the development of the library and library services. Therefore, library services are very relevant to the achievement of effective teacher job commitment in public secondary schools. The well-stocked libraries would enhance teacher job commitment in secondary schools as teachers would not need to be stressed for them to access relevant and updated textbooks and other reading materials to form their lesson notes. Teachers could also use the library in their leisure time to read and make other career consultations for effective commitment to the teaching profession in secondary schools.

Objectives of the Study

The main objective of the study was to find out the relationship between institutional support services and secondary school teachers' job performance in Ogun East Senatorial District. The specific objectives of the study were to;

1. examine the relationship between Information and Communication Technology Service and secondary school teachers' task performance in Ogun East Senatorial District
2. establish the relationship between in-service training and secondary school teachers' task performance in Ogun East Senatorial District

3. assess the relationship between welfare services and secondary school teachers' task performance in Ogun East Senatorial District
4. investigate the relationship between library services and secondary school teachers' task performance in Ogun East Senatorial District

Hypotheses

The following hypotheses guided the study

- Ho₁:** There is no significant relationship between Information and Communication Technology (ICT) service and secondary school teachers' task performance in Ogun East Senatorial District.
- Ho₂:** There is no significant relationship between in-service training and secondary school teachers' task performance in Ogun East Senatorial District.
- Ho₃:** There is no significant relationship between welfare services and secondary school teachers' task performance in Ogun East Senatorial District.
- Ho₄:** There is no significant relationship between library services and secondary school teachers' task performance in Ogun East Senatorial District.

Methodology

Research Design

The correlational research design of survey type was adopted. The reason for adopting

the correlational research design was because the study examined the relationship between institutional support services and secondary school teachers' job performance.

Population and Sample

The population of the study comprised all the 3095 teachers in Ogun East Senatorial District. The sample of the study was 540 which represent 17.45% of the entire population of secondary school teachers. Multistage random sampling technique was used in selecting the sample.

Instrumentation

Two researcher's developed instrument were used in gathering the data and the instruments were tagged "Institutional Support Services Questionnaire (ISSQ) and Teachers' Job Performance Questionnaire (TTJQ)" while the reliability coefficient were $a = .72$ and $a = .77$ respectively.

Method of Data Analysis

The data collected were analysed using Pearson Product Moment Correlation (PPMC) and the hypotheses were tested at .05 level of significance.

Results and Discussion of Findings

Ho₁: There is no significant relationship between Information and Communication Technology (ICT) services and secondary school teachers' job performance in Ogun East Senatorial District.

Table 1: Relationship between ICT services and Secondary School Teachers' Job Performance

Variables	N	Mean	SD	df	r	P-value
ICT Services	540	15.840	2.238	538	.607	.019
Teachers' Job Performance		4.106	.719			

The table 1 above showed the relationship between ICT services and secondary school teachers' job performance. The correlation coefficient of .607 revealed that a positive and high relationship exists between ICT services and secondary school teachers' job performance. The null hypothesis was rejected. Additionally, the p-value is .019, which is less than the conventional significance level of 0.05. This means the observed relationship is statistically

significant and unlikely to have occurred by chance. Therefore, there was a significant relationship between ICT services and secondary school teachers' job performance in Ogun East senatorial district.

Ho₂: There is no significant relationship between in-service training and secondary school teachers' job performance in Ogun East Senatorial District.

Table 2: Relationship between In-service Training and Secondary School Teachers' Job Performance

Variables	N	Mean	SD	df	r	P-value
In-service Training	540	17.390	2.109	538	.607	.021
Teachers' Job Performance		4.106	.719			

The table 2 above showed the relationship between in-service training and secondary school teachers' task performance. The correlation coefficient of .466 revealed that a positive and moderate relationship exists between in-service training and secondary school teachers' task performance. The null hypothesis was rejected. Additionally, the p-value is .021, which is less than the conventional significance level of 0.05. This means the observed relationship is

statistically significant and unlikely to have occurred by chance. Therefore, there was a significant relationship between in-service training and secondary school teachers' job performance in Ogun East senatorial district.

Ho₃: There is no significant relationship between welfare services and secondary school teachers' job performance in Ogun East Senatorial District

Table 3: Relationship between Welfare Services and Secondary School Teachers' Job Performance

Variables	N	Mean	SD	df	r	P-value
Welfare Services	540	20.711	2.274	538	.898	.014
Teachers' Job Performance		4.106	.719			

The table 3 above showed the relationship between welfare services and secondary school teachers' job performance. The correlation co-efficient of .898 revealed that a positive and high relationship exists between welfare services and secondary school teachers' task performance. The null hypothesis was rejected. Additionally, the p-value is .014, which is less than the conventional significance level of 0.05. This means the observed relationship is statistically significant and unlikely to have

occurred by chance. Therefore, there was a significant relationship between welfare services and secondary school teachers' job performance in Ogun East senatorial district.

Ho₄: There is no significant relationship between library services and secondary school teachers' job performance in Ogun East Senatorial District.

Table 4: Relationship between Library Services and Secondary School Teachers' Job Performance

Variables	N	Mean	SD	df	r	P-value
Library Services		18.940	1.731			
Teachers' Job Performance	540	4.106	.719	538	.519	.020

The table 4 above showed the relationship between library services and secondary school teachers' job performance. The correlation coefficient of .519 revealed that a positive and high relationship exists between library services and secondary school teachers' job performance. The null hypothesis was rejected. . Additionally, the p-value is .020, which is less than the conventional significance level of 0.05. This means the observed relationship is statistically significant and unlikely to have occurred by chance. Therefore, there was a significant relationship between library services and secondary school teachers' task performance in Ogun East senatorial district.

platforms, and tools for collaborative learning, enhance teachers' efficiency and effectiveness in delivering lessons, managing classrooms, and assessing students. The result of the study corroborates the finding of Mugizi and Amwine (2020) who found that the utilization of ICT tools positively influenced teachers' job performance in public secondary schools. The finding of the study was in line with that of Watkins (2010) who revealed that the use of ICT resources in teaching result to high academic achievements among students. Similarly, a study by Amadi and Siminialayi (2021) examined the relationship between ICT tools and teachers' job performance in public secondary schools in Port Harcourt Metropolis, Nigeria. The findings indicated that ICT competencies have a high positive relationship with teachers' job performance, suggesting that proficiency in ICT tools can enhance teaching effectiveness.

Discussion of Findings

The first hypothesis revealed that there was a significant relationship between ICT services and secondary school teachers' job performance. ICT services, including access to digital resources, online teaching

The second hypothesis revealed that there was a significant relationship between in-service training and secondary school teachers' task performance. In-service training provides teachers with the opportunity to acquire new skills, update their knowledge on current educational trends, and adopt innovative teaching strategies, all of which directly impact their job performance. The result corroborate with the finding of Akinlolu et al. (2023) who found that in-service training significantly improves teachers' task performance in Nigerian secondary schools by enhancing their pedagogical knowledge and instructional methods. Teachers who participated in continuous professional development programmes reported higher confidence in delivering lessons, managing classroom dynamics, and utilizing diverse teaching aids. Similarly, Nebolisa and Uzor (2020) investigated the relationship between in-service training programmes and teachers' job performance in public secondary schools in Anambra State. Their findings indicated a significant, strong, and positive relationship between teachers' participation in in-service training programmes and their job performance, highlighting the importance of continuous professional development.

The third hypothesis revealed that there was a significant relationship between in-service training and secondary school teachers' task performance. The result revealed the essential role those welfare services, such as competitive salaries, health benefits, housing allowances, and job security, play in improving teachers' motivation, job satisfaction, and overall performance. Teachers who are provided with adequate welfare services are more likely to feel

valued and supported, which leads to greater commitment to their roles and more effective teaching practices. The result corroborate with the findings of Eze et al. (2023) who concluded that Nigerian secondary schools showed that the provision of adequate welfare packages, including regular salaries, health benefits, and opportunities for career advancement, significantly enhanced teachers' job performance. Teachers who benefited from these welfare services reported higher job satisfaction, reduced stress, and a stronger sense of loyalty to their institutions, which positively influenced their teaching effectiveness.

The fourth hypothesis revealed that there was a significant relationship between library services and secondary school teachers' task performance. This result emphasizes the vital role that library services play in enhancing teachers' professional development and their instructional capabilities. Access to well-equipped and organized libraries provides teachers with the necessary resources, such as textbooks, journals, research papers, and digital materials, which are crucial for lesson planning, curriculum development, and keeping up with current educational trends. The result agreed with the findings of Akinyemi and Adekunle (2022) who found that teachers who had access to well-stocked school libraries were able to better prepare lessons, incorporate a wider range of teaching materials, and provide more diverse learning experiences for students.

Conclusion

The study concluded that institutional support services such as ICT service, In-service training, welfare service and library

service had significant relationship with secondary school teachers' task performance in Ogun East senatorial district.

Recommendation

- The study therefore recommended that;
- i. educational institutions should invest in comprehensive ICT infrastructure and provide regular ICT training for teachers. Access to modern technological tools and digital resources will help teachers improve their lesson delivery, engage students more effectively, and manage classrooms more efficiently
 - ii. it is essential to offer ongoing in-service training programmes to teachers to enhance their pedagogical skills and knowledge.
 - iii. schools and educational policymakers should prioritize teachers' welfare by offering competitive salaries, health benefits, housing allowances, and opportunities for career advancement.
 - iv. schools should enhance library services by ensuring that libraries are well-stocked with relevant textbooks, research journals, and digital resources. Furthermore, libraries should provide access to online databases and e-books, allowing teachers to access up-to-date information and materials for lesson planning, research, and professional development.

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STUDENTS' PERCEPTION OF MATHEMATICS AND THEIR LEARNING BEHAVIOUR IN SECONDARY SCHOOLS IN IFE CENTRAL LOCAL GOVERNMENT AREA, OSUN STATE

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Abstract

This study investigated the influence of students' perception of mathematics and their behaviour towards learning the subject with specific focus on student's attitude, self-concept, teachers' teaching methods, and teacher' reinforcement. The study employed a non-experimental descriptive research design. From the population of 573, a sample of 261 SSII students was purposively selected. The instrument titled 'Students' Perception of Mathematics Questionnaire (SPMQ)' constructed by the researchers built on a modified 4-point Likert scale was used to collect data. The instrument was validated by experts both in science education as well as in test and measurement. The reliability coefficient through Cronbach alpha was found to be 0.79. The results revealed, student's attitude (mean 3.13, variance 1.123); self-concept (mean 2.30, variance 1.419); teaching methods (mean 2.85, variance 1.227); and reinforcement strategies (mean 3.09, variance 0.84). The findings revealed that students' negative perception of mathematics, teaching methods, and lack of reinforcement significantly affect their learning behaviour. It is then recommended that mathematics education reform, teacher professional development, and reinforcement strategies be implemented to improve mathematics learning outcomes.

Key words: Mathematics, Perception, Learning Behaviour, Secondary Schools Students

Introduction

Mathematics is one of the compulsory subjects in the school curriculum. Mathematics education is compulsory at pre-basic, basic, and post-basic levels of education in Nigeria. The compulsory teaching and learning of mathematics, revealed the importance of the subject to nation building. Oyedele and Adeniyi (2022) defined mathematics as a vital tool

for fostering technological innovation, economic growth, and sustainable development, as it equips individuals with critical thinking, problem-solving, and analytical skills. It communicates the idea of growth, expansion and improvements in goods and services emanating from practical applications of science, to reduce poverty, crime and security problems. Agwuegbo (2020) stated that mathematics

is indispensable for national development, as it drives innovation, critical thinking, and problem-solving skills. It was emphasized that mathematics should be integrated into everyday communication, just like the English language, to foster a mathematically literate society.

To achieve this, students need to have the right or positive perception of mathematics, which will in turn influence their learning behaviour. Akpan and Udofia (2022) from their study stated that students' perception of mathematics encompasses their attitudes, beliefs, and emotions towards the subject, influencing their motivation, interest, and overall performance in mathematics. The perception of the students may affect how they react to mathematics learning. If their perception is positive, it will be evident in their behaviour as they would be very eager to learn more mathematical concepts, and persist in making improvements. Whereas, when students' perception is negative, their behaviour towards mathematics would also be negative and lackadaisical. This implies that learning behaviour is an outcome of perception. Perception is shaped by belief, experience and information received. Hence, students' learning behaviour towards mathematics may be influenced by their perception of mathematics. Research has consistently shown that students' perceptions of mathematics significantly impact their performance and learning behaviour. For instance, Fekumo and Omeka (2022) found that negative perceptions of mathematics can substantially hinder students' academic achievement.

Based on the work of Oyewole and Ogunniyi (2022), an individual's perception

of mathematics is shaped by their personal experiences, expectations, motivations, self-concept, emotions, and cultural background. This perspective is substantiated by Daryl Bem's self-perception theory, which posits that individuals' attitudes and beliefs are shaped by their internal cognitive processes, rather than solely by external factors. Ogundele (2022) referred to self-concept as an individual's perception of their own mathematical abilities, influencing their motivation, confidence, and performance in mathematics. In a study, Oyewole and Ogunniyi (2022) investigated relationship between self-concept and mathematics learning among Nigerian secondary school students. The results showed a significant positive relationship between self-concept and mathematics learning, indicating that students with higher self-concept scores tend to perform better in mathematics. In another study, Ekene and Anyawu (2022) examined achievement goal orientation and self-concept as predictors of secondary school students' academic achievement in mathematics in Anambra State, Nigeria. The results showed that self-concept was a significant predictor of academic achievement in mathematics.

Adeyemi and Afolabi (2022) conducted a study on the factors influencing students' academic performance in mathematics in Osun State, Nigeria. The findings showed that teachers' teaching methods, students' motivation, and parental involvement significantly influenced students' academic performance in mathematics. It also identified factors such as lack of study habits, poor time management, and inadequate resources as contributing to poor academic achievement.

A teaching method according to Ogundele and Akinyemi (2022) referred to as a broader technique used to help students achieve learning outcomes. Some of these teaching methods among others include:

- (i) Innovative teaching method
- (ii) Experiential learning method
- (iii) Collaborative learning method
- (iv) Problem-solving teaching method

Ogundele (2022) defined innovative teaching method as an approach that incorporates new and creative ways of teaching, such as role-playing, simulations, and technology-based instruction. From Afolabi (2020) experiential learning method was defined as a method that involves hands-on experiences and real-world applications to promote learning. Akinyemi (2022) in his study defined collaborative learning method as an approach that encourages students to work together to achieve a common goal. Problem-solving method by Udofia (2022) was defined as an approach that encourages students to think critically and solve problems through hands-on activities and real-world applications.

Ogunyemi and Akinyemi in a study investigated the impact of teaching methods on academic performance of secondary school students in Nigeria, the results revealed that teaching methods can significantly improve student learning outcomes. Oladele and Adeyemo (2020) in their own study examined the impact of teachers' teaching methods on students' learning experiences in mathematics. The findings revealed that students' perceptions of their teachers' teaching styles vary significantly. The results also revealed that

both teacher-centered and student-centered teaching approaches were employed by mathematics teachers, and that teachers' actions and inactions significantly influenced students' learning experiences.

Ezeliora and Nwosu (2022) examined the impact of instructional materials on mathematics achievement among senior secondary school students in Anambra State. The results showed that students taught with instructional materials outperformed those taught without instructional materials, and that the use of instructional materials enhanced students' understanding of mathematical concepts.

Furthermore, reinforcement strategies play a crucial role in shaping students' behaviour towards mathematics learning. Akpan (2022) defines reinforcement as a technique that increases the frequency or duration of desired behavior by following it with a pleasing consequence. Studies have also highlighted the effectiveness of specific reinforcement strategies, such as verbal praise and encouragement, in promoting positive behavioral changes in students. For example, Igwilo, Owelle, and Deebom (2020) found that teachers' use of verbal praise, appreciation, and words of encouragement can serve as a catalyst for fostering a positive attitude towards mathematics learning. Existing literature showed that students' perception towards mathematics has great impact on the students' mathematics learning behaviour. Nevertheless, those studies were interchangeably using the word 'attitude' for learning behaviour when it is very clear that learning behaviour does not have the same meaning as attitude.

Attitude and learning behaviour are often used synonymously, but they are different. Attitude refers to a person's evaluation or judgment of an object, person, situation, or concept. It represents a combination of beliefs and feelings toward something; whereas, learning behaviour refers to the actions, conduct, or observable responses of an individual in a particular situation. It involves what people do or how they act in response to internal and external stimuli. Educational research has shown us time and again that there is so much more to learning than just hearing the spoken words of a teacher and repeating them back verbatim. To truly grasp new concepts, obtain new skills, and make real-life connections to the materials, students must become actively engaged members of a learning community. One thing that sets the most successful teachers apart is understanding that student learning behaviours directly impact the learning outcome of every student on their roster. Student learning behaviours include all of the actions that students take to access the new information being taught to them while also behaving in a responsible manner. For example, students who listen attentively, follow directions, attempt to solve problems, and never give up are significantly more likely to succeed in class than those who do not exhibit these positive behaviours. In fact, something as simple as daydreaming, coming in late, or falling asleep in class can put students far enough behind that they struggle to catch up, feel overwhelmed, and eventually give up trying. In addition, learning behaviours undergo development over time, shaped by various factors including effective instruction, reinforcement techniques, practice opportunities, and the learner's maturation process. On this note, it is

therefore necessary to conduct a study on the influence of students' perception of mathematics and learning behaviour of senior secondary schools in Ife Central Local Govt. Area, Osun State.

Purpose of the Study

The following specific objectives are generated; they are to:

- (i) examine how students' perception of mathematics influence their learning behaviour in senior secondary schools in Ife Central Local Govt. Area;
- (ii) determine the influence of students' self-concept on their behaviour towards mathematics learning in senior secondary schools in Ife Central Local Govt. Area;
- (iii) determine the influence of students' perception of teacher's teaching method on their behavior towards mathematics learning in senior secondary schools in Ife Central Local Govt. Area; and
- (iv) investigate the influence of teacher's reinforcement on students' mathematics learning behaviour in senior secondary schools in Ife Central Local Govt. Area

Research Questions

The study was guided by the following research questions:

- (i) How does students' perception of mathematics influence their learning behaviour?
- (ii) What is the influence of students' self-concept on their behaviour towards mathematics learning?
- (iii) What is the influence of students' perception of teacher's teaching method on their behaviour towards

- mathematics learning?
- (iv) What is the influence of teacher's reinforcement on students' mathematics learning behaviour?

Method of the Study

The study adopted descriptive survey research design. The population comprised of all senior secondary students II (SSII) in public secondary schools in Ife Central Local Government area of Osun State, Nigeria. In all, there were 573 registered SSII students in nine schools as at 2023/2024 academic session (From Osun East Education District Office, Ile-Ife). 261 SSII students were selected from six schools on purpose as the sample size. SSII students were chosen because, they have passed the foundational class, and are now in the preparatory class for external examinations. So, they already had their perception of mathematics which may have affected their interest in mathematics learning. An instrument titled 'Students' Perception of mathematics Questionnaire (SPMQ) was used to collect data for this study. Items of the SPMQ, were built on a modified 4-point Likert scale of strongly agree (SA)=4, agreed (A) = 3, disagree (D) = 3 and strongly disagree (SD) =1. Both the content and construct of the instruments were subjected to external criticism to ensure credibility, honesty and integrity of research and hence validated by experts in science education as well as in test and measurement, all in University of Ilesa, Ilesa, Osun State. Based on the experts' recommendation, comments and opinions, modifications were made to the SPMQ instrument. The instrument was tested on 25 students from one of the schools in Ife East Local Government Area. Their responses when subjected to reliability analysis, the

responses produced a Cronbach's alpha coefficient of .79, suggesting a satisfactory level of reliability and consistency. The instrument was then distributed to the sampled students in the selected schools through the efforts of the research team. Afterwards, data collected was analyzed with the use of percentage, mean and standard deviation techniques. In this research, the benchmark mean score of 2.50 was used as a criterion for making decisions about the research questions. A mean of 2.50 and above, implies agreement on an item while a mean below 2.50 indicates disagreement.

Results presentation and Discussion

Research Question 1: How does students' perception of Mathematics influence their attitude towards mathematics learning?

Table 1: Students' Perception of Mathematics Influence their Attitude towards Mathematics Learning

Descriptive Statistics					
	N	Minimu m	Maximu m	Mean	Std. Deviation
Mathematics is not really difficult to understand if you give it enough attention. So, I try my best at home.	261	1.00	4.00	3.107 3	.81097
I donot belief that some persons are gifted in mathematics. So, I try my best to do my assignments myself.	261	1.00	4.00	2.934 9	.93210
The harder you work at mathematics the better you become. So, mathematics is on my personal study plan.	261	1.00	4.00	3.145 6	.73502
I know there are so many applications of mathematics in my daily life. So, I love being present in mathematics class. I wouldn't like to miss it.	261	1.00	4.00	3.337 2	2.01373
Valid N (listwise)	261				

Average Mean = 3.13

Table 1 above presents the results on students' perception of Mathematics and their learning behaviour towards it. The results revealed a mean score a mean score of 3.11 on students' perception and learning behaviour. Using a benchmark mean score of 2.50, the results indicate that students experience difficulty with mathematics, and this difficulty persists regardless of the time spent on the subject. However, students' belief that some persons are gifted when it comes to learning mathematics, with a mean score of 2.93. The study also revealed that hard work on learning mathematics does not correlate to success in mathematics learning, and most of the students do not have mathematics on their study plan; with a mean score of 3.15. Unfortunately, most students are not aware of the numerous ways mathematics is used in everyday life, and this lack of understanding, among other reasons, contributes to their decision to skip mathematics classes; the mean score of 3.34 confirmed this. With the average mean score

of 3.13 and average variance of standard deviation of 1.123, which is higher than the 2.50 benchmark.

Research Question 2: What is the influence of students' self-concept on their behaviour towards Mathematics learning?

Table 2:

	Descriptive Statistics				
	N	Minimu m	Maximu m	Mean	Std. Deviation
I often feel that others are better than me and wish I was more like them. So, I would prefer students who are good in mathematics to solve a mathematics problem while copy from them than for them to teach me the solution steps.	261	1.00	4.00	2.3602	.98868
I can hardly solve difficult problems no matter how hard I try to. If I'm given a difficult assignment, I don't bother to resolve it.	261	1.00	4.00	2.2720	.98778
I feel I am not a bright student in mathematics. So, I dont have a study plan for it.	261	1.00	4.00	2.4406	2.72618
My mistakes only show me how worthless or incapable I am. So, mathematics is not my personal study schedule.	261	1.00	4.00	2.1303	.97186
Valid N (listwise)	261				

Average Mean = 2.301

Table 2 above shows result of data analyzed on students' self-concept and their learning behaviour. The results revealed that students does not often feel that their classmates are better in mathematics and they only prefer to cheat via copy correct solution to questions, with a mean score of

2.36. Most of the students cannot solve difficult problems, no matter how hard they try, so they did not bother to try and thus resolve to cheat or fail, with a mean score of 2.27. The result further revealed that most of the students do not feel bothered about their ill-status in mathematics, and thus

deliberately do not put the subject in their study plan, with a mean score of 2.44. Most of the students do not see their incapability to solve simple problem as ill-status and thus worthless of inclusion in their personal study schedule, with a mean score of 2.13. with average mean score of 2.30 and a grand variance of standard deviation of 1.419, which is lower than 2.50 bench mark. It can be inferred that there is no notable relationship between students' self-concept and their behaviour towards learning mathematics. These results are inconsistent

with the conclusions drawn by Oyewole and Ogunniyi (2022), which indicated that an individual's perception of mathematics is multifaceted, being influenced by personal experiences, expectations, motivations, self-concept, emotions, and cultural background.

Research Question Three: What is the influence of students' perception of teachers' teaching method on their attitude towards mathematics learning behaviour?

Table 3

	Descriptive Statistics				
	N	Minimum	Maximum	Mean	Std. Deviation
My mathematics teacher explains the objectives of the lesson at the start of the lesson, and that makes me look out for steps during the lesson to achieve the objectives.	261	1.00	4.00	3.0881	2.07084
My mathematics teacher gives room for me to ask questions at any point in the lesson where I do not understand. So, I listen attentively during the lesson.	261	1.00	4.00	3.0115	.91770
My teacher explains the solution steps of a mathematics problem repeatedly to the class and that makes me to always not want to miss the lesson.	261	1.00	4.00	3.0460	.84455
My mathematics teacher is too fast and always rush the lesson. So, I don't even bother to attend the lesson.	261	1.00	4.00	2.2644	1.07553
Valid N (listwise)	261				

Average Mean = 2.85

The teachers' teaching method and its impacts on students' attitude towards mathematics learning behaviour was analyzed in Table 3 above. The result revealed mathematics teachers often articulate lesson objectives at the start, prompting students to work together and focus on attaining the specified objectives; with a mean score of 3.09. Mathematics teachers do give room for students to ask questions and answers during the lesson, which made students listen attentively and pay unfailing attention during the sessions; with a mean score of 3.01. Furthermore,

mathematics teachers do repeatedly explain steps in every solved mathematics problem to the students; with a mean score of 3.05. Mathematics teachers are steady and systematic in the presentation of instruction, they carry students along in the lesson; with a mean score of 2.26, average mean score of 2.85 and grand variance of standard deviation of 1.227.

Research Question 4: What is the influence of teacher's reinforcement on students' mathematics learning behaviour?

Table 4 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
My mathematics teacher do commend or appreciate me whenever I give an answer in the class, even if it isn't the correct answer. That makes me always want to be present and participate in the lesson.	261	1.00	4.00	2.9579	.93754
If there was an award attached to a mathematics problem, I put more effort to get the solution.	261	1.00	4.00	3.1111	.77404
My mathematics teacher gives me tips on how to improve in mathematics and help me to work towards the tips and that encourages me to study more and improve.	261	1.00	4.00	3.1149	.77099
My mathematics teacher is kind and speaks positive of me in the class, and I enjoy to attend the lesson.	261	1.00	4.00	3.1839	.89265
Valid N (listwise)	261				

Average Mean = 3.09

Table 4 above presents the analysis of teacher's reinforcement on students' mathematics learning behaviour. The results revealed that mathematics teachers do commend and appreciate students whenever attempts are made to answer questions in the class; with a mean score of 2.96. Also, teachers do attach award to solution to mathematics problem, thus make students compete for it; with a mean score of 3.11. Mathematics teachers give tips to students on how to improve in their knowledge of mathematics; with a mean score of 3.11. Furthermore, the result revealed that teachers are kind and encourage students by using positive words for them; with a mean score of 3.18. The average mean of 3.09 and grand variance of 0.84.

Discussion of Findings

The findings from Table 1 suggest that students' negative perception of mathematics significantly affects their learning behaviour towards the subject. This result is consistent with the work of Akpan and Udofia (2022), who found that negative perceptions lead to negative and lackadaisical behavior towards mathematics learning. This highlights the importance of addressing students' perceptions and attitudes towards mathematics to improve their learning outcomes.

The study's findings from Table 2 on the influence of students' self-concept on their behaviour towards mathematics learning show no notable relationship between students' self-concept and their behaviour towards learning mathematics. The findings are in contrast with Oyewole and Ogunniyi (2022) research results where it was stated

that an individual's perception of mathematics is shaped by their personal experiences, expectations, motivations, self-concept, emotions, and cultural background.

The results from Table 3 on influence of students' perception of teachers' teaching method on their attitude towards mathematics learning behavior indicate that teachers' teaching methods have a significant impact on students' mathematics learning behaviour. This findings align with the study by Adeyemi and Afolabi (2022), which showed that teachers' teaching methods significantly influence students' academic performance in mathematics. Therefore, it is essential for teachers to employ effective teaching methods that promote student engagement and motivation.

Furthermore, the findings from Table 4 on the influence of teacher's reinforcement on students' mathematics learning behavior reveal that teacher reinforcement plays a crucial role in shaping students' mathematics learning behaviour. The findings suggest that reinforcement strategies, such as verbal praise, commendable appreciation, and words of encouragement, can positively influence students' behavior towards mathematics learning. This result is consistent with the study by Igwilo, Owelle, and Deebom (2020), which found that reinforcement strategies can reinforce students' behavior towards mathematics learning.

Conclusion of the Study

The study investigated the influence of students' perception of mathematics and their learning in public secondary schools. Based on the findings, it could be concluded

that students' negative attitudes towards mathematics have a profound impact on their learning behaviour. In contrast, no significant relationship was found between students' self-concept and their behaviour towards mathematics learning. On the other hand, the study highlighted vital role of teacher-related factors, particularly teaching methods and reinforcement strategies, in influencing students' attitudes towards mathematics learning.

Recommendations

Based on the study's findings, the following recommendations are suggested to enhance mathematics education.

- (i) stakeholders should reform mathematics education to focus on developing positive perceptions and attitudes towards mathematics among students.
- (ii) teachers should undergo professional development programs to enhance their teaching methods, incorporating student-centered approaches and reinforcement strategies to foster positive learning behaviours.
- (iii) teachers should employ various reinforcement strategies, such as verbal praises, commendable appreciations, and words of encouragement, to motivate students and promote positive learning behaviors.
- (iv) educational institutions should adopt student-centered learning approaches, allowing students to take ownership of their learning, explore mathematical concepts, and develop problem-solving skills.

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ASSESSMENT OF DIETARY PATTERNS OF UNDERGRADUATES OF PUBLIC UNIVERSITIES IN EDO AND DELTA STATES, NIGERIA

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Abstract

The study examined dietary patterns among undergraduate students of universities in Edo and Delta States, Nigeria using the ex-post facto research design. The population of the study consisted of 93,331 undergraduate students in nine public universities in Edo and Delta States. The multistage sampling technique was used in the study. The balloting sampling technique was used to select 150 undergraduate students from 200 – 400 levels in each Department from two Faculties in each University. The instruments that were used for data collection was an adapted structured questionnaire titled: Dietary Patterns Questionnaire for Undergraduates (DPQU). The Cronbach reliability Alpha of the instrument was 0.86. The research question 1 was analysed using descriptive statistics - Mean (\bar{X}), Standard Deviation (SD) while the hypothesis was tested using t-test for two independent sample means at 0.05 level of significance. The result showed that dietary patterns do not change with respect to gender. The result further shows that environment dictates students choice of meal per time as many eat more of noodles, soft drink, eat in-between meals, eat food high in sugar, fat, salt, cassava food, beans products, baked food among others. It was recommended that the Ministry of Health should introduce a comprehensive public health intervention measure including a comprehensive nutritional and health education programme for undergraduate students as it is needed to promote knowledge of healthy dieting and lifestyle.

Keywords: Dietary Patterns, Undergraduates, Public Universities, Gender

Introduction

Dietary patterns and disease control remain one of the topical issues in public health commentary, particularly in developing countries like Nigeria. This may be because of the important role of food and in the promotion of health living and development of any living thing. However, it seems that many students depend on junk food which

includes high level of refined sugar, white flour, trans-fat and saturated fat, having preservative and colouring agents for their nutrition. This may be responsible for the cause of non-communicable diseases among undergraduates (Meg, Small, Bailey, & Maggs, 2012).

Poor dietary habits have been identified as a

significant lifestyle challenge faced by undergraduates during their time in school. As widely acknowledged, nutrition is not merely fuel but a crucial aspect of life. Unhealthy eating behaviors, such as failing to consume the recommended five or more servings of fruits and vegetables daily, having low intake of milk and dairy products, skipping meals, and frequently consuming energy-dense, nutrient-poor fast foods, are prevalent among students (Alkazemi, 2018).

Dietary pattern refers to the quality, quantity, proportion, variety, and combination of different foods, drinks, and nutrients consumed. It encompasses the timing, location, and frequency with which foods are regularly eaten (Dietary Guideline Advisory Committee, 2015). A healthy dietary pattern is characterized by a higher intake of vegetables, fruits, legumes, whole grains, fish, and low-fat dairy products. It also includes aspects such as eating habits, food preferences, preparation methods, cooking techniques, and serving practices. Additionally, dietary patterns involve food habits, including the types of foods consumed, the number of meals, and their timing. These patterns are significant as they reflect both the types of available foods and the nutrient content consumed by individuals or groups.

Brown and Hazen (2018) reported that dietary patterns are well known modulator of cardiovascular diseases. A good dietary pattern is marked by a high intake of fruits and vegetables, which is linked to substantial reductions in the risk of cardiovascular diseases and Type II diabetes mellitus. Such diets are typically low in total fat, saturated fat, and cholesterol, which

helps in maintaining a healthy weight and lowering the risk of coronary heart disease. For instances, margarine which contains low cholesterol and is also low in saturated fat, is perceived as a healthy alternative to butter. Butter is a source of bad cholesterol while margarine is not (Morris & Genser, 2003).

The World Health Organization (WHO) (2020) recommends that dietary guidelines for individuals and populations should ensure adequate energy intake and balance to maintain a healthy weight. These guidelines advise limiting fat consumption, shifting from saturated fats to unsaturated fats, and eliminating trans fatty acids. Additionally, diets should emphasize increased intake of fruits and vegetables, legumes, whole grains, and nuts, while reducing the consumption of free sugars and sodium. A poor dietary pattern is characterized by dietary behaviors that fail to adhere to these principles. Other poor dietary patterns are: skipping breakfast, increased intake of calories such as snacks, eating in between meals, less consumption of fruits and vegetables and wiled use of supplement. Therefore, dietary patterns are the habitual decisions an individual or group of people makes when choosing what food to eat. Diet is very vital to life and a major source of health issues to persons; hence people are what they eat and the kind of food they eat makes them who they are.

Dietary patterns are grouped into two: healthy dietary pattern and unhealthy dietary pattern. A healthy dietary pattern is characterized by a higher consumption of fruits, vegetables, legumes, whole grains, and nuts, while restricting the intake of free sugars and sodium (salt). It also includes a

limited intake of fats. Unhealthy dietary pattern is increased consumption of soda, sweets, saturated fatty acid and low consumption of fruits and vegetables, usually have inadequate amount of floated, magnesium and unsaturated fatty acids, high transfatty acid and poor dietary fiber whose negative effect has been proven on health. Nutrition behaviours can be targeted alongside with dietary pattern and lifestyle behaviours to improve health. Dietary diversity measures the number of different food groups consumed over a reference period, typically 24 hours. It is generally recommended that a balanced diet includes six essential food groups daily (Gao, Stiller, Scherbaum, Biesalski, Wang, Hormann & Bellows, 2013). With respect to gender, possible differences may exist in the dietary patterns of students as Masella and Malorni (2017) pointed that females generally consume more fruits, vegetables, legumes, and whole foods, although they also eat more sweets and cakes than males. Conversely, males are more likely to drink wine, beer, spirits, and sweet carbonated beverages, often engaging in dietary behaviors that could increase the risk of overweight and obesity. Overweight/obese are higher in males than females.

Alkazemi (2018) stated that male students consume meat, chicken, turkey, and fish per day compared to female students. Males are also found to drink more sugary drinks than female students. A higher proportion of female students was reported to have regular consumption of potato chips and fatty, salty snacks and eating sweets, such as cakes, chocolates, and candies, more than twice a day. More female students usually felt good enough to shop and cook compared to male students (Masella &

Malorni, 2017). Both genders show equally unhealthy dietary habits. University students' life transition often results in poor nutrition and unhealthy weight gain (Darling, Sunguya, Ismail, Manu, Canavan, Assefa, Sie, Fawzi, Sudfeld & Guwattude, 2019).

Young students especially in universities tend to change their dietary pattern and lifestyle on leaving home. They tend to exploit their freedom and may not follow the family dietary patterns they were brought up with. Undergraduates have the tendency to be exposed to different kinds of life-styles that may hamper their nutritional status. These categories of students live independently, with nobody responsible for monitoring their food intake and physical activities. As a result, students are not conscious of taking proper or adequate diet. They are prone to eating junk foods due to its availability and accessibility in terms of cost and time. Omage and Omuemu (2018) observed that youths are especially prone to poor eating habits and often have a tendency to consume "junk" foods.

Many undergraduates are responsible for managing their own diets for the first time when they move away from home. As a result, university students often experience significant nutritional transitions and are notably impacted by changes in their eating habits. Skipping of breakfast and eating in-between meals are common among university students. In addition, due to their youthful exuberance, students adopt various negative lifestyles, such as heavy alcohol consumption, drug misuse and abuse, as well as poor physical activities, all of which impaired their nutritional status (Arulogun, & Awolabi, 2011). The

researcher has also observed that majority of undergraduate students are always falling sick during examination and other stress time. It could be that they are malnourished, pale and not strong enough to withstand stress. Individual and population who are well fed, eat well-balanced and nourished meals are healthy, nourished, more productive, and strong enough to withstand any type of stress, no matter the level of stress they undergo.

Research Question

The study is guided by the research question below.

1. What are the dietary patterns of male and female undergraduate students in Universities in Edo and Delta States, Nigeria?

Hypothesis

The hypothesis formulated and tested is given below

1. There is no significant difference in the dietary patterns of male and female undergraduate students in Universities in Edo and Delta States, Nigeria

Review of Related Literature

This study is rooted on the Becker's Nutritional theory propounded by Becker in 1976. The theory is anchored on the premise that knowledge and decision making about: a) the availability of healthy foods, b) the food or dietary consumption pattern or preferences, c) behavioural tendencies towards food resources in a given family has implications on nutritional outcomes on members of the household based on considerations such as the size of the family, the purchasing power of the family and

other environmental factors. Becker's theory has proven in illuminating the household determinants of nutrition.

The relevance of the Becker's nutritional theory of household to this work is that the theory holds that knowledge and decision making about: a) the availability of healthy foods, b) the food consumption pattern (preferences), c) behavioural tendencies towards food resources in a given family, has nutritional implications on members of the household based on considerations such as personality differences, the purchasing power of the family and other environmental factors. The above premise identifies three or more components that are vital in this study. These components or variables include: a) knowledge and decision making, b) the food or dietary consumption pattern (preferences), c) nutritional outcomes, and d) other considerable variables such as personality differences, the purchasing power of the family and other environmental factors. For this study, knowledge of mothers is considered necessary for food decision making in the household and this was investigated along with food consumption pattern and nutritional status.

A cross sectional study was conducted by Alkazemi (2018) to assess gender differences in weight status, dietary habits and health attitudes among college students in Kuwait. A total number of 615 students were used from Kuwait University. The Healthy Eating Index provides an assessment for the intake of grains, vegetables, fruits, milk and dairy products and meats, which receive a score of 0-10 per the number of servings consumed from each food group. A pilot study that was

performed to measure the Healthy Eating Score reliability showed a Cronbach's Coefficient of .74, which supports the reliability of the Healthy Eating Score total score as an indicator of overall diet quality. Parametric variables were analyzed using t-test and analysis of variance (ANOVA) to examine the differences in the anthropometric characteristics of students. Regarding supplement use, 32.3% of all students reported using supplements, with no differences in use between genders, However, differences were noted in terms of the types of supplements used by each gender. Male students used sports-related performance-enhancing and muscle-bulking supplements, whereas female students used weight-loss aids, multivitamin tablets, iron, folic acid, omega-3 fatty acids, vitamin D, calcium, and hair-and nail strengthening supplements. More male students reported being smokers as compared to female students (32.4% vs. 1.0%, $p < .001$). The dietary habits for an average per week are summarized. More than one-third of students (35%) reported often skipping breakfast, and 16% students reported eating four or more meals from sit-down or take-out restaurants. In addition, 50% of the students reported that they do not eat as nutritiously as they feel is appropriate for their health. In terms of food-group intake, the consumption of less than two serving a day of wholegrain or high fiber products, whole fruits, vegetables and milk or dairy products was reported as 24.3%, 26.6%, 24.7%, and 30.4%, respectively. No difference in the servings of these food groups was noted between genders.

hotdog), white bread and derivatives, brown-bread and derivatives, rice and pasta,

sweets (cake, ice-cream, chocolate), carbonated beverages (coffee, tea, Nescafe, hot chocolate, or milk), cooked vegetables (mainly for composite dishes), fast food (hamburger, pizza, Lebanese pizza (known as man ouche with thyme or cheese or yogurt based kechek), and sandwiches), and fried potatoes and chips. t-tests were conducted to examine differences in height, weight and BMI between males and females. Chi-square analyses were used to compare BMI categories distributions, income level quartiles, university types, field of studies, and consumption frequencies of the different food categories between males and females and some nominal variables distributions between clusters. Based on the semi-quantitative Food Frequency Questionnaire (FFQ), significant differences were observed between male and female university students with respect to their consumption of individual food categories regularly consumed by the Lebanese population (14 out of the 16 food items or groups). Males consumed more fish, white bread, rice and pasta, carbonated beverages, fruit juice, fast food, and fried potatoes and chips than females ($p < .001$), while females consumed more brown bread, meat, grains, olive oil, fruits and raw and cooked vegetables ($p < .001$), Only hot beverages and sweets were equally consumed by males and females.

A study was also carried out by Awosan, Ibrahim, Essien, Yusuf and Okolo (2014) on dietary pattern, lifestyle, nutritional status and prevalence of hypertension among traders in Sokoto, Nigeria. A cross-sectional descriptive study was conducted among 390 traders selected through multistage sampling technique from November to

December, 2012. Anthropometric and blood pressure measurements were done for the participants, together with questionnaire administration. High prevalence of unhealthy eating habits was recorded among the participants; 50.7% of the respondents ate their largest meal at dinner, 49.9% ate snacks everyday, 66.7% ate fatty foods, 27.1% and 3.3% drank fruit juice and carbonated drinks respectively thrice weekly or more, 56% and 58.8% ate fruits and vegetables respectively less than thrice in a week or not at all. Also, 50.7% lived a sedentary lifestyle, 5.2% currently smoked cigarette and 10.8% had consumed alcohol within the past 30 days. Similarly, the prevalence of overweight (28.9%), obesity (28.1%) and hypertension (29.1%) were high among the participants. The study demonstrated a high prevalence of unhealthy eating habits and lifestyle, overweight, obesity and hypertension among traders in Sokoto.

Methods

The design that was adopted in the study was ex-post facto research design. Ex-post facto research design is a method in which groups with qualities that already exist are compared with some dependent variable. Also known as “after the fact” research, Ex-post facto research focuses on how actions that have already occurred can predict certain situations (Salvatore & Saunder, 2016). Therefore, a researcher cannot manipulate or modify actions or behaviours that have already occurred. Ex-post facto is suitable since the research is meant to collect data on the dietary pattern, lifestyle pattern and nutritional status of the students as they exist without allowing further changes in all these indices nor give the students any treatment.

The population of this study consisted of 93,331 undergraduate students in nine Public Universities in Edo and Delta States, Nigeria. Three public universities in Edo State: Ambrose Alli University, Ekpoma, Edo State University, Uzairue, University of Benin, Benin City and six public universities in Delta State: Delta State University, Abraka, Federal University of Petroleum Resources, Effurun and Nigerian Maritime University, Okerenkoko, University of Delta, Agbor, Delta University of Science and Technology, Ozoro and Dennis Osadebe University Asaba. The population record is obtained from Student Affairs of universities in Edo and Delta States.

A sample of 150 students from five Universities was drawn for the study while the sampling technique that was used to select the sample size in this study was the multistage sampling technique. In the first stage, five Public Universities in Edo and Delta States were used. Five universities, two in Edo State and three in Delta State were selected through purposive sampling technique. From the five public universities selected in Edo and Delta States, balloting was used to select two faculties in each university, having 10 faculties from five Universities. The reason why the researcher chose three universities in Delta State and two in Edo State is because Delta has more universities than Edo State. Delta State has six public universities while Edo State has three public universities. In the second stage dealing with the ten faculties selected, simple random sampling technique was used to select one Department each from two faculties in each University, having 10 Departments. In the last stage, from the 10 Departments

selected, systematic random sampling technique was used to select 15 students in each Department from two Faculties in each University, having 30 students from each University. Altogether, 150 students from five Universities were used for the study.

The instrument for data collection was adapted questionnaire from the work of Omege and Omuemu (2018). The questionnaire was retitled “Dietary Patterns Questionnaire for Undergraduates (DPQU)”. The instrument was divided into three sections A and B. Section A: Demographics –elicited bio data information of the students such as the name of their universities and gender. Section B focused on Dietary Pattern Questions (DPQ). The items in Section B were adapted from Omege and Omuemu (2018) article of Food and Nutrition. The original instrument contained 29 – items. The items in part II of Section B were adapted from the JPS Health and Fitness developed by Besim (2019) to assess the lifestyle of the respondents. The original instrument contained 15 items. The items in the instrument were organized in accordance with the research questions developed to guide the study. The items were rated on a four points scale, namely: Always (A), Not Often (NO), Often (O), Not At All (NAA). The selected items were modified to reflect work related to dietary patterns of undergraduate students within the universities. For instance, item 2 on dietary pattern: “I prefer eating breakfast everyday”. This changed to: “I eat breakfast everyday”. Similarly, item 12 originally read: “I prefer skipping breakfast to lunch”. This was changed to: “I skip breakfast to lunch”.

To ensure validity, the questionnaire was

validated by three experts - two experts in Home Economics and one in Management and Evaluation in Ambrose Alli University, Ekpoma, Edo State. Their suggestions, comments and recommendations made were incorporated into the final draft of the instrument. The experts ascertained the content validity of each of the item in the instrument to ensure that it measured what it was intended to measure. The reliability of the instrument was determined using the internal consistency method, by employing Cronbach Alpha formula. The questionnaire was administered once to 30 undergraduate students who were not part of the sample. The reliability of the measurement tool was determined by setting the pointer at the zero level and determining the weight of an object with those whose weight were fixed and known already. The instrument was adjudged reliable since the reliability coefficient was .75 which is higher than the expected threshold of .70.

The researchers took permission from the school authorities/management to solicit their cooperation in the questionnaire administration exercise. A cover letter to respondents (students) was attached to explain the purpose of the research exercise to undergraduate students so that they were appropriately guided on how to respond to the items in the questionnaire. The researchers with the help of two trained research assistants administered questionnaire to the students. The questionnaire was retrieved as soon as it was completed on the same day of administration and this gave a 100% return rate.

The data collected was analyzed using descriptive statistics - Mean (\bar{x}) and

Standard Deviation (SD). Mean and Standard Deviation (SD) were used to analyze data in answering the research question. A mean score of 2.5 was used as the benchmark for determining dietary patterns of male and female students. This was obtained by adding up the 4-point scale (Strongly Agreed -4, Agreed -3, Disagreed -2 and Strongly Disagreed -1) and dividing the sum of the scales (10) by the total number of scales to give 2.50. Hence, a score of 2.50 or higher represented balanced dietary pattern while 1 to 2.49 represented imbalanced dietary pattern. The independent t-test for two sample means

was used to test the hypothesis at 0.05 level of significance. The probability value (p) was used to take decisions as regard the hypothesis. If P-value is less than or equal to .05, the null hypothesis was rejected but if P-value is greater than .05, the null hypothesis was retained.

Results

Research Question 1: What are the dietary patterns of male and female undergraduate students in Universities in Edo and Delta States, Nigeria?

Dietary patterns of male and female undergraduate students in Universities in Edo and Delta States, Nigeria

s/n	Items	Male		Female		Total	
		X	SD	Mean	SD	Mean	SD
1.	I eat three square meals daily	2.31	1.166	2.33	1.237	2.32	1.200
2.	I eat breakfast everyday	2.01	1.102	1.92	1.130	1.97	1.114
3.	I skip lunch to breakfast	1.54	.859	1.49	.845	1.51	.849
4.	I eat light food at dinner	1.96	1.075	2.16	1.114	2.07	1.097
5.	I eat whatever food that is available	1.72	.913	1.86	.888	1.79	.900
6.	My environment dictates my meal	2.54*	1.371	2.68*	1.296	2.61	1.330
7.	Meals should never be skipped	2.06	1.040	2.18	1.059	2.12	1.049
8.	Noodles is a good food for me	2.32	1.274	2.54*	1.279	2.44	1.277
9.	Do you take fruit juice?	2.55*	1.193	2.39	1.159	2.47	1.174
10.	Do you take soft drink?	2.45	1.251	2.61*	1.275	2.53	1.262
11.	I eat vegetables and fruits	2.75*	1.130	2.89*	1.098	2.82	1.112
12.	I eat in-between meals	2.52*	1.169	2.76*	1.123	2.65	1.148
13.	I visit fast food outlets for food	2.41	1.116	2.44	1.083	2.43	1.095
14.	I drink eight glasses of water daily	2.59*	1.214	2.58*	1.161	2.59	1.183
15.	I eat food high in sugar	2.39	1.304	2.72*	1.187	2.57	1.250
16.	I eat food high in fat	3.10*	.897	3.23*	.847	3.17	.870
17.	I eat food high in salt	2.86*	1.018	2.92*	.984	2.89	.998
18.	I eat food high in protein	2.08	.967	2.16	.854	2.13	.907
19.	I eat cassava food	2.41	1.178	2.70*	1.102	2.56	1.144
20.	I eat yam food	2.00	1.146	1.95	1.036	1.97	1.087
21.	I eat beans products	3.11*	.919	3.14*	.944	3.13	.929
22.	I eat baked food	2.61*	1.189	2.71*	1.134	2.66	1.158
23.	I eat egg products	1.97	.985	2.00	.847	1.99	.912
24.	I eat fried food	2.00	1.171	2.47	1.142	2.25	1.175
25.	I eat fatty food	1.97	1.183	2.04	1.031	2.01	1.102
26.	I eat sugary food and beverages	2.46	1.285	2.48	1.270	2.47	1.273
27.	I skip breakfast	2.14	1.060	2.20	.979	2.17	1.015
28.	I eat snacks	1.92	.982	2.09	1.123	2.01	1.059
29.	I eat red and processed meat	2.39	1.165	2.10	1.020	2.24	1.097
Overall mean score = 2.32							

*Significant mean (X = 2.50)

The results in Table 1 showed that male respondents agreed on items 6, 9, 11, 12, 14, 16, 17, 21, 22 at mean score range of 2.54 to 3.11 respectively and disagreed on items 1, 2, 3, 4, 5, 7, 8, 10, 13, 15, 18, 19, 20, 23, 24, 25, 26, 27, 28 and 29 at mean score ranging from 1.54 to 2.86 respectively. the result that female respondents agreed on items 6, 8, 10, 11, 12, 15, 16, 17, 19, 21 and 22 at a mean score of range of 3.23 to 2.54 respectively and disagreed on items 1, 2, 3, 4, 5, 7, 9, 13, 18, 20, 23, 24, 25, 26, 27, 28 and 29 at a mean score ranging from 1.49 to 2.47 respectively. Comparing the responses of the male and female respondents, disclose that they both agreed on items 6, 11, 12, 16, 17, 21 and 22. This means that

environment dictates their meals, they all eat vegetable and fruits, eat in between meals, eat food high in fat and salt, eat beans products and baked food. In addition, the male respondents like fruits juice, drink eight glasses of water daily which the female do not like. The female respondents on the other hand like noodles and soft drinks, food high in sugar, cassava food which their male counterparts do not like.

Hypothesis 1: There is no significant difference in the dietary patterns of male and female undergraduate students in Universities in Edo and Delta States, Nigeria.

Table 2: t-test Summary Analysis on Nutritional Status of Male and Female Undergraduate Students in Universities in Edo and Delta States, Nigeria

Variables	Gender	(n=273)	\bar{X}	S.D	t-cal.	Sig	Remarks
Dietary pattern	Male	71	2.35	.537	-1.074	.975	Reject null hypothesis
	Female	79	2.44	.500			

Result in Table 2 shows that the calculated t-value of -1.074 is statistically significant ($p < .05$). Therefore, the null hypothesis which states There is no significant difference in the dietary patterns of male and female undergraduate students in Universities in Edo and Delta States, Nigeria is rejected while the alternate is accepted. This implies that no significant sex differences exist in the dietary patterns of male and female undergraduate students in Universities in Edo and Delta States, Nigeria.

Discussion of Findings

The result from Table 1 shows that sex differences do not exist in the dietary pattern of male and female undergraduate students

in Universities in Edo and Delta States, Nigeria. This could be resulting from the fact that socioeconomic condition and family background of most of the students is relatively same; making them exhibit similar consumption behaviour. Generally, the socio-cultural differences between male and females often make many expect that women would be more conscious of their dietary pattern and food eating habit by been careful with what they eat at every point in time. However, the result showing that no obvious difference exists in the dietary patterns with respect to sex of students is an indication that many students often eat whatever is “available” and affordable and not necessarily what is desirable. The result in Table 2 agrees with the findings of

Alkazemi (2018) who found no difference in the dietary pattern of participants by gender. Similarly, the result aligns with the findings of Salameh, Jomaa, Issa, Farhat, Salame, Zeidan and Baldi (2014) who found that hot beverages and sweets were equally consumed by males and females. The result agrees with that of Alkazemi (2018) who found that students reported that they do not eat as nutritiously as they feel is appropriate for their health.

On the contrary, the result in Table 2 does not support findings of Salameh, Jomaa, Issa, Farhat, Salame, Zeidan and Baldi (2014) who found that dietary patterns differed among university students; males, particularly in private universities were more prone to adopt a westernized diet, while females were prone to follow vegetarian/low calorie diets. The result is in line with that of Awosan, Ibrahim, Essien, Yusuf and Okolo (2014) who found a high prevalence of unhealthy eating habits and lifestyle, overweight, obesity and hypertension among traders in Sokoto.

Conclusion and Recommendations

The need for maintaining a healthy dietary behaviour or pattern among undergraduates cannot be undermined. Based on findings, it is concluded that male and female undergraduate students have fairly similar dietary patterns in universities in Edo and Delta States, Nigeria. Based on findings, the following recommendations are made:

- 1) In order to raise awareness of healthy diets choices, the Ministry of Health should implement comprehensive public health

intervention measures, such as a thorough nutritional and health education program for undergraduate students.

- 2) The students' bursary programme funded by the Edo State government should be extended to support students from disadvantaged households who are challenged with having a sufficient nutritional balance.

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COUNSELLING IMPLICATIONS AND FACTORS INFLUENCING COMMERCIAL SEX AMONG FEMALE STUDENTS IN PUBLIC UNIVERSITIES IN EDO STATE

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Abstract

The study examined counseling implications and factors influencing commercial sex among female students in faculty of social sciences in Ambrose Alli University, Ekpoma Edo State. This study employed the descriptive research design. Was conducted in Ambrose Alli University Ekpoma, Edo State. The convenience sampling technique was used. The population for this study consist all the 3781 female students. The sample size of 362 female students was used in this study. The instrument used for this study is a self-structured questionnaire. Data collected were analyzed using descriptive statistics with frequency count and percentages. Results from the study revealed that peer pressure influence was a major factor with majority (84.5%), though friends, parental supports influence (80.9%) and poverty (64.1%) The study concluded that peer pressure influence, parental support and poverty influences commercial sex among female students in Faculty of Social Sciences in Ambrose Alli University, Ekpoma Edo State. It is therefore recommended that the school management should as a matter of urgency establish and initiate an entrepreneurship skills development programmes to train female students sex worker in various skills acquisition to become self-reliant and independently generating money to provide the essential needs for themselves.

Keywords: *Commercial Sex, Females and School Based*

Introduction

All human societies are confronted with the question of modification from infancy of individual's behavior to conform to the demands of social life, and ultimately making the young children full members of the society. The process for doing this is called socialization. It is through this process of socialization that members learn certain habits, traditions, knowledge, skills, norms and values which the society considers quintessential (Okafor & Duru, 2020). Schools particularly at the realm of higher education (HE) are an integral part of

this process since it is at this level that, students are being prepared to enter the labour market and emerge with skills to support socio-economic and political systems and as messengers of ideas (Balogun, 2018).

At the onset of formal education in Nigeria, it was a thing of joy and honor for any young person to be offered admission into a degree programme in any of the few universities in the country. It was an occasion which everybody, including parents, looked forward to, especially the accompanying

matriculation exercises which the new intake celebrated with pomp and pageantry, to the envy and admiration of their less fortunate relations and friends. That was in the days of the “Ivory Tower” concept of the universities, when universities were repositories for high ideals and enviable academic traditions. However, the reality today is a radical departure from the past, as it is common knowledge that in Nigeria studying at University or any other higher educational institution is nightmarish and a necessary evil. Adelekan et al (2019) had documented this, but we make bold to declare that the situation is growing worse by the day since then.

In the place of the erstwhile high ideals and enviable academic traditions are a plethora of deviant activities such as campus prostitution, cultism, alcoholism, drug addiction, sexual harassment, rape, examination malpractices and a host of others. Perhaps one of the major hydra-headed and multi-dimensional social problem facing tertiary institutions in Nigeria today is how to handle the menace of campus commercial sex work among female students. The growing rate of commercial sex workers among female university students today is raising a serious concern among Nigerians Alobo and Ndifon (2020) found a re-occurring decimal in the unfolding dynamics of the dark side of the ivory towers. Commercial sex work is now more lucrative as a student in the campus due to client preference for students as against brothels and street walkers.

This has promoted admission racketeering and compounded universities admission crisis as increased number of professional prostitutes are now desperate to gain

admission into higher institutions at any cost (Devault, et al., 2019). Essentially, most young girls sent to Universities, polytechnics and colleges of education to acquire knowledge and become productive citizens in the nation have found a vocation in commercial sex work. They now ply the trade right inside the campuses. By the day, they parade themselves as students, attending lectures and going to the libraries like other students, but by night they shed their academic garbs and engage in the oldest profession in the world – prostitution (Oтите & Ogionwo, 2018).

On Wikipedia, it was observed in a survey of commercial sex workers that almost two thirds or about 63% reported that they started commercial sex work before the age of 19. Nearly 99% of those surveyed were single, divorced, widowed or separated while the majority of them 63% work from brothels. Owing to the negative public perception of commercial sex, majority of them working in cities come from distant areas, far from places of their origin.

It is important to note that it was in the mid-1990s, that sex trafficking of women to European countries such as Italy began to gain ground. When the women reach the country of destination, they are immediately indebted to the trafficker for transport and lodging fees and will have to pay off the debt before they become free. Sex tourism according to Kempadoo and Doezema (2019) is a travel planned particularly with the intention of having sex, generally to a country where prostitution is legalized. Paul (2018) noted that women suffer by being part of an oppressed group who fall victims of this social menace. They are principally transported across national borders to either

willing or forcefully engage in prostitution.

Although prostitution is not legal in Nigeria, but its practice is quite prevalent in the country. It is said to be one of the major challenges in our country. Prostitution is an active disease vector for sexually transmitted diseases including HIV/AIDS. It has brought about a moral decadence in our country. The disruptive effects of prostitution affect the sex workers, clients, pimps and madams as well as the entire society. It is noteworthy that sex workers are trained by older professional or pimp before the commencement of their job.

Studies on the factors influencing commercial sex among female students have been investigated by several scholars in recent time. Galadima, et al., (2021) examined the causes and implications of prostitution among women in Maiduguri, Borno State, Nigeria. The objectives of this paper was to understand the principal causes influencing the women to enter into prostitution as a business profession for earning money, identify the problems associated with prostitution, as well as challenges the prostitutes encountering while practicing their business of sex services for money. Prostitution amongst under-aged girls has become an alarming phenomenon in Maiduguri, Borno State; and this led the State Government to demolish most of the, hotels and related alcohol drinking point. The law has granted State Government a vet to ban prostitution and reverse the brothels and hotels who were not legally owned the hotels, hence the intelligent report showed that most of the places demolished has been a criminal meeting point, while abusing under-aged girls who are mainly coming from various

internally displaced persons camp within the Maiduguri Metropolitan. A descriptive and cohort survey designed method was applied, using participant and non-participant observation with the aid of interview. The researchers selected ten (10) different brothels and hotels with random sampling techniques. A sample size of (90) prostitutes were used (9) from each of the ten (10) areas selected. A simple frequency distribution and percentages with the aid of Chi-square was used to distinguish respondents' opinion on the factors attracting them to embrace the sex for money business and its implication. Opinion generated from the respondents and other empirical literatures consulted has simultaneously proved that poverty, hunger, peer group and broken home are the principal causes influenced them to join prostitution.

Nabaggala (2020) determined the factors that influence early sexual practice among secondary school teenagers in Nakaseke District, Uganda. A descriptive cross sectional study was conducted and 391 secondary school students (13-19) years old were recruited from 4 secondary schools in Nakaseke district by a random sampling. Data was collected by use of structured questionnaire and focus group discussions, analysed by Graphical tests Prism 6.0. Chi-square tests were used to determine the relationship between demographic factors, social-economic factors, and environmental factors influencing early sexual practices. For all statistical tests, p value less than 0.05 were considered significant. Results: Almost half (47%) of the respondents had experienced intercourse before the age of 18 years, 38% started sex as early as before 13 years, 89.1% had sex willingly, 46.2% had

multiple sexual partners. The findings also showed that sex ($\chi^2=27.45$, p-value of <0.001), religion ($\chi^2 =37.31$, p-value of 0.001), class ($\chi^2=15.22$, p-value of 0.001), parental formal education ($\chi^2=8.377$, p-value of 0.015), fasting ($\chi^2 =99.37$, p-value of 0.001) and cultural beliefs ($\chi^2 =14.33$, p-value of 0.001). Among the social economic factors, father's sexual education ($\chi^2=8.704,3$, p value 0.03 accessibility of information on media ($\chi^2=12.42$, p-value of 0.002), different sources of information on sexual issues ($\chi^2=28.62$, p-value of 0.001), parental employment ($\chi^2 =21.94$, p-value of 0.001), ($\chi^2=124.1$, p-value of 0.001), number of girl/ boyfriends ($\chi^2= 15.98,1$, p-value of 0.001), pressure for sex ($\chi^2= 15.98$, p-value of 0.001), peer influence ($\chi^2=87.99$, p-value of 0.001), lack of negotiation skills ($\chi^2=203.2$, p-value of 0.001), substance use ($\chi^2=19.79$, p-value of 0.001 , attending night club ($\chi^2=38.73$ p-value of 0.001), and sex for goods ($\chi^2=116.4$, p-value of 0.001) were significantly associated with sexual practice among the respondents.

Wylęły (2019) analysed the phenomenon of prostitution among university students. The study presents the scale of this phenomenon and its causes. The study was conducted among 1,877 university students. Respondents were interviewed through an online panel survey. Students spoke about their own experience in prostitution and shared thoughts about the approval for this phenomenon. Based on obtained answers, it was possible to identify conditioning for student prostitution, which encompasses biological, psychological, environmental, cultural, and economic factors. Moreover, students mentioned additional reasons for taking up prostitution: difficult financial situation during studies, above-average sex

drive, laziness, and consumer mentality supported by the culture of promiscuity. It turned out that each of the mentioned factors may encourage students to become involved in prostitution. The analysis also drew attention to the lack of sexual education, conducive to risky sexual behaviours of young people. The research has shown that a large group of students exchange sex for money. The study concluded that commercial sex of students are still an unexplored area of knowledge. Prostitution, due to its controversial nature, is treated as a taboo subject.

Kangiwa (2020) identified the socio economic factors and condition that are associated with the profession. It is an attempt to study socio economic background, pattern of establishment, social organization and modes of operation of the prostitutes with a view to suggesting effective ways of reducing prostitution. A cross-sectional survey design was adopted for the study. A total of 150 prostitutes form the sample of the study. Multi-stage sampling technique involving cluster and simple random sampling methods were used to select the respondents. The major instrument for data collection was the interview. Descriptive statistics such as frequency tables and percentages were used in analyzing the data collected. The findings revealed that the driving force behind prostitution is economic gain. Prostitutes are found to have pathological problems at their backgrounds and the social relations amongst them are based on primordial pattern. Prostitution has both the positive and negative effects.

Early sexual practices come with unfavourable outcomes ranging from

sexually transmitted infections, including HIV/ AIDS, unprepared pregnancies, unsafe abortions, anaemia leading to maternal mortality, early school dropout, reduced performance at school and stigma. Long- term health problems such as secondary infertility may also arise and any other health outcomes such as violence and mental distress. All these impose a huge economic burden on public health system, along with loss of productivity, among young population (Adogu, 2019). In other studies, teenagers' decisions about participating in early sex are shown to be influenced by numerous factors; Parents, peers, the media, access to education and services, among others (Onsomu, et al, 2020).

The people involved in commercial sex experience negative effect even though they still make out from it. Lex (2018), argued that, sex work has been identified as the core group for transmission of HIV/AIDS and STD, Thus, they face discrimination throughout the world. Due to the diseases that befall these people on daily basis, sex work has been considered a menace in the society and also violence against humanity, (Lex, 2018). These negative effects includes untimely death, frustration, unwanted pregnancy etc. one of the major challenges is that, some of these sex workers are illiterates, they neither attend seminars nor listen to news on television where they could be enlightened on the risk of their work. This work has then, become their life style, therefore, making it difficult for the government to cope with. In country like Nigeria, commercial sex workers are termed as deviance and unhealthy in the society. It is also a big embarrassment to the government and the families who their

youths are involved in such acts, such families will lack their respect from people in the society no matter their position in the society (Onah, 2019).

Scholars have made attempt to investigate the factors influencing commercial sex among female students in Nigeria. Galadima, Alimi, Garba and Suleiman (2021) examined the causes and implications of prostitution among women in Maiduguri, Borno State, Nigeria who found that from the respondents and other empirical literatures consulted has simultaneously proved that poverty, hunger, peer group and broken home are the principal causes influenced them to join prostitution. Nabaggala (2020) determined the factors that influence early sexual practice among secondary school teenagers in Nakaseke District, Uganda. The findings also showed that sex, religion, class, parental formal education, fasting and cultural beliefs were significantly associated with sexual practice among the respondents and Kangiwa (2020) identified the socio economic factors and condition that are associated with the profession. The findings revealed that the driving force behind prostitution is economic gain. Prostitutes are found to have pathological problems at their backgrounds and the social relations amongst them are based on primordial pattern. Prostitution has both the positive and negative effects. The training lessons are based on how to deal with a difficult man, sexually transmitted diseases and self-defence. This study therefore seeks to address the factors influencing commercial sex among female students in faculty of social sciences in Ambrose Alli University, Ekpoma Edo State..

Research Questions

This study was guided by the following research questions:

1. Does peer pressure influences commercial sex among female students in Faculty of Social Sciences of Ambrose Alli University, Ekpoma Edo State?
2. Does parental support influences commercial sex among female students in Faculty of Social Sciences of Ambrose Alli University, Ekpoma Edo State?
3. Does poverty influences commercial sex among female students in Faculty of Social Sciences of Ambrose Alli University, Ekpoma Edo State.

Research Methodology

This study employed the descriptive research design. The population for this study consist all the 3781 female students in Ambrose Alli University, Ekpoma Edo State (2021/2022 academic session). The total population of female students in faculty of social sciences in Ambrose Alli University, Edo State is 3781. The sample size of 397 students was drawn as the sample size for the investigation. Using Taro Yamane formula (1976) for calculating sample size: The convenience sampling technique will be used to determine the participants for the study. The female students whom are readily available and willing to participate in the study on the occasions of the researcher's visits to Ambrose Alli University Ekpoma, Edo State will be used for the study. The instrument used for this study is a self-structured questionnaire. The design of the instrument is closed ended questions. It comprised of sections A, B, C and D.

Reliability was achieved through test-retest method. A pilot study using (10%) married men in Faculty of Medical Laboratory Sciences which is outside the study area. The questionnaire was termed reliable if the Cronbach's value of its pilot study result is 0.78.

Data was collected through the administration of questionnaires to the respondents. After permissions was solicited from the necessary ethics committee of Ambrose Alli University, the purpose of the study was explained to the respondents and with the help of two trained the questionnaires were administered in the space of two weeks to female students in Faculty of Social Sciences in Ambrose Alli University Ekpoma, Edo State. A total of three hundred and sixty-two (362) questionnaires were used for data analysis which gave 100% returned rate. Data collected was analyzed with frequency count and percentages and tables were employed to properly organize the data. This is to orderly present the figures and enhance understanding of the outcomes of the analysis.

Results

The result of the research questions are presented in table below

Table 1: Peer Pressure and Commercial sex among Female Students in Faculty of Social Sciences (N=362)

Item Statements	Strongly Agree	Agree	Disagreed	Strongly Disagreed
Pressure from friend make many ladies sell their bodies for money	110 (30.39%)	211 (58.28%)	22 (6.08%)	19 (5.25%)
The influence of age group causes peer pressure	65 (17.96%)	245 (67.68%)	32 (8.84%)	20 (5.53%)
Many ladies sexual life are according to the wishes of their friends	62 (17.13%)	12 (3.31%)	74 (20.44%)	211 (58.29%)
Inability to resist the suggestions of friend led many ladies into commercial sex	306 (84.53%)	23 (6.35%)	19 (5.25%)	14 (3.87%)
The love to always follow what is acceptable by friends make many indulge in commercial sex	219 (60.50%)	86 (23.76%)	35 (9.67%)	22 (6.08%)

Rating Scale Strongly Agree -4 point, Agree -3, Disagree-2, Strongly Disagree - 1

Table 1 shows the distribution of respondents on peer pressure influence on commercial sex among female students in Faculty of Social Sciences. The result showed that 110(30.39%) of the respondents strongly agreed that pressure from friend make many ladies sell their bodies for money. 211(58.28%) agree, 22(6.08%) disagreed while 19(5.25%) strongly disagreed. This implies that peer pressure from friends make many ladies sell their bodies for money. The result showed that 65 (17.96%) of the respondents strongly agree that the influence of age group causes peer pressure, 245(67.68%) agree, 32(8.84%) disagreed while 20(5.53%) strongly disagreed. the result showed that majority of the respondents agree that influence of age group causes peer pressure Also 62(17.13%) of the respondents strongly agree that many ladies sexual life are according to the wishes of their friends, 12(3.31%) agree, 74 (20.44%) disagreed while 211(58.29%) strongly disagreed. This shows that majority of the respondents strongly disagreed that many ladies sexual life are according to the wishes

to their friends. The result showed that 306(84.53%) of the respondents strongly agreed that inability to resist the suggestion of friend led many ladies into commercial sex, 23(6.35%) agree, 19(5.25%) disagreed while 14(3.87%) strongly disagreed. This implies that majority of the respondents strongly agree that inability to resist the suggestion of friend led many ladies to into commercial sex. The result further showed that 219(60.50%) of the respondents strongly agreed that the love to always follow what is acceptable by friends make many indulge in commercial sex, 86(23.76%) agree, 35(9.67%) disagree while 22(6.08%) strongly disagreed. This shows that majority of the respondents strongly agree that the love to always following what is acceptable by friends make indulge in commercial sex

Table 2: Parental Support Influences on Commercial Sex among Female Students in Faculty of Social Sciences of Ambrose Alli University, Ekpoma Edo State (N=362)

Item statements	Strongly Agree	Agree	Disagreed	Strongly Disagreed
Parents support their children when they choose to practice commercial sex	11 (3.04%)	12 (3.31%)	105 (29.01%)	234 (64.64%)
Parents encourage commercial sex by comparing them to children who are into the practice	14 (3.87%)	19 (5.25%)	28 (7.73%)	301 (83.15%)
The statement “can you not see what your mates are doing to get money” has made many children go into commercial sex	293 (80.94%)	38 (10.50%)	20 (5.52%)	21 (5.80%)
Most parents encourage their children to give sex in return for money and gift from others	199 (54.97%)	65 (17.96%)	50 (13.81%)	48 (13.26%)
Commercial sex among students is caused by many parents	12 (3.31%)	29 (8.01%)	42 (11.60%)	279 (77.07%)

Rating Scale Strongly Agree -4 point, Agree -3, Disagree-2, Strongly Disagree - 1

Table 2 shows the contain respondents responses on parental support influences commercial sex among female students in Faculty of Social Sciences of Ambrose Alli University Ekpoma. This shows that 11(3.04%) of the respondents strongly agree that parents support their children when they choose to practice commercial sex, 12(3.31%) agree, 105 (29.01%) disagreed while 234(64.64%) strongly disagreed. This implies that majority of the respondents strongly disagreed that parents support their children when they choose to practice commercial sex. Also 14(3.87%) of the respondents strongly agree that parent encourage commercial sex by comparing them to children who are into the practice, 19(5.25%) agree 28(7.73%) disagreed while 301(83.15%) strongly disagreed. This implies that majority of the respondents strongly disagreed on parents encouraging commercial sex by comparing their children who are into the practice. 293(80.94%) of the respondents strongly agree that the

statement “can you not see what your mates are doing to get money” has made many children to into commercial sex, 38(10.50%) agree, 20(5.52%) disagree while 21(5.80%) strongly disagreed. This shows that majority of the respondents strongly that the statement “can you not see what your mates are doing to get money” has made many children go into commercial sex. Furthermore, 199(54.97%) of the respondents strongly agree that most parents encourage their children to give sex in return for money and gift from others, 65(17.96%) agree, 50(13.81%) disagreed while 48(13.26%) strongly disagreed. This revealed that majority of the respondents strongly agree that most parents encourage their children to give sex in return for money and gift from others. 12(3.31%) of the respondents strongly agree that commercial sex among students is caused by many parents, 29(8.01%) agree, 42 (11.60%) disagreed while 279(77.07%) strongly disagreed. This shows that majority of the

respondents strongly disagreed that commercial sex among students is caused by many parents

Table 3: Poverty Influence on Commercial Sex Among Female Students in Faculty of Social Sciences of Ambrose Alli University, Ekpoma Edo State (N=362)

s/n	Variables	Strongly Agree	Agree	Disagreed	Strongly Disagreed
1	Economic hardship has made many ladies sell their bodies for money	220 (60.77%)	82 (22.65%)	28 (7.73%)	32 (8.84%)
2	Inability to feed in many homes has made many ladies go into commercial sex	178 (49.17%)	120 (33.15%)	48 (13.26%)	16 (4.42%)
3	The search for a better life at all cost has made many ladies go into commercial sex	218 (60.22%)	78 (21.55%)	43 (11.88%)	23 (6.35%)
4	Lack of means to buy study materials at school has made many ladies go into commercial sex	232 (64.09%)	67 (18.51%)	34 (9.39%)	29 (8.01%)
5	Lack of means to pay the school fees has made ladies go into commercial sex	101 (27.90%)	205 (56.63%)	34 (9.39%)	22 (6.08%)

Rating Scale Strongly Agree -4 point, Agree -3, Disagree-2, Strongly Disagree - 1

Table 3 contains respondents' responses on influence of poverty commercial sex among female students in faculty of social sciences of Ambrose Alli University, Ekpoma Edo State. In table 4.4 above the result shows that 220 (60.77%) of the respondents strongly agree that economic hardship has made many ladies sell their bodies for money, 82(22.65%) agree, 28 (7.73%) disagreed while 32(8.84%) strongly disagreed. This implies that majority of the respondents strongly agree that economic hardship has made many ladies sell their bodies for money. Also the result shows that 178(49.17%) of the respondents strongly agree that inability to feed in many homes has made many ladies go into commercial sex, 120(33.15%) agree, 48 (13.26%) disagreed while 16(4.42%) strongly disagreed. This implies that majority of the respondents strongly agree that inability to feed in many homes has made many ladies

go into commercial sex. In the same vein 218(60.22%) of the respondents strongly agree that the search for a better life at all cost has made many ladies go into commercial sex, 78(21.55%) agree, 43 (11.88%) disagreed, while 23(6.35%) strongly disagreed. This shows that majority of the respondents strongly agree that the search for a better life at all cost has made many ladies go into commercial sex. Similarly, 232(64.09%) of the respondents strongly agreed that lack of means to buy study materials at school has made many ladies go into commercial sex, 67(18.51%) agree, 34(9.39%) disagreed while 29(8.01%) strongly disagreed. This implies that majority of the respondents agree that lack of means to buy study materials at school has made many ladies go into commercial sex. In the same vein, 101(27.90%) of the respondents strongly agree that lack of means to pay the school

fees has made ladies go into commercial sex, 205(56.63%) agree, 34 (9.39%) disagreed while 22(6.08%) strongly disagreed. The shows that majority of the respondents agree that lack of means to pay the school fees has made ladies go into commercial sex

Discussion of Findings

The findings from this study revealed that majority of the respondents strongly agree that the love to always following what is acceptable by friends and poverty makes them indulge in commercial sex. The result corroborates that of Galadima, et al., (2021) who found that poverty, hunger, peer group and broken home are the principal causes influenced them to join prostitution.

The result shows that majority of the respondents strongly disagreed that commercial sex among students is caused by many parents. This findings supports that of Nabaggala (2020) who found that peer influence, lack of negotiation skills, substance use, attending night club and sex for goods were significantly associated with sexual practice among the respondents.

The result reveals that majority of the respondents agree that lack of means to pay the school fees has made ladies go into commercial sex. The result is in line with that of Wylęgły (2019) who found that students exchange sex for money. The study concluded that commercial sex of students are still an unexplored area of knowledge. Prostitution, due to its controversial nature, is treated as a taboo subject.

Implications for Counselling

Results from this study have implications for counselling in the following ways:

- 1) The result suggests that practising counsellors, trainee counsellors and counsellor educators have roles to play in providing some of their relevant services –information, orientation and counselling services to adolescents in universities on the repercussions of commercial sex on their health. The implication of not providing these services is that risky sexual behaviours and sexual assault could take a centre stage in the learning institutions leading to the loose of social and moral esteem of institutions of a citadel for learning and character shaping.
- 2) Secondly, the implication of the result points to the fact that eradicating completing commercial sex among students is completely unrealistic and seemingly unattainable. This is because the prevailing socioeconomic condition of most students in the face of economic hardship in recent times could make many students sell out their body in exchange for money for survival. However, to reduce the spread of commercial sex trade in school may be highly cost implicative in the area of improving students support services in schools. For instance, guidance counselling and information and technological services are recognized services needed to provide academic and social support form students. Considering that peer pressure, parental support and poverty were all uncovered as factors promoting

commercial sex among female undergraduates; it is evident that this result has policy implication that necessitate the need for peer counselling, provision of social support services and financial management classes among learners. Considering the investment cost that is possibly incurred in providing these services in schools, some financial support and aids may be needed from humanitarian and non-governmental initiatives to reduce the ascendancy of such act among female university undergraduates in Edo State.

Conclusion

Based in findings, it is concluded that peer pressure, parental support and poverty influences commercial sex among female students in Faculty of Social Sciences of Ambrose Alli University, Ekpoma Edo State

Recommendations

The following recommendations were made in the study:

1. State Government should continue to act on matters affecting the plight of the general public, thereby implement the full scale recommendations of the committee of frustrating the operation of commercial sex workers in the institutions,
2. The school management should as a matter of urgency establish and initiate an entrepreneurship skills development programmes to train the like of these commercial sex worker in various skills acquisition

to become self-reliant and independently generating money to provide the essential needs for themselves

3. There should be sex education syllabus right from primary to tertiary level, so as to educate them on the health a hazard involves in indiscriminate sex disorder; hence most of them are ignorant of the implications.
4. That parent should monitor the movement of the daughters beginning from the tender age to the puberty level, so as to inculcate with them the spirit of morality, discipline and good behaviour that could brighter future and the family as a whole.
5. Government, NGO's, INGO's and well to do members of society should as a matter of urgency endeavour to identify the most vulnerable household assists them with cash and kinds, food and non-food items to survive with their family. Besides, there is need to offer them a scholar ship to students

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