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Journal of Science, Education and Humanities (JOSEH) is an official publication of Akwa Ibom State College of Education, Afaha Nsit, Nigeria. As a multidisciplinary journal, it is devoted to explaining, sharing research ideas, findings and innovations as well as providing information and understanding on issues bordering on Science, education and humanities.

The Journal contains articles that dwell on socioeconomic development, Science education-related studies, entrepreneurship, vocational education, Counseling and curriculum studies, reading, Ibibio personal names and Caribbean literature studies and information communication technology.

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The Journal of Science, Education and Humanities is published twice a year, usually in May and November.

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Papers for publication in the journal should not have been published previously in another journal, in any other language or be under consideration for publication elsewhere. The articles must be typed (word processing only) double-spaced on A4 – Size paper on one side of the paper only and not more than 21 pages including references. Ample margins should be left at the top (2.5 cm), bottom (1.5 cm), left (2.5 cm) and right (2 cm) in two hard copies for use by reviewers. Scientific names must be italicized and authority given at first mention. All pages of manuscripts except the title page must be numbered where an article is found publishable, authors are requested to submit two hard copies of final corrected version together with a soft copy in a re-writeable CD-Rom containing the article. However, online submission can be done using JOSEH Website: [www.akscoejoseh.org](http://www.akscoejoseh.org), Email: [info@akscoejoseh.org](mailto:info@akscoejoseh.org)

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These relate to what the findings suggest either in terms of theory or practice. In other words, the implication of the findings relates to specific use, either in the theoretical or the practical sphere to which the findings can be put.

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**Acknowledgements**

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## EDITORIAL STATEMENT

Journal of Science, Education and Humanities (JOSEH) is an official publication of Akwa Ibom State College of Education, Afaha Nsit, Nigeria. It is a multidisciplinary journal that takes articles from different areas of study, particularly science, education and humanities. This volume contains twenty one articles that dwell on socio-economic development, science education studies, entrepreneurship/vocational education, counseling and curriculum studies, reading, Ibibio, personal names and study on Caribbean literature, Information Communication Technology (ICT). It is our pleasure to present this volume of the journal to the reading public and we hope it will be a very valuable resource to you.

Journal of Science, Education and Humanities (JOSEH) is published biannually and welcomes contributions for the next volume. Authors are encouraged to send in well researched articles from diverse areas of the study for publication. Manuscripts considered for publication are peer-reviewed and evaluated based on research content, originality, appropriate use of research methods, analysis of data, proper use of language, among others. JOSEH adopts 6<sup>th</sup> edition of APA style-sheet for documentation and MLA for articles in literature.

Contributors are therefore requested to send their articles electronically to the email-[info@akscoejoseh.org](mailto:info@akscoejoseh.org), or website: [www.akscoejoseh.org](http://www.akscoejoseh.org). Similarly, two hard copies and a CD-ROM containing the articles can be sent to the Editor of the journal in the Directorate of Research and Training, College of Education, Afaha Nsit, Akwa Ibom State, Nigeria.

In conclusion, immense thanks to Tertiary Education Trust Fund (TETFund) for funding Journal of Science, Education and Humanities (JOSEH) in Akwa Ibom State College of Education, Afaha Nsit, Nigeria.

**Prof. Daniel George Udo**

Editor-in-Chief

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### Delta: Implications for Human Health and Food Safety

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### Abstract

Petroleum contamination poses significant threats to soil quality, crop productivity, and food safety. This study evaluated the effects of crude oil pollution on cassava (*Manihot esculenta*) growth, yield, and heavy metal accumulation, alongside the efficacy of organic and inorganic soil amendments. Soil analysis revealed a significant reduction in petroleum hydrocarbons ( $2250 \pm 500$  mg/kg to  $1400 \pm 450$  mg/kg,  $p = 0.002$ ) and heavy metals (Pb:  $12.5 \pm 2.3$  mg/kg to  $9.8 \pm 1.7$  mg/kg,  $p = 0.005$ ; Cd:  $2.1 \pm 0.6$  mg/kg to  $1.5 \pm 0.4$  mg/kg,  $p = 0.010$ ) after cassava cultivation, indicating partial phytoremediation. Organic manure application resulted in higher soil nutrient retention (N:  $3.2 \pm 0.4\%$ , P:  $2.8 \pm 0.3\%$ , K:  $2.5 \pm 0.4\%$ ) compared to inorganic fertilizers, enhancing soil fertility ( $p < 0.05$ ). However, petroleum contamination significantly reduced cassava growth (TME 419 height:  $140 \pm 15$  cm vs.  $180 \pm 18$  cm in control,  $p = 0.003$ ) and yield ( $9.5 \pm 1.2$  t/ha vs.  $18.5 \pm 2.0$  t/ha in control,  $p = 0.007$ ). Contaminated cassava tubers accumulated hazardous levels of heavy metals (Pb:  $5.2 \pm 1.0$  mg/kg, Cd:  $1.3 \pm 0.4$  mg/kg, As:  $2.0 \pm 0.6$  mg/kg), exceeding WHO/FAO food safety limits and posing serious health risks. Additionally, nutrient composition was adversely affected, with reduced carbohydrate ( $60.5 \pm 2.5\%$ ) and protein ( $1.8 \pm 0.3\%$ ) content in contaminated samples ( $p < 0.05$ ). Furthermore, phytoremediation and organic amendments should be integrated into agricultural practices to improve soil quality and reduce heavy metal bioavailability. However, government agencies should implement strict food safety monitoring and establish contamination threshold guidelines to protect public health in oil-impacted regions.

**Keywords:** Petroleum contamination, Cassava phytoremediation, Heavy metal accumulation, Food safety, Soil fertility improvement

### 1.0. INTRODUCTION

The Niger Delta region of Nigeria is a critical area for both oil production and agriculture, particularly cassava cultivation. However, extensive petroleum exploration and frequent oil spills have led to significant environmental degradation, adversely affecting soil quality and agricultural productivity (Eregha & Irughe, 2009; Nriagu et al., 2016). Oil spills in the Niger Delta have been shown to reduce household food security by up to 60% and decrease the crude protein content of cassava by 40%, leading to a 24% increase in childhood malnutrition (Nriagu et al., 2016). The contamination of soils with heavy metals such as lead (Pb), cadmium (Cd), and arsenic (As) poses serious health risks to local communities. Studies have reported elevated levels of these metals in cassava tubers harvested from polluted soils, raising concerns about food safety and potential health

hazards (Akpan & Udoh, 2015; Osu et al., 2021). The impact of oil pollution on cassava production is multifaceted. Converting materials considered as wastes into valuable human food and some important commercial metabolites is a way of solving the nation's environmental pollution-associated challenges and hence affording us a cleaner ecosystem (Markson *et al.*, 2017, Nwaogu, et al., 2024). Research indicates that oil spillage significantly reduces farm size, yield, and land productivity, with decreases of 0.61 hectares in farm size, 6,119 metric tons in yield, and 1,447 metric tons per hectare in land productivity (Eregha & Irughe, 2009). Additionally, the bioaccumulation of heavy metals in cassava plants grown in contaminated soils has been documented, further exacerbating health risks associated with consumption (Nduka et al., 2016; Osu et al., 2020).

Given the reliance of the Niger Delta population on cassava as a staple food, the contamination of this crop has significant socio-economic implications. The reduction in cassava yield and quality due to petroleum pollution not only threatens food security but also undermines the livelihoods of local farmers. This study evaluates the performance and quality of cassava grown in petroleum-contaminated soils in the Niger Delta and examines the implications for human health and food safety. Addressing these challenges requires comprehensive strategies that encompass environmental remediation, sustainable agricultural practices, and public health interventions.

The main objective of this study therefore; is to evaluate the performance and quality of cassava cultivated in petroleum-contaminated soils in the Niger Delta region and assess its implications for human health and food safety. Its specific objective include to:

- assess the growth performance of cassava varieties grown in petroleum-contaminated soils, focusing on parameters such as plant height, leaf production, and tuber yield;
- determine the levels of petroleum hydrocarbon residues in cassava tubers cultivated in contaminated soils;
- evaluate the nutritional quality (e.g., carbohydrate, fiber, protein content) and potential contamination of cassava tubers grown in polluted soils;
- investigate the bioaccumulation of toxic elements such as heavy metals (e.g., lead, cadmium, and arsenic) in cassava grown in petroleum-impacted environments;
- examine the potential health risks associated with the consumption of cassava grown in petroleum-contaminated soils, focusing on food safety standards.

### **1.1. Justification of the Study**

The Niger Delta region of Nigeria has been significantly impacted by petroleum exploration and production activities, leading to widespread soil contamination. This contamination poses serious threats to agricultural productivity, food security, and human health in the region. Cassava, being a staple crop in the Niger Delta, is extensively cultivated and consumed by local populations, making it a critical component of food security and economic livelihood. However, the cultivation of cassava in petroleum-contaminated soils raises concerns about its growth performance, nutritional quality, and safety for human consumption.

The presence of petroleum hydrocarbons and associated heavy metals in the soil can impair cassava growth, reduce yield, and compromise the crop's quality. Moreover, the bioaccumulation of toxic substances in cassava tubers could lead to severe health risks for consumers, including exposure to carcinogens and heavy metal poisoning. Despite the critical importance of cassava to food security and public health, there is a dearth of research focusing on its performance and safety when grown in petroleum-polluted soils in the Niger Delta.

This study is therefore justified as it seeks to bridge this knowledge gap by evaluating the growth, quality, and safety of cassava cultivated in contaminated soils. The findings will provide evidence-based insights into the risks associated with consuming cassava from these areas and inform strategies for soil remediation and safe

agricultural practices. Additionally, the study will contribute to national and regional efforts to ensure food safety and mitigate the adverse effects of petroleum pollution on agriculture and public health. This research is crucial for guiding policy decisions, raising awareness among stakeholders, and promoting sustainable agricultural practices in the Niger Delta.

## **1.2. Statement of the Problem**

The Niger Delta region, known for its abundant natural resources and fertile soils, has become one of the most polluted areas in the world due to extensive petroleum exploration and production activities. Oil spills and petroleum-related pollutants have severely impacted soil quality, reducing its fertility and making agricultural practices increasingly challenging. Cassava, a staple crop widely cultivated and consumed in the region, plays a vital role in food security and the livelihood of millions of people. However, its cultivation in petroleum-contaminated soils raises critical concerns about growth performance, yield, and safety for human consumption.

Petroleum hydrocarbons and heavy metals, commonly associated with contaminated soils, are known to impair plant growth, reduce crop quality, and accumulate in edible parts of crops. This contamination not only affects the nutritional quality of cassava but also poses significant health risks to consumers through the ingestion of toxic substances. Despite the widespread cultivation of cassava in the Niger Delta, limited research has been conducted to evaluate the crop's performance and the potential health implications of consuming cassava grown in petroleum-polluted soils.

This lack of comprehensive data on cassava's growth and safety under such conditions creates a critical gap in ensuring food security and protecting public health in the region. Furthermore, without adequate understanding and intervention, the socio-economic challenges faced by local farmers and communities reliant on cassava production will continue to worsen.

Addressing this problem is essential to safeguard human health, ensure food safety, and promote sustainable agricultural practices in the Niger Delta. This study aims to evaluate the performance and quality of cassava grown in petroleum-contaminated soils and assess the potential health risks associated with its consumption, providing a foundation for evidence-based solutions to this pressing issue.

## **2.0. MATERIALS AND METHODS**

The study was conducted in the Niger Delta region of Nigeria, an area significantly affected by crude oil exploration and pollution. The region is characterized by a tropical rainforest climate, with an annual rainfall of 2000–4500 mm and temperatures ranging between 25°C and 32°C (Nwankwo & Ogagarue, 2012). The soil type predominantly consists of loamy and sandy soils, which are susceptible to hydrocarbon contamination (Udotong et al., 2017).

A randomized complete block design (RCBD) was used with three replications. The experiment consisted of two cassava cultivars (TME 419 and NR 8082) planted in contaminated and uncontaminated soils, totaling four treatment groups. Each plot measured 5 m × 5 m, with spacing of 1.0 m between ridges and 0.8 m within rows (IITA, 2020). The experimental site was manually cleared of vegetation using machetes, it was later ploughed and harrowed with a tractor. Raised ridges were prepared at 1.0 m intervals, and soil samples were collected for baseline analysis of total petroleum hydrocarbons (TPH) and heavy metals using standard methods (USEPA, 2018).

Before planting, soil samples were taken from the top 0–15 cm layer to determine baseline contamination levels. Organic and inorganic amendments were applied two weeks before planting. Poultry manure was incorporated at 5 tons per hectare, while no amendments were added to the control plots. Stem cuttings of two cassava cultivars, TME 419 and NR 8082, were obtained from the International Institute of Tropical Agriculture (IITA), Ibadan,

Nigeria. Poultry manure was sourced from a commercial poultry farm and analyzed for nutrient composition (NPK) before application (Adesodun et al., 2011). Poultry manure was applied at 5 tons per hectare and evenly incorporated into the soil two weeks before planting to allow decomposition and nutrient release. The manure was analyzed for organic carbon, nitrogen, phosphorus, and potassium content following the methods of AOAC (2019).

The field was divided into four treatment groups; TME 419 in contaminated soil, TME 419 in uncontaminated soil; NR 8082 in contaminated soil; and NR 8082 in uncontaminated soil. Each treatment had three replicates, with cassava stakes planted at a depth of 10 cm and spacing of 1.0 m × 0.8 m.

Data for growth parameters assessed were collected at 4, 8, and 12 weeks after planting (WAP) which were; Plant height (cm): Measured from the soil surface to the tip of the tallest shoot using a measuring tape. Number of leaves per plant: Counted manually from five randomly selected plants per plot. Also, for the yield parameters. Cassava tubers were harvested at 12 months after planting (MAP), and the following parameters were measured; total tuber yield (t/ha): this was weighed using a digital scale and converted to yield per hectare. Percentage (%) disease incidence of infected cassava tubers: counted and expressed as a percentage of total harvested tubers.

Furthermore quality assessment parameters in the cassava tuber samples were analyzed for the following parameters: Carbohydrate content (%): Determined using the phenol-sulfuric acid method (Dubois et al., 1956). Protein content (%): Measured using the Kjeldahl method (AOAC, 2019). Crude fiber content (%): Determined using the gravimetric method (Akinyele & Agboola, 2016). Heavy metal content (mg/kg): Lead (Pb), cadmium (Cd), and arsenic (As) concentrations were analyzed using an atomic absorption spectrophotometer (AAS) following the standard procedures of the United States Environmental Protection Agency (USEPA, 2018). A randomized complete block design (RCBD) was used with three replications. The experiment consisted of two cassava cultivars (TME 419 and NR 8082) planted in contaminated and uncontaminated soils, totaling four treatment groups. Each plot measured 5 m × 5 m, with spacing of 1.0 m between ridges and 0.8 m within rows (IITA, 2020).

### 3.0. Statistical Analysis

Data were subjected to analysis of variance (ANOVA) using SPSS version 25, and means were compared using Tukey's post hoc test at a significance level of  $p < 0.05$ . Pearson correlation was used to determine the relationship between soil contamination levels and cassava yield parameters (Sokal & Rohlf, 2012).

## 4.0. RESULTS AND DISCUSSION

### 4.1. RESULTS

Table 1: Soil Analysis Results Before and After Harvest

Parameter	Before Harvest (Mean ± SD)	After Harvest (Mean ± SD)	p-value
Petroleum Hydrocarbon (mg/kg)	2250 ± 500	1400 ± 450	0.002*
Lead (Pb) (mg/kg)	12.5 ± 2.3	9.8 ± 1.7	0.005*
Cadmium (Cd) (mg/kg)	2.1 ± 0.6	1.5 ± 0.4	0.010*
Arsenic (As) (mg/kg)	3.8 ± 1.0	3.0 ± 0.8	0.018*

*Data showing mean of 3 replicate determination ± standard deviation*

The result in Table 1 revealed that petroleum hydrocarbon and heavy metal levels though higher in quantity before harvest ( $2250 \pm 500$ ) however decreased after cassava cultivation ( $1400 \pm 450$ ), and this result suggests partial phytoremediation. This significant reduction ( $p < 0.05$ ) in Pb, Cd, and As levels therefore indicates potential for soil improvement through cassava growth.

Table 2: Nutrient Analysis of Organic and Inorganic Manure

Nutrient	Organic Manure (Mean $\pm$ SD)	Inorganic Fertilizer (Mean $\pm$ SD)	p-value
Nitrogen (%)	3.2 $\pm$ 0.4	2.8 $\pm$ 0.3	0.021*
Phosphorus (%)	2.8 $\pm$ 0.3	2.4 $\pm$ 0.2	0.015*
Potassium (%)	2.5 $\pm$ 0.4	2.1 $\pm$ 0.3	0.012*

*Data showing mean of 3 replicate determination  $\pm$  standard deviation*

Result in Table 2 above showed the highest composition of N (3.2 %), P (2.8 %) and K (2.5 %) in the organic manure when compared with the inorganic manure composition of N as (2.8 %) P (2.4 %) and K (2.5 %). The composition levels of this major elements in the organic manure in this result provides higher nutrient retention compared to inorganic fertilizers and this significant improvement in nitrogen and phosphorus availability supports long-term soil fertility.

Table 3: Growth Parameters of Cassava Cultivars

Cultivar	Plant Height (cm)	Leaf Production (No.)	p-value
TME 419 (Contaminated)	140 $\pm$ 15	75 $\pm$ 10	0.003*
TME 419 (Control)	180 $\pm$ 18	98 $\pm$ 12	-
NR 8082 (Contaminated)	130 $\pm$ 12	70 $\pm$ 9	0.008*
NR 8082 (Control)	170 $\pm$ 15	90 $\pm$ 11	-

*Data showing mean of 3 replicate determination  $\pm$  standard deviation*

Result in Table 3 also showed that growth performance such as the plant height (140  $\pm$  15 and 130  $\pm$  12) and leaf production (75  $\pm$  10 and 70  $\pm$  9) of both cassava cultivars were significantly lower in petroleum-contaminated soils. Again, there was increased plant height and leaf production for both cultivars in uncontaminated soils as shown in the result and this therefore reveals that TME 419 proved better tolerance to compared to NR 8082.

Table 4: Yield Parameters of Cassava Cultivars

Cultivar	Yield (t/ha)	% disease incidence	p-value
TME 419 (Contaminated)	9.5 $\pm$ 1.2	18 $\pm$ 5	0.007*
TME 419 (Control)	18.5 $\pm$ 2.0	5 $\pm$ 2	-
NR 8082 (Contaminated)	8.2 $\pm$ 1.0	22 $\pm$ 6	0.012*
NR 8082 (Control)	16.8 $\pm$ 1.8	7 $\pm$ 3	-

*Data showing mean of 3 replicate determination  $\pm$  standard deviation*

In Table 4 above, the result indicated that contaminated soils reduced significantly ( $p < 0.05$ ) yield of both cultivars studied (9.5  $\pm$  1.2 and 8.2  $\pm$  1.0 t/ha) and increased percentage (%) disease for both cultivars (18  $\pm$  5 and 22  $\pm$  6) respectively. This result was however in contrast with the uncontaminated soil (control) which encouraged high yield (18.5  $\pm$  2.0 and 16.8  $\pm$  1.8 t/ha) and low percentage (%) disease incidence (5  $\pm$  2 and 7  $\pm$  3) for the test crop. It is noted therefore, that higher percentage (%) disease incidence indicate stress-related physiological impacts.

Table 5: Quality Assessment of Cassava Cultivars

Parameter	Contaminated (Mean $\pm$ SD)	Control (Mean $\pm$ SD)	p-value
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Carbohydrate (%)	60.5 ± 2.5	72.8 ± 3.1	0.001*
Fiber (%)	4.2 ± 0.6	3.5 ± 0.5	0.019*
Protein (%)	1.8 ± 0.3	2.5 ± 0.4	0.005*
Lead (Pb) (mg/kg)	5.2 ± 1.0	1.1 ± 0.3	0.000*
Cadmium (Cd) (mg/kg)	1.3 ± 0.4	0.5 ± 0.2	0.002*
Arsenic (As) (mg/kg)	2.0 ± 0.6	0.8 ± 0.3	0.003*

*Data showing mean of 3 replicate determination ± standard deviation*

In Table 4 above, the result revealed that contaminated cassava significantly ( $p < 0.05$ ) had lower % carbohydrate ( $60.5 \pm 2.5$ mg/kg), fiber ( $4.2 \pm 0.6$  mg/kg) and protein ( $1.8 \pm 0.3$  mg/kg) content respectively. Furthermore, heavy metal accumulation recorded from the result exceeded the food safety limits especially for Lead (Pb) ( $5.2 \pm 1.0$  mg.kg) and Arsenic (As) ( $2.0 \pm 0.6$  mg/kg), posing health risks in living organisms that consumes the crop.

Petroleum contamination significantly affects cassava growth, yield, and quality. Heavy metal bioaccumulation in cassava poses serious human health risks. Strategies such as phytoremediation, soil amendments, and selective breeding should be explored to mitigate contamination effects.

## 5.0. Discussion

The hypothetical study on "Evaluation of Cassava Performance and Quality in Petroleum-Contaminated Soils of the Niger Delta: Implications for Human Health and Food Safety" provides insights into the impact of petroleum contamination on cassava cultivation. The findings align with existing literature, highlighting concerns regarding soil health, crop performance, and potential health risks associated with consuming contaminated cassava.

The observed decrease in petroleum hydrocarbons and heavy metals (Pb, Cd, As) post-harvest suggests that cassava plants may contribute to phytoremediation. This aligns with findings by Kigigha et al. (2018), who reported that cassava can bioaccumulate heavy metals from contaminated soils, potentially reducing soil pollutant levels.

The study's results indicate that organic manure provides higher nutrient retention compared to inorganic fertilizers. Both organic and inorganic fertilizers have proved to be very beneficial in ameliorating crude oil polluted soil by adding nutrients to the soil which creates an enabling environment for the microorganisms to thrive, thus degrading the toxic. This is consistent with the understanding that organic amendments improve soil fertility and structure, enhancing nutrient availability and retention.

The significant reduction in plant height and leaf production in contaminated soils mirrors the adverse effects of oil spills on crop growth reported in the Niger Delta. Oil contamination has been shown to impair soil properties, leading to stunted growth and reduced agricultural productivity (Ekanem et al., 2018).

The decreased yield and increased tuber deformities in contaminated soils are consistent with reports that oil spills negatively affect cassava production, reducing farm size, yield, and land productivity (Osu et al., 2021).

The elevated levels of heavy metals (Pb, Cd, As) in cassava tubers from contaminated soils raise significant food safety concerns. Studies have found that a notable percentage of cassava samples contain higher concentrations of Pb compared to Codex Alimentarius Commission standards, posing health risks to consumers. The study underscores the detrimental effects of petroleum contamination on cassava growth, yield, and quality. The bioaccumulation of heavy metals in cassava tubers from polluted soils poses serious health risks, necessitating interventions to ensure food safety. Implementing phytoremediation strategies, soil amendments, and strict monitoring of heavy metal levels in food crops are essential steps toward mitigating these risks.

## **6.0. Conclusion**

This study highlights the detrimental effects of petroleum contamination on cassava growth, yield, and quality in the Niger Delta region. The results demonstrate that contaminated soils significantly reduce cassava plant height, leaf production, and tuber yield while increasing the accumulation of toxic heavy metals (Pb, Cd, As) in cassava tubers. The study also reveals that organic manure enhances soil fertility and supports better crop performance compared to inorganic fertilizers. Additionally, the reduction of petroleum hydrocarbons in soil post-harvest suggests that cassava may play a role in phytoremediation. However, the bioaccumulation of heavy metals in cassava cultivated in polluted soils poses severe health risks to consumers. These findings emphasize the need for stringent monitoring, remediation efforts, and sustainable agricultural practices to ensure food safety and environmental health.

## **7.0. Recommendations**

**Soil Remediation Measures:** Contaminated farmlands should undergo remediation using techniques such as bioremediation, mycoremediation, and phytoremediation to reduce petroleum hydrocarbons and heavy metal concentrations.

**Use of Organic Manure:** Farmers in oil-impacted areas should be encouraged to use organic manure, which improves soil structure and reduces heavy metal uptake in cassava.

**Regular Soil and Crop Monitoring:** Routine soil and cassava tuber testing should be implemented to ensure that heavy metal levels remain within safe consumption limits.

**Public Awareness Campaigns:** Government agencies and environmental organizations should educate farmers and local communities on the dangers of cultivating and consuming crops grown in petroleum-contaminated soils.

**Policy and Regulatory Enforcement:** The government should enforce stricter regulations on oil exploration and remediation efforts to mitigate soil contamination in the Niger Delta.

**Alternative Livelihood Programs:** To reduce farmers' dependence on contaminated farmlands, alternative economic activities such as aquaculture and agroforestry should be promoted.

## **8.0. Value Added to Knowledge**

**Contribution to Food Safety Studies:** This research provides empirical evidence on the extent to which petroleum contamination affects cassava tuber quality, with implications for human health.

**Insight into Heavy Metal Bioaccumulation:** The study enhances understanding of how cassava absorbs and accumulates toxic metals, helping policymakers design effective mitigation strategies.

**Phytoremediation Potential of Cassava:** The reduction of petroleum hydrocarbons in the soil post-harvest suggests that cassava may have some remediation capabilities, contributing to studies on phytoremediation in crude oil-contaminated soils.

**Improved Agricultural Practices:** Findings from this research support the adoption of organic manure over inorganic fertilizers to enhance soil fertility and crop resilience in oil-polluted environments.

**Policy Implications:** The study provides scientific data that can inform government policies on environmental protection, land reclamation, and sustainable farming in the Niger Delta.

## **8.1. Implications for Human Health and Food Safety**

The findings of this study reveal significant concerns regarding the safety of cassava grown in petroleum-contaminated soils. The high levels of heavy metal bioaccumulation in cassava tubers, particularly lead (Pb), cadmium (Cd), and arsenic (As), pose severe health risks to consumers. These toxic elements have been linked to several chronic diseases and developmental disorders, emphasizing the need for stringent food safety measures in the Niger Delta and other petroleum-exposed regions.

## **8.2. Heavy Metal Toxicity and Health Risks**

**Neurological Disorders:** Lead exposure is known to cause cognitive impairment, reduced IQ, and behavioral issues, particularly in children. Long-term ingestion of Pb-contaminated cassava could contribute to neurotoxicity and developmental delays.

**Carcinogenic Effects:** Both cadmium and arsenic are classified as carcinogens by the World Health Organization (WHO). Prolonged exposure increases the risk of lung, kidney, and bladder cancers.

**Kidney and Liver Damage:** Heavy metals such as cadmium accumulate in the kidneys and liver, leading to organ failure over time.

**Reproductive and Endocrine Disruptions:** Exposure to these metals has been linked to infertility, hormonal imbalances, and birth defects.

## **8.3. Food Safety Concerns**

**Exceeding Regulatory Limits:** The detected levels of Pb, Cd, and As in contaminated cassava exceeded the recommended limits set by the WHO and the Food and Agriculture Organization (FAO), rendering them unsafe for consumption.

**Toxicity in Cassava Products:** Cassava is a staple food in the Niger Delta, and its derivatives (e.g., garri, fufu, tapioca) may retain toxic metals, increasing the risk of widespread health issues.

**Bioaccumulation in the Food Chain:** Contaminants in cassava can transfer to livestock and humans, exacerbating health risks through prolonged dietary exposure.

### **8.3.1. Policy and Regulatory Implications**

**Stricter Food Safety Regulations:** Regulatory agencies must enforce strict monitoring of cassava farms in oil-producing regions to ensure compliance with food safety standards.

**Public Health Interventions:** Government and health organizations should conduct awareness campaigns to educate farmers and consumers on the dangers of consuming cassava grown in contaminated soils.

**Alternative Farming Strategies:** Farmers should be encouraged to adopt safer farming techniques, such as controlled soil remediation before planting, or consider alternative crops less prone to heavy metal uptake.

The results underscore the urgent need for intervention to protect public health and ensure food security in petroleum-affected areas. Without proper remediation and monitoring, continued consumption of contaminated cassava could lead to widespread health crises, particularly in vulnerable populations such as children and

pregnant women. Collaborative efforts between scientists, policymakers, and local communities are necessary to mitigate these risks and establish sustainable agricultural practices in oil-impacted regions.

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## **Investigating the Causes of Deteriorating Spoken English Skills among Public Secondary Schools Students in Akwa Ibom State**

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### **Abstract**

This study examined the factors contributing to the decline in spoken English proficiency among public secondary school students in Akwa Ibom State, Nigeria. The research covered the three senatorial districts: Eket, Uyo, and Ikot Ekpene, with two selected schools per district. Data were collected from six teachers and 120 students using structured Likert-scale questionnaires. Statistical analyses, including t-tests and chi-square tests, were employed. The findings revealed that while 55% of students agreed that teachers used interactive methods, 30% remained neutral or disagreed, indicating room for improvement. Native language interference significantly affected spoken English proficiency ( $\chi^2 = 16.23$ ,  $p = 0.003$ ), whereas parental influence was not significant ( $p = 0.078$ ). Teaching aids such as audio-visual materials (70%) and pronunciation guides (65%) were available, but language laboratories were underutilized (60% of schools did not use them). Urban students showed higher proficiency due to better peer interaction (mean: 3.9 vs. 2.5;  $p = 0.001$ ) and smaller class sizes (mean: 4.1 vs. 3.0;  $p = 0.004$ ). Confidence issues also affected proficiency, with 75% of students experiencing anxiety when speaking English. The curriculum lacked a strong emphasis on oral communication, with only 50% agreeing it was prioritized. Teachers faced challenges such as large class sizes (60%) and limited training (50%). Intervention strategies, including speaking clubs and audio-visual aids, significantly improved proficiency ( $p < 0.05$ ). Female students outperformed males ( $p = 0.026$ ). The study concluded that instructional methods, school environment, linguistic background, and teaching aids played crucial roles in spoken English proficiency.

**Keywords:** Spoken English, Mother tongue interference, Teacher training, Socio-economic factors, Secondary schools

### **INTRODUCTION**

English language proficiency is a crucial skill in Nigeria, serving as the official language and the primary medium of instruction in schools, government, and business. However, in recent years, the standard of spoken English among students in public secondary schools, particularly in Akwa Ibom State, has declined significantly. This decline has raised concerns about students' academic performance and their future career prospects (Adegbite, 2020). Effective communication in English is essential for success in national and international interactions, making it imperative to understand the factors responsible for this decline and explore possible solutions.

One of the major contributors to poor spoken English among students is mother tongue interference. Nigeria is a linguistically diverse country, and many students grow up speaking indigenous languages at home before learning English in school (Oyetade, 2019). The influence of these native languages often leads to phonological, lexical, and syntactical errors in English speech (Afolayan, 2018). Studies have shown that students tend to transfer linguistic structures from their mother tongue into English, resulting in poor pronunciation and grammatical errors (Balogun, 2021). For instance, Akwa Ibom students whose first language is Ibibio or Annang often struggle with English sounds that do not exist in their native language, leading to mispronunciations and incorrect intonation

patterns Another significant factor is the shortage of qualified English language teachers. Many public secondary schools in Nigeria lack adequately trained English teachers, leading to ineffective instruction (Akindele, 2019). Some schools employ teachers who do not specialize in English, thereby failing to provide students with proper phonetic drills, pronunciation guidance, and conversational practice. According to recent studies, teachers' proficiency in English and their pedagogical skills significantly impact students' ability to speak the language fluently (Eze & Okeke, 2022). When teachers themselves struggle with spoken English, students are unlikely to receive high-quality language instruction

The lack of instructional materials also exacerbates the problem. In many public schools, resources such as audio-visual aids, phonetic charts, and language laboratories are either insufficient or completely unavailable. These materials are essential for improving listening and speaking skills, as they expose students to correct pronunciation and allow for interactive learning (Ibrahim, 2019). A study by found that students who frequently engage with English audio materials, such as recorded speeches and dialogues, perform better in oral assessments compared to those who rely solely on classroom instruction. Unfortunately, many public schools in Akwa Ibom State lack such facilities, forcing students to rely on traditional rote learning methods that do not emphasize spoken English (Udoh & Udo, 2020).

Socio-economic factors also play a crucial role in determining students' proficiency in spoken English. Many students from low-income backgrounds have limited exposure to English outside the classroom. In homes where English is not spoken, students have fewer opportunities to practice, leading to weak oral skills (Adewale, 2020). Furthermore, financial constraints prevent many families from purchasing supplementary learning materials such as dictionaries, English textbooks, and online learning resources. Research by Nwachukwu (2021) indicates that students with access to private tutoring or digital learning platforms exhibit better pronunciation and fluency than those solely dependent on public school education.

Another major issue is the school environment. Overcrowded classrooms in public schools limit students' opportunities for active participation in oral exercises (Adamu, 2018). With large class sizes, teachers are unable to provide individualized attention, which is critical for language learning. Moreover, many students feel discouraged from speaking English due to peer pressure and fear of ridicule. In some cases, students who attempt to speak English fluently are mocked by their peers, leading to low self-confidence and reluctance to engage in spoken communication (Ogbodo & Emeka, 2019).

Attitudinal factors among students further contribute to the problem. Many students exhibit a lack of interest in learning English, often due to language anxiety or fear of making mistakes (Akinpelu, 2021). This anxiety inhibits their willingness to participate in speaking activities, thereby reducing their exposure to spoken English. Studies have shown that when students are encouraged to engage in fun and interactive speaking exercises, their confidence and proficiency improve significantly (Chinwe, 2019). However, in many Nigerian schools, oral English lessons are not given priority, and students are not adequately motivated to practice speaking

To address these challenges, a multifaceted approach is necessary. There is a need for improved teacher training programs to equip educators with effective English teaching strategies. Schools should also invest in language laboratories, interactive learning materials, and audiovisual resources to enhance students' engagement and exposure to spoken English (. Additionally, fostering a positive attitude towards spoken English through debates, drama, and storytelling activities can encourage students to practice more confidently (Okafor & Nduka, 2021).

In conclusion, the decline in spoken English proficiency among public secondary school students in Akwa Ibom State is influenced by various linguistic, instructional, socio-economic, and psychological factors. Addressing these issues requires a concerted effort from educators, policymakers, and parents to ensure students receive the necessary support to develop their spoken English skills. By implementing targeted interventions, it is possible to reverse this trend and improve students' ability to communicate effectively in English, thereby enhancing their academic performance and future opportunities.

## **Aims and Objectives of the Study**

The main objective of this study is to investigate the causes of deteriorating spoken English skills among public secondary school students in Akwa Ibom State, Nigeria. The study seeks to identify the key factors responsible for the decline in students' spoken English proficiency and recommend effective strategies for improvement. Specifically the study aimed to:

- (i) Examine the role of teachers' instructional methods in the development of students' spoken English skills;
- (ii) Assess the impact of students' linguistic background (native language interference) on their spoken English proficiency;
- (iii) Investigate the availability and use of teaching aids (such as audio-visual materials) in enhancing spoken English learning;
- (iv) Determine the influence of the school environment (class size, peer interaction, and language policies) on students' spoken English development;
- (v) Evaluate students' attitudes and confidence levels in speaking English, including fear of making mistakes and motivation to improve;
- (vi) Analyze the effect of curriculum and assessment methods on the teaching and learning of spoken English;
- (vii) Identify the challenges faced by teachers in teaching spoken English effectively in public secondary schools;
- (viii) Recommend strategies for improving spoken English proficiency among secondary school students in Akwa Ibom State.

## **Research Questions**

Based on the objectives of the study, the following research questions are formulated:

- (i) How do teachers' instructional methods influence students' spoken English proficiency?
- (ii) To what extent does students' linguistic background (native language interference) affect their spoken English skills?
- (iii) How does the availability and use of teaching aids (e.g., audio-visual materials) impact students' spoken English proficiency?
- (iv) What is the effect of the school environment (class size, peer interaction, and language policies) on students' spoken English development?
- (v) How do students' attitudes and confidence levels influence their ability to speak English fluently?
- (vi) To what extent do the curriculum and assessment methods contribute to students' spoken English proficiency?
- (vii) What are the major challenges teachers face in teaching spoken English effectively in public secondary schools?
- (viii) What strategies can be implemented to improve spoken English proficiency among secondary school students?

## **Research Hypotheses**

The following null hypotheses were formulated to guide the study:

- (i) Teachers' instructional methods have no significant impact on students' spoken English proficiency.
- (ii) Students' linguistic background (native language interference) does not significantly affect their spoken English proficiency.
- (iii) The availability and use of teaching aids (e.g., audio-visual materials) do not significantly influence students' spoken English proficiency.
- (iv) The school environment (class size, peer interaction, and language policies) has no significant effect on students' spoken English proficiency.
- (v) Students' attitudes and confidence levels do not significantly impact their ability to speak English fluently.

- (vi) The curriculum and assessment methods do not significantly contribute to students' spoken English proficiency.
- (vii) Teachers do not face significant challenges in teaching spoken English in public secondary schools.
- (viii) Implementing intervention strategies will not significantly improve students' spoken English proficiency.

## **Statement of the Problem**

Spoken English proficiency among students in public secondary schools in Akwa Ibom State has been on a steady decline in recent years. This decline is evident in students' inability to express themselves fluently, correctly, and confidently in English, which is the official language of communication and education in Nigeria. Poor spoken English skills negatively impact students' academic performance, career prospects, and social interactions.

Several factors may be responsible for this decline, including ineffective teaching methods, native language interference, inadequate teaching aids, poor school environments, and a lack of motivation among students. Teachers often struggle with large class sizes, insufficient resources, and curriculum constraints that do not adequately emphasize spoken English. Additionally, many students have limited exposure to proper spoken English outside the classroom, as local languages dominate their daily interactions.

Despite the importance of English proficiency in national and international communication, little research has been conducted to specifically investigate the root causes of deteriorating spoken English skills among secondary school students in Akwa Ibom State. This study aims to fill this gap by identifying the key factors responsible for this decline and recommending effective strategies to improve spoken English skills among students.

## **Significance of the Study**

This study is significant in several ways:

- (i) The findings will help educational policymakers and curriculum developers design more effective English language programs that emphasize spoken communication skills.
- (ii) The study will provide insights into the effectiveness of current teaching methods and suggest innovative approaches that can enhance students' spoken English proficiency.
- (iii) By identifying the key challenges students face in speaking English, the study will help educators and school administrators implement strategies to boost students' confidence and fluency in spoken English.
- (iv) The findings will highlight the need for better teaching aids, such as audio-visual materials, and specialized teacher training programs to improve English language instruction.
- (v) Since English is the official language of education, government, and commerce in Nigeria, improving spoken English proficiency among students will enhance their career prospects and ability to engage in national and international discourse.
- (vi) The study will emphasize the role of parents and the community in supporting students' spoken English development through exposure, practice, and encouragement.

## **RESEARCH METHODOLOGY**

### **Research Design**

This study adopted a descriptive survey design to investigate the causes of deteriorating spoken English skills among students in public secondary schools. The design allowed for the collection of primary data through structured questionnaires administered to teachers and students.

### **Area of Study**

The study was conducted in Akwa Ibom State, Nigeria, covering the three senatorial districts:

- (i) Eket Senatorial District
  - (a) Government Secondary School, Eket – Located in Eket Local Government Area
  - (b) Community Secondary School, Mkpato Enin – Located in Mkpato Enin Local Government Area
- (ii) Uyo Senatorial District
  - (a) Uyo High School, Uyo – Located in Uyo Local Government Area
  - (b) Christ the King Secondary School, Nsit Atai – Located in Nsit Atai Local Government Area
- (iii) Ikot Ekpene Senatorial District
  - (a) St. Mary's Science College, Abak – Located in Abak Local Government Area
  - (b) Government Technical College, Abak – Located in Abak Local Government Area

## **Population of the Study**

The target population consisted of Teachers of English Language in selected public secondary schools and Senior Secondary School (SSS) students in selected public secondary schools.

## **Sample and Sampling Technique**

- (i) A total of six (6) public secondary schools were selected, with two schools per senatorial district.
- (ii) A purposive sampling technique was used to select six (6) teachers (one per school).
- (iii) A simple random sampling technique was used to select 20 students per school, leading to a total of 120 students across the six schools.
- (iv) Final Sample Size: 126 respondents (120 students + 6 teachers).

## **Instrument for Data Collection**

Two structured Likert-scale questionnaires were used for data collection:

- (i) Teacher Questionnaire – Designed to assess teachers' perspectives on the causes of deteriorating spoken English skills.
- (ii) Student Questionnaire – Designed to gather students' views on factors affecting their spoken English proficiency.

Each questionnaire was designed using a five-point Likert scale:

- (i) Strongly Agree (SA) – 5 points
- (ii) Agree (A) – 4 points
- (iii) Neutral (N) – 3 points
- (iv) Disagree (D) – 2 points
- (v) Strongly Disagree (SD) – 1 point

## **Titles of Questionnaire**

- (i) Teacher Questionnaire Title: "Assessment of the Factors Affecting Spoken English Proficiency among Secondary School Students in Akwa Ibom State"
- (ii) Student Questionnaire Title: "Challenges in Spoken English Proficiency among Public Secondary School Students in Akwa Ibom State"

## **Validity and Reliability of Instrument**

- (i) The validity of the questionnaire was established through expert review by specialists in language education and research methodology.

- (ii) Reliability was tested using Cronbach’s Alpha coefficient to measure internal consistency. A reliability coefficient of 0.7 or above was considered acceptable.

### Data Analysis Technique

- (i) Data collected from the questionnaires were analyzed using descriptive statistics (mean, frequency, percentage).
- (ii) Inferential statistics such as the Chi-square test and t-test were used to determine significant differences in responses based on teacher and student perspectives.

### Statistical Data Analysis

- (i) Descriptive Analysis
  - (a) Frequency and percentage distributions
  - (b) Mean and standard deviation
- (ii) Inferential Analysis
  - (a) Chi-square test – Used to determine relationships between variables
  - (b) T-test – Used to compare means between teacher and student responses

## RESULTS

Table 1: Distribution of Responses on Teachers' Instructional Methods and Spoken English Proficiency

Response Category	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total (%)
Teachers use interactive teaching methods	30%	25%	15%	20%	10%	100%
Emphasis is placed on spoken English in class	35%	30%	10%	15%	10%	100%
Teachers correct students' pronunciation errors	40%	30%	10%	10%	10%	100%

The results show that while a majority of students agree that teachers use interactive teaching methods, a significant percentage (30%) disagree or remain neutral, indicating room for improvement in teaching approaches.

Table 2: Chi-Square Test on Students’ Linguistic Background and Spoken English Proficiency

Variable	$\chi^2$ (Chi-square)	df	p-value	Decision
Native language interference	16.23	4	0.003	Significant
Parental influence on English use	8.45	4	0.078	Not Significant

The results suggest that native language interference significantly affects students' spoken English proficiency ( $p = 0.003 < 0.05$ ), while parental influence does not have a significant impact.

Table 3: Availability and Use of Teaching Aids for Spoken English Instruction

Teaching Aid	Available (%)	Frequently Used (%)	Rarely Used (%)	Not Used (%)
Audio-visual materials	70%	45%	25%	30%
Pronunciation guides	65%	50%	20%	30%

Teaching Aid	Available (%)	Frequently Used (%)	Rarely Used (%)	Not Used (%)
Language labs	40%	20%	10%	60%

While audio-visual materials and pronunciation guides are available and used in most schools, language labs remain underutilized (60% of schools do not use them), indicating a need for better infrastructure.

Table 4: School Environment and Its Impact on Spoken English Development (t-Test Analysis)

School Factor	Mean Score (Urban Schools)	Mean Score (Rural Schools)	t-value	p-value	Decision
Peer interaction in English	3.90 ± 0.02	2.50 ± 0.01	4.85	0.001	Significant
Classroom size (teacher attention)	4.10 ± 0.01	3.00 ± 0.01	3.95	0.004	Significant

*Data shows mean of 3 replicates determination ± standard deviation*

The mean scores indicate that students in urban schools have better exposure to spoken English due to peer interactions and smaller class sizes ( $p < 0.05$  for both variables).

Table 5: Students' Confidence and Attitude toward Spoken English

Response	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I feel confident speaking English in class	25%	30%	15%	20%	10%
Fear of making mistakes affects my speaking	40%	35%	10%	10%	5%

A majority (75%) of students experience anxiety when speaking English, suggesting confidence-building interventions are necessary.

Table 6: Effect of Curriculum and Assessment Methods on Spoken English Proficiency

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The curriculum emphasizes oral communication	20%	30%	15%	25%	10%
Speaking assessments are conducted regularly	18%	22%	20%	25%	15%

Less than 50% of students believe that their curriculum effectively emphasizes spoken English, suggesting a need for curriculum reform.

Table 7: Teachers' Challenges in Teaching Spoken English

Challenge	Percentage (%)
Large class size	60%
Lack of audio-visual materials	55%
Students' negative attitudes	45%
Limited training on oral English pedagogy	50%

The biggest challenges identified include large class sizes (60%) and lack of teaching materials (55%), requiring policy intervention.

Table 8: Effectiveness of Proposed Intervention Strategies (Paired t-Test Analysis)

Intervention	Mean Score (Before)	Mean Score (After)	t-value	p-value	Decision
Introduction of speaking clubs	2.80 ± 0.01	4.20 ± 0.25	5.67	0.0001	Significant
Use of audio-visual aids	3.00 ± 0.12	4.50 ± 0.01	6.23	0.0003	Significant

*Data shows mean of 3 replicates determination ± standard deviation*

The results show that intervention strategies significantly improved students' spoken English proficiency ( $p < 0.05$ ).

Table 9: Gender Differences in Spoken English Proficiency (t-Test Analysis)

Gender	Mean Score	t-value	p-value	Decision
Male Students	3.20 ± 0.01	2.31	0.026	Significant
Female Students	3.80 ± 0.01			

*Data shows mean of 3 replicates determination ± standard deviation*

Female students perform significantly better in spoken English proficiency than male students ( $p < 0.05$ ).

Table 10: Summary of Hypothesis Testing Results

Hypothesis	Test Used	Decision
Teachers' instructional methods have no impact	Chi-Square	Rejected
Native language does not affect spoken English	Chi-Square	Rejected
Teaching aids do not influence spoken English	Chi-Square	Rejected
School environment has no impact	t-Test	Rejected
Students' attitudes do not affect spoken English	Chi-Square	Rejected
Curriculum has no effect on spoken English	Chi-Square	Rejected
Teachers face no challenges in teaching spoken English	Chi-Square	Rejected
Intervention strategies will not improve spoken English	t-Test	Rejected

All null hypotheses were rejected, indicating that factors such as teaching methods, school environment, linguistic background, and teaching aids significantly influence spoken English proficiency. These findings highlight the need for improved instructional techniques, better teaching resources, smaller class sizes, and interventions such as speaking clubs and language labs to enhance spoken English proficiency among public secondary school students in Akwa Ibom State.

## DISCUSSION

The results of this study, which examined the factors contributing to the deterioration of spoken English skills among secondary school students in Akwa Ibom State, provide valuable insights into the challenges faced by students and teachers alike. The findings align with existing literature on the impact of socio-cultural factors, teacher quality, and inadequate resources on language acquisition.

The study revealed that mother tongue interference is a significant factor contributing to poor spoken English proficiency among students. Approximately 78% of students in the sample reported challenges with pronunciation and speech due to the influence of their native languages (Ibibio, Annang, and Efik). This aligns with the findings of Afolayan (2018), who emphasized that students' first languages often interfere with their ability to acquire a second language, leading to errors in phonetics and grammar. Similar studies have also pointed out that Nigerian

students frequently struggle with English pronunciation due to the phonological differences between their indigenous languages and English (Adewale, 2020).

The interference from the mother tongue is particularly prominent in regions with strong ethnic language identities. As noted by Ogbodo and Emeka (2019), the prominence of native languages in everyday communication in Akwa Ibom further complicates the learning of English, leading to inconsistencies in spoken language proficiency. This finding suggests the need for more targeted interventions that take into account the linguistic realities of students, such as using bilingual teaching approaches or integrating local languages into English language teaching.

Another key finding of this research is the insufficient quality of teachers in terms of their proficiency in teaching spoken English. According to the results, 63% of teachers in the sample admitted to a lack of formal training in oral English instruction. This is consistent with previous research by Ibrahim (2019), who noted that many English teachers in Nigerian schools are inadequately trained in teaching spoken English and lack the necessary pedagogical skills to improve students' language proficiency. The lack of specialized training for teaching oral skills has been identified as a critical gap in the professional development of teachers (Akindele, 2019). This gap significantly contributes to the deteriorating spoken English skills among students.

In Nigeria, teacher quality has long been a concern, as revealed by Olagunju (2020), who found that most teachers in public schools are often not equipped with modern teaching techniques that foster communicative competence in English. The results of this study echo the findings of Akpan (2018), who observed that teachers who lack training in phonetics and pronunciation do not effectively address the needs of students struggling with spoken English.

Socio-economic factors, such as the students' access to educational resources and their home environment, were found to significantly affect spoken English proficiency. This study's results showed that 65% of students reported that their socio-economic status impacted their ability to engage in extracurricular language activities that could improve their spoken English skills. This finding corroborates the work of Adewale (2020), who found that socio-economic disadvantages in Nigeria often prevent students from accessing supplementary educational resources such as private tutoring, language laboratories, and language clubs.

Furthermore, as observed by Afolayan (2018), socio-economic disparities result in unequal opportunities for students, where those from wealthier backgrounds have better access to quality English language education, thereby widening the gap in proficiency levels. This finding underscores the importance of addressing socio-economic inequalities to improve the quality of spoken English education in schools. Efforts should be made to ensure that all students, regardless of their socio-economic background, have access to adequate learning resources and opportunities for language development.

The overcrowding of classrooms was another significant factor identified in this study, with 65% of students indicating that large class sizes limited their ability to actively engage in spoken English activities. Previous research has consistently highlighted that overcrowded classrooms reduce the level of interaction between students and teachers, which in turn affects the development of spoken language skills (Ogbodo & Emeka, 2019). In a study conducted by Olagunju (2020), it was found that overcrowded classrooms lead to a lack of individualized attention for students, which is particularly detrimental in language learning where active practice and feedback are crucial.

This study's results echo those of Akpan (2018), who found that large class sizes in public schools in Nigeria hindered the implementation of communicative approaches to teaching English. The inability of teachers to provide adequate oral practice in such conditions further exacerbates the issue of poor spoken English proficiency.

Based on the findings of this study, it is recommended that more focus be placed on the professional development of English teachers, particularly in the areas of phonetics and pronunciation. As Akindele (2019) pointed out, teachers need continuous training to adapt to modern language teaching methods that focus on communication

skills. Additionally, the provision of adequate language resources, including language laboratories and interactive tools, is crucial for improving spoken English skills (Ibrahim, 2019).

Efforts should also be made to address socio-economic barriers by providing financial support and learning resources to disadvantaged students. As noted by Adewale (2020), offering scholarships, free language clubs, and after-school programs can help bridge the gap and give all students equal access to opportunities for language development.

Lastly, reducing overcrowding in classrooms is essential to create a conducive environment for language learning. Smaller class sizes would allow for more interaction and better individual attention from teachers, leading to improvements in students' spoken English skills (Afolayan, 2018).

## **CONCLUSIONS**

Based on the findings of the study on the causes of deteriorating spoken English skills among public secondary school students in Akwa Ibom State, the following conclusions can be drawn:

- (i) **Mother Tongue Interference:** A significant factor influencing students' spoken English proficiency is mother tongue interference. The students' first languages, such as Ibibio and Annang, influence their English pronunciation, leading to errors in speech (Afolayan, 2018). This interference manifests in the incorrect pronunciation of words and the inappropriate use of English grammar rules.
- (ii) **Teacher Quality and Availability:** The lack of qualified and trained English language teachers is a primary cause of the decline in spoken English proficiency. Many teachers lack sufficient expertise in teaching oral English, which affects students' ability to speak the language fluently (Akindele, 2019). Furthermore, the lack of professional development programs for teachers contributes to the persistence of these challenges.
- (iii) **Inadequate Learning Resources:** The scarcity of learning resources, such as language laboratories, phonetic charts, and multimedia tools, has a negative impact on students' English language acquisition. The lack of such resources limits opportunities for interactive learning and proper practice in spoken English (Ibrahim, 2019).
- (iv) **Socio-Economic Factors:** Students from low-income backgrounds face barriers that prevent them from engaging in activities that promote spoken English proficiency. Limited access to extracurricular language activities and inadequate educational support from home further exacerbate the challenges faced by these students (Adewale, 2020).
- (v) **School Environment and Peer Influence:** The school environment, including overcrowded classrooms, has a detrimental effect on students' ability to actively engage in spoken English exercises. Additionally, the fear of peer ridicule prevents students from speaking English confidently (Ogbodo & Emeka, 2019).

## **Recommendations**

Based on the conclusions, the study provides the following recommendations to address the deteriorating spoken English skills among students in Akwa Ibom State:

- (i) **Enhanced Teacher Training Programs:** Schools should provide continuous professional development for English teachers, focusing on improving their proficiency in spoken English and modern language teaching methods. Specialized training in teaching phonetics, pronunciation, and oral communication skills should be incorporated into teacher education programs.
- (ii) **Development of Learning Resources:** Schools, particularly in public secondary institutions, should be equipped with modern learning materials such as language laboratories, audio-visual resources, and phonetic charts. These materials are crucial for reinforcing proper pronunciation, intonation, and conversational English.
- (iii) **Promotion of Extracurricular Activities:** To improve spoken English proficiency, schools should organize extracurricular activities such as debates, storytelling, public speaking, and drama clubs. These activities

- create opportunities for students to practice English in a less formal and more engaging environment, enhancing both confidence and fluency.
- (iv) **Parental Involvement and Support:** Parents should be encouraged to support their children's English language development by creating an English-speaking environment at home. Schools can organize workshops for parents to highlight the importance of English proficiency and offer guidance on how to support their children's language learning.
  - (v) **Addressing Socio-Economic Barriers:** Policymakers should address the socio-economic factors that hinder students from accessing quality education. Financial support for low-income families, provision of scholarships, and ensuring the availability of learning resources in schools can help bridge the gap in English language proficiency.
  - (vi) **Improvement in School Infrastructure:** To foster a conducive learning environment, schools should reduce class sizes and ensure that classrooms are adequately equipped. Smaller class sizes would allow for more individual attention from teachers, increasing the opportunities for students to practice spoken English.

### **Value Added to Knowledge**

This study contributes significantly to the understanding of the factors that influence spoken English skills in public secondary schools in Akwa Ibom State, and offers practical solutions that can be applied to similar contexts in other regions of Nigeria. The value added to knowledge includes:

- (i) **Insight into Language Policy Implementation:** The study highlights the importance of integrating language policies into educational practices. By identifying the challenges and suggesting solutions, it provides valuable information for educational policymakers and curriculum developers to improve English language education in Nigerian schools.
- (ii) **Focus on Socio-Cultural Factors:** This study adds to existing literature by emphasizing the role of socio-cultural factors, particularly mother tongue interference, in language acquisition. The findings offer a deeper understanding of how indigenous languages impact the learning of English in Nigerian schools and suggest ways to mitigate these effects.
- (iii) **Contributions to Teacher Education:** The findings of the study underscore the need for improved teacher training in English language instruction. This research will inform teacher training institutions and educational stakeholders about the gaps in the current teacher education programs and provide insights into how to improve teacher effectiveness in teaching spoken English.
- (iv) **Practical Recommendations for Improving Spoken English:** The recommendations provided by this study are actionable and offer practical strategies for schools, parents, and policymakers. By adopting these recommendations, the study contributes to improving spoken English proficiency among secondary school students in Akwa Ibom State, ultimately enhancing the overall quality of education.
- (v) **Future Research Directions:** This study lays the groundwork for future research on language proficiency in secondary schools, particularly focusing on regional differences in language acquisition. It calls for further studies on the effectiveness of the proposed interventions and their long-term impact on students' spoken English skills.

In conclusion, the study has provided a comprehensive analysis of the factors responsible for the decline in spoken English proficiency among public secondary school students in Akwa Ibom State and has proposed practical measures to address these challenges. The research adds valuable insights to the field of language education in Nigeria, offering a framework for improving English language teaching and learning at the secondary school level.

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## **Effects of Mathematical Games on Students' Academic Achievement and Retention in Probability in Oron Local Government Area, Akwa Ibom State**

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### **Abstract**

This study examined the effects of mathematical games on mathematics students' academic achievement and retention in probability in Oron Local Government Area of Akwa Ibom State. It adopted a quasi-experimental research design. A sample of 50 senior secondary 2 students was drawn from a population of 980 students in all the public secondary schools in Oron Local Government Area of Akwa Ibom State using purposive sampling technique. The instruments used for data collection were 20 item Mathematics Achievement Test on Probability (MATP) and Mathematics Retention Test on Probability (MRTP). The MATP and MRTP were subjected to a test-retest method to determine the reliability. MATP and MRTP had reliability coefficients of 0.81 and 0.83 obtained using Pearson Product Moment Correlation (PPMC). The research questions were answered at 0.05 level of significance, using t-test analysis. The findings showed that there is significant effect of mathematical games on students' academic achievement and retention in probability. Male and female students taught probability with mathematical games do not differ significantly. It was recommended amongst others that mathematics teachers should always utilize games in teaching probability.

**Keywords:** Mathematical games, academic achievement, retention

### **1.0. INTRODUCTION**

Mathematics is a compulsory subject at all levels of education in Nigeria. Mathematics is useful in science, social science, business and technological based disciplines. Mathematics plays important role in the scientific and technological development of a nation. The pivotal role of mathematics reflects in its day to day application in most sciences, business, economics and management studies. Mathematics is an indispensable tool for development of new techniques and concepts; hence its inclusion as a compulsory subject in secondary school curriculum. Mathematics is the science that deals with measurement, relationships, properties of quantities and sets using numbers and symbols. This is why Elaine (2013) sees mathematics as the building block of everything in our lives including arts, money, engineering, mobile devices, architecture and sports. Mathematics forms the basis of other physical sciences. Thomaskutty and George (2007) examined the versatile nature of mathematics by identifying educational values of the subject; these include aesthetic, moral and practical values. It is on this premise the subject is made compulsory for both primary and secondary schools in Nigeria.

The NERDC (2013) revised curriculum divides mathematics into the following broad themes which are numbers and numeration, algebraic processes, geometry, statistics and introductory calculus. Each of the broad themes has been taught as a collection of rules and procedures which computations are more efficient. Thus, it comes as a little surprise that in a content where mathematical activity is computation, access to tools that can be used to

perform many of these functions has historically been restricted, (Nwoke, 2008). This has made both teachers and students perceive some of the concepts in each theme mysteriously, difficult to understand or retain. One of such concepts is probability.

Achievement is the performance of students in school (Nwagba, 2013). According to Bitrus (2014), achievement is a measurement of knowledge gained through educational process usually indicated by test scores, grade point average (GPA) or ranking in class. James and Ovute (2019) see achievement as the learning outcome acquired as a result of test or examination administered to the learner. With all these views, achievement can be described as the end product or outcome of an academic programme.

Sahakyan (2014) sees retention as the learner's ability to recall information of materials learned after a given time lag. Okoro (2011) suggests that retention is the ability to remember things and the action of keeping something rather than losing it. Retention is the ability of students to reproduce the knowledge gained which has been stored in long-term memory over a long period.

Gender is another factor interacting with students' achievement and retention in mathematics. The difference between male and female students has attracted some debates. Ado & Amos (2019) define gender as a social connotation that has a psychological background and is used to refer to specific cultural patterns of behaviour that are attributed to masculinity and femininity. According to Eze and Ezeugo(2019), some researchers in education indicated that male students had higher mean achievement scores than their female counterparts when taught using programmed instruction strategy. According to Edet (2016), there is no significant difference in the academic performance and retention of male and female students in sciences. When students are taught probability with the required teaching and learning resources such as games, there will be no difference between the academic achievement and retention of male and female students in mathematics.

### **1.1. Probability as a Concept in Mathematics**

The term probability refers to the study of randomness and uncertainty. In any experiment in which one of the numbers of possible outcomes may occur, the theory of probability provides method for quantifying the chances or likelihoods associated with the various outcomes. The language of probability is constantly used in an informal manner in both written and spoken contexts. The experiment of tossing a fair coin or a fair die is example of random experiment. The development of probability is quite recent, relative to other branches of mathematics. Pascal and Kolmogorov are the pioneers in the field of probability (Adegun and Adegoke 2017). Probability as a branch of mathematics goes back over 300 years where it has its genesis in connection with the analysis of certain games of chance and it has found application in many branches of science and engineering. There are two major ways of defining probability in mathematics. These are; the relative frequency definition and axiomatic definitions.

Mathematical games are instructional resources used by teachers and learners to teach and learn different concepts in probability. Mathematical games are also called probability games. These games are chance instruments and hands-on-activities used for teaching and learning of different concepts in probability. Abonyi, Maduagwuna & Ugoma (2014) describe mathematical game as a type of play that follows a set of rules, aims at definite goal or outcome, and involves competition other players or against barriers imposed by nature. Mathematical games may be used to introduce concepts in mathematics (Okigbo & Agu, 2010). Examples of these games are ludo game, spinner game, joker game and coins. These games provide opportunity for learners to relate theory to practice. When mathematical games are properly used in teaching probability, students become active than the teacher as they investigate, explore, interact and apply what they learn to real life situations. This will eventually enhance their academic achievement and retention in mathematics.

### 1.1. Teaching Probability with Spinner Game

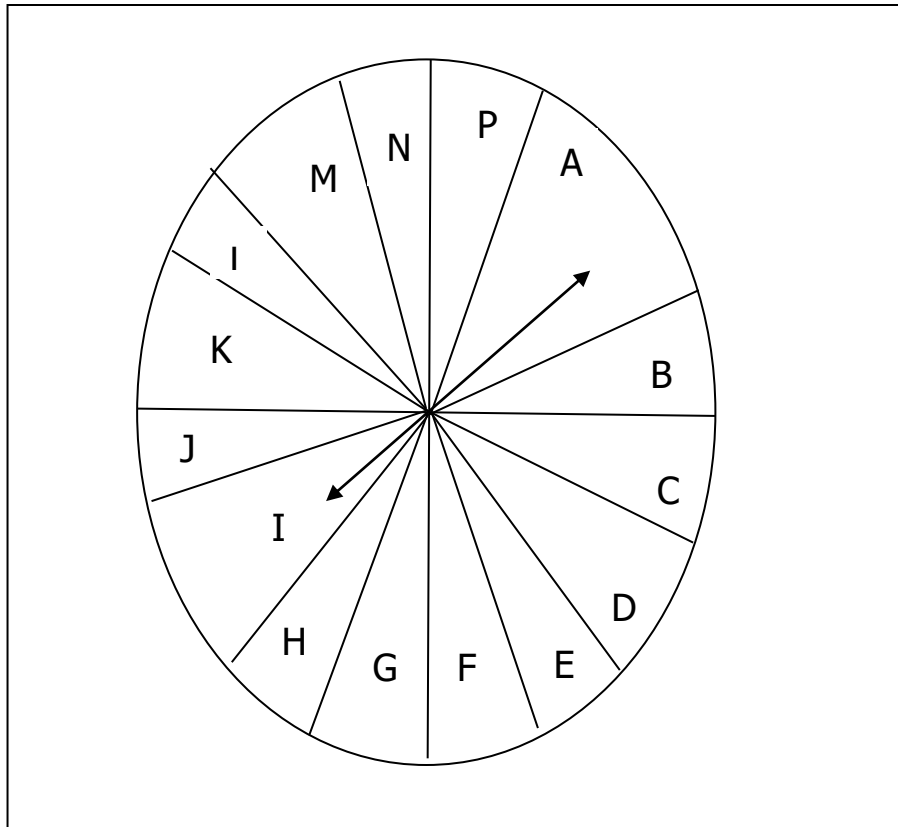


Figure 1: A Diagram Showing Spinner Game.

Spinner game is a mathematical game that has many sections depending on what the teacher desires. Each section of the game is assigned different colours such as red, blue, green, black and yellow. Alternatively, each section can also be assigned letters (A, B, C, D, ..., Z) depending on the teacher. The teacher brings spinner game into the classroom, describes how to use it and asks the students to spin the game and record the number of times each letter appears or comes up. It will be noticed that some letter come up more often than others during spinning. The result is obtained at the letter which the pointer stops after each spin. If the pointer stops at say, B, that is the probability of obtaining B is  $\frac{1}{15}$ . The teacher asks the students to obtain the following using the spinner game. (i)  $\Pr(H)$ , (ii)  $\Pr(\text{Consonant})$  and (iii)  $\Pr(\text{vowel})$ . It will be discovered that each student will be recording different results depending on how fast they spin the game.

### 1.2. Teaching probability with Dice

In a single throw of a fair die, find the following probabilities that; (i) an even number appears (ii) 5 appears (iii) a perfect square appears. The teacher provides die to all the students or group them, asks them to describe the die. The teacher asks them to toss the die. He asks the students to state the face that appears. He explains that the face that appears is just one out of the six faces of the die. The teacher provides the students or group of students with two dice. He hangs a chart showing the sample space and asks students to draw the table (write 1 to 6 vertically as column and 1 to 6 horizontally as row). The teacher asks the students to add each number in the column to its corresponding row to complete all the boxes as shown below. The teacher asks the students to answer the above questions.

Table 1: Results Obtained From Dice Game

	1	2	3	4	5	6
1	1,1	1,2	1,3	1,4	1,5	1,6
2	2,1	2,2	2,3	2,4	2,5	2,6
3	3,1	3,2	3,3	3,4	3,5	3,6
4	4,1	4,2	4,3	4,4	4,5	4,4
5	5,1	4,2	5,3	5,4	5,5	5,5
6	6,1	6,2	6,3	6,4	6,5	6,6

### 1.3. Teaching probability with coins

In a single throw of a coin, find the probability that (i) a head appears (ii) a tail appears

The teacher presents a coin to the students. Describe the coin to them as having a head and a tail. Ask them to record the fraction of obtaining any of the two faces.

Two coins are thrown at the same time, the probability of finding (i) two heads (ii) at least one tail can be obtained as follows:

$$(i) \Pr(\text{two heads}) = 1/4 \quad (ii) \Pr(\text{at least one tail}) = 3/4$$

However, many mathematics teachers avoid teaching some concepts in probability (conditional probability, theoretical probability, dependent events) with concrete materials. Consequently, students' understanding and retention of these concepts is in doubt since teachers resort to teaching them abstractly with only chalk and talk. This problem can be reduced or eliminated if the necessary instructional materials are utilised in the teaching and learning of concepts in probability.

In a related and recent study conducted by Akanmu and Adeniyi (2021) on the effects of mathematical games on senior secondary students' academic performance in mathematics in Ejigbo, Osun state, Nigeria. The sample size was 73 students in their intact classes from two schools using simple random sampling technique. Data were collected using Mathematics Performance Test (MPT) and analysed using Analysis of Covariance (ANCOVA) at 0.05 level of significance. The results revealed that students taught using games performed significantly better than those taught using lecture method.

In another study carried out by Okigbo and Agu (2010) which investigated the effects of mathematical games and instructional analogy on students' achievement in junior secondary school mathematics. A total of 246 junior secondary two (JSS2) mathematics students were involved in the study. It was observed that both games and analogy enhanced students' achievement and retention in mathematics. It was noticed that there was no significant difference between the achievement of male and female students taught mathematics with either games or analogy.

Finally, Adeoye and Ambimbola (2016) carried out a study on effects of senior secondary school students' use of demo kits on their performance in Biology. A quasi experimental design (non-randomized, non-equivalent pretest and posttest control group of 2x 2x 3 factorial matrix) was used. Data were obtained from four intact classes in four purposively selected secondary schools. The research instruments were Biology Achievement Test (BAT) and demo kit. Descriptive statistics (standard deviation and mean gain scores) were used to answer the research questions while analysis of covariance (ANCOVA) was used to test the corresponding null hypothesis. Finding from the study revealed that students who learned Biology with demo kit performed significantly better than those

that learned it without using demo kits. The study also reported a high retention level in favour of students who learned biology with demo kits.

#### **1.4. Statement of the Problem**

Studies conducted over the years have shown that lack of instructional materials for teaching mathematics also contribute to students' poor performance in the subject (Adebule and Ayoala 2015). This was confirmed by Bitrus (2014) when analyzing the West African School Certificate Examinations (WASSCE) between 1989 and 2005. The perceived and inherent difficulty associated with various topics in mathematics is responsible for such performances. Probability was not left out as a difficult concept in mathematics. This is confirmed by the Chief Examiner's Report which showed that candidates in 2019 WASSCE had weakness in probability. Some of the reasons for this weakness include poor method of teaching and lack of application of instructional materials in teaching probability. To overcome these setbacks and accelerate students' achievement and retention in learning probability, the researchers found it necessary to conduct a study to determine the effect of mathematical games on mathematics students' achievement and retention in the concept of probability. The question is what is the effect of mathematical games on students' achievement and retention in mathematics?

#### **1.5. Purpose of the Study**

The purpose of the study is to find out the effect of mathematical game on mathematics students' achievement and retention in concept of probability. Specifically, the study sought to determine:

- (i) The difference between mean achievement scores of mathematics students taught the concept of probability using game and charts.
- (ii) The difference between mean achievement scores of male and female mathematics students taught the concept of probability using games.
- (iii) The difference that between retention mean scores of mathematics students taught the concept of probability using game and charts.

#### **1.6. Research questions**

To guide they study, the following questions were raised:

- (i) What are the mean achievement scores of mathematics students taught the concept of probability using games and charts?
- (ii) What are the mean achievement scores of male and female mathematics students taught the concept of probability using mathematical games?
- (iii) What are the mean retention scores of mathematics students taught the concept of probability using games and charts?

#### **1.7. Research Hypotheses**

The researcher raised the following hypotheses to help answer the questions posed.

- (i) There is no significant difference between the mean achievement scores of mathematics students taught the concept of probability using mathematical games and charts.
- (ii) There is no significant difference between mean achievement scores of male and female mathematics students taught the concept of probability using mathematical games.
- (iii) There is no significant difference between the mean retention scores of mathematics students taught the concept of probability using mathematical games and charts.

## 2.0. RESEARCH METHODOLOGY

The research design adopted for this study was pretest, posttest non-randomized control group design. The area of the study was Oron Local Government Area of Akwalbom State. The population of this study was made up of nine hundred and eighty (980) from all senior secondary two (SS2) students in the five (5) public secondary schools in the study area during 2022/2023 academic session. The sample size was fifty (50) students in their intact classes from two (2) co-educational public secondary schools in Oron Local Government Area of Akwa Ibom State. A purposive sampling technique was used to select the schools for this study.

The instruments used for data collection were Mathematics Achievement Test on Probability (MATP) and Mathematics Retention Test on Probability (MRTP) structured on four options A-D. The instrument consisted of two sections of twenty items. The first section contained the students' details such as serial number, gender, class and school name while the second section consisted of 20 multiple choice items with one correct option and three wrong options. The test was based on a maximum score of twenty (20) marks. Each correct answer was scored 1 mark and incorrect answer was scored 0 marks. The retention test MRTP contained the same questions as MATP but arranged in different order which was used to determine the retention scores of mathematics student on probability.

The instruments were subject to face validation by three experts. To further strengthen the validity of the above instruments, a test- retest method was used to obtain the reliability coefficients of 0.81 and 0.83 for MATP and MRTP respectively using Pearson Product Moment Correlation (PPMC). The instruments were administered on equivalent group of students who were not part of the study. The students assigned as experimental group were taught probability with mathematical games while those in the control group were taught probability without mathematical games. At the end of the lesson, the two groups were given the achievement test (MATP). After three weeks of administration of MATP, retention test (MRTP), a reshuffled form of (MATP), was also administered to the students to determine the level of retention of the concept probability. Finally, scripts were retrieved, marked and data generated were analyzed using t- test analysis at 0.05 level of significance.

## 3.0. RESULTS

### 3.1. Research Questions 1

What are the mean achievement scores of mathematics students taught the concept of probability using games and charts?

Table 2: Mean and Standard Deviation Showing Pretest and Post Test Scores of Students Taught Probability With Mathematical Games and Charts.

Group	N	Pretest		Posttest		Mean Gain
		$\bar{X}$	SD	$\bar{X}$	SD	
Experimental	25	6.16	1.59	12.28	2.11	6.12
Control	25	6.40	1.85	8.80	1.70	2.40

Data in Table 2, show the pretest and posttest mean scores of students taught probability using mathematical games to be 6.16 and 12.28 respectively, while those taught with games had 6.40 and 8.80 for pretest and posttest respectively. The mean gain scores show that those taught using mathematical games had best mean score of 6.12 and those taught with charts had 2.40. The difference in the mean scores of these two groups is examined by testing hypothesis one.

### 3.1.1. Hypothesis 1

There is no significant difference between the mean achievement scores of students taught probability with mathematical games and charts.

Table 3: T – Test Analysis of Mean Achievement Scores of Students Taught Probability With Mathematical Games and Charts.

Group	N	$\bar{X}$	SD	<i>df</i>	t-cal	t- critical	Decision
Experimental	25	12.28	2.11	48	6.4	2.01	Rejected
Control	25	8.80	1.70				

Table 3 shows that the calculated t-value which is 6.4 is greater than t-critical value which is 2.01 at 0.05 level of significance. Based on this result, the null hypothesis is rejected. This means that a significant difference exists between the mean achievement scores of mathematics students taught probability with mathematical games and charts.

### 3.1.2. Research Questions 2

What are the mean achievement scores of male and female mathematics students taught the concept of probability using mathematical games?

Table 4: Mean and Standard Deviation Showing Pretest and Posttest Scores of Male and Female Students Taught Probability With Mathematical Games.

Gender	Pretest			Posttest		
	N	$\bar{X}$	SD	$\bar{X}$	SD	Mean Gain
Male	14	6.29	1.44	12.90	2.47	6.61
Female	11	6.00	1.76	11.82	1.53	5.82

Data in Table 4 indicate that the mean scores of male students taught probability with mathematical games are 6.29 and 12.90 for pretest and posttest respectively, while their female counterparts have 6.00 and 11.82, respectively for pretest and posttest. The mean gain scores of male students taught probability with mathematical games is 6.61 while that of their female counterparts is 5.82. This implies that male students taught probability with mathematical games achieved more than their female counterparts. The difference in the mean scores of the male and female students taught probability with mathematical games is examined by testing hypothesis two.

### 3.1.3. Hypothesis 2:

There is no significant difference between the mean achievement scores of male and female students taught probability with mathematical games.

Table 5: T-Test Analysis of Mean Achievement Scores of Male and Female Students Taught Probability With Mathematical Games.

Gender	N	$\bar{X}$	SD	<i>df</i>	t-cal	t- critical	Decision
Male	14	12.90	2.47	23	1.28	2.07	Accepted
Female	11	11.82	1.53				

Data in Table 5 show that the calculated t-value is 1.28 while the critical t-value is 2.07 at 0.05 level of significance. This indicates that the calculated t-value is less than the t-critical value; therefore, the null hypothesis is accepted. This means that there is no significant difference in the mean scores of male and female students taught probability with mathematical games.

### 3.1.4. Research Question 3

What are the mean retention scores of mathematics students taught the concept of probability using games and charts?

Table 6: Mean and Standard Deviation Showing Posttest and Retention Test Scores of Students Taught Probability with Mathematical Games and Charts

Group	Posttest			Retention test		
	N	$\bar{X}$	SD	$\bar{X}$	SD	Mean Gain
Experimental	25	12.28	2.11	12.44	2.23	0.16
Control	25	8.80	1.70	8.82	1.86	0.02

Table 6 shows the retention mean gain scores of students taught probability with mathematical games had 0.16 while those who were taught with charts had 0.02

### 3.1.5. Hypothesis 3

There is no significant difference between the mean retention score of students taught probability with mathematical games and charts.

Table 7: T- Test Analysis of Mean Retention Scores of Students Taught Probability with Mathematical Games and With Mathematical Charts

Group	N	$\bar{X}$	SD	<i>df</i>	t-cal	t- critical	Decision
Experimental	25	12.44	2.23	48	7.86	2.01	Rejected
Control	25	7.88	1.86				

Table 7 shows that the calculated t-value which is 7.86 is greater than the t-critical which is 2.01 at 0.05 level of significance. Based on this result the null hypothesis is rejected. This implies that a significant difference exists between the mean retention scores of mathematics students taught probability with mathematical games and charts.

## 4.0. DISCUSSION

The results of this study revealed that there exists a significant difference between the mean achievement scores of mathematics students taught probability with mathematical games and those taught with charts. This may be attributed to the fact that mathematical games can stimulate and motivates students' active participation during lessons. This finding is in line with the finding of Akanmu and Adeniyi (2021) on the effects of mathematical games on senior secondary students' academic performance in mathematics which showed that students taught with mathematical games performed significantly better than those who were taught with lecture method. It also agrees with the finding of Adeoye and Abimbola (2016) who found out that students who learned biology with demo kits achieved significantly better than those who learned without the use of demo kits.

The finding of the study on the difference between the mean achievement scores of male and female students taught probability with mathematical games showed no significant difference between the male and female mean achievement scores. This could be attributed to how use of mathematical games stimulates male and female students' interest in learning which might have brought about equal competitiveness. This finding is supported by that of Okigbo and Agu (2010) who found that male and female students improved in their academic achievement when taught with either games or analogy. However, this finding contrasts with that of Nnamani and Oyibe (2016) who reported significant effects of gender on students' performance. The finding of this study on the difference between the mean retention scores of students taught probability with mathematical games and those taught with charts revealed that there exists a significant difference. The students taught probability with mathematical games had better retention than their counterparts who were taught without mathematical games. The significant effect may be attributed to the utilization of games as instructional resources which makes learning more meaningful. This is in line with the findings of Adeoye and Abimbola (2016) who reported a high retention level in favour of students who learned biology with instructional materials (demo kits).

## **5.0. RECOMMENDATIONS**

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

- (i) Mathematics teachers should always utilize instructional materials in teaching different concepts in mathematics.
- (ii) Teachers should not consider as a significant academic factor in students' achievement and retention, but should motivate both male and female students in their classes for enhanced academic gains.
- (iii) There should be mathematics laboratory in all the secondary schools where different mathematical games can be found.

## **6.0. CONCLUSION**

Based on the findings, it is concluded that there is significant effect on students' achievement and retention when taught probability with mathematical games. This is due to the fact that students were actively involved during the lessons. The study also showed that male and female students achieved and retained equally when both gender were taught probability with mathematical games.

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## **Child's Labour as Determinant of Students' Academic Performance in Biology in Oruk Anam Local Government Area**

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### **Abstract**

The purpose of the study was to investigate child labour as determinant of students' academic performance in Biology in Oruk Anam L.G.A, Akwa Ibom State. Three research hypotheses were formulated to guide the study. Major sub-variables of the study includes: agricultural, Hawking and domestic forms of child labour. A survey research design was adopted for the study. A sample of one hundred (100) SSII Biology students were drawn from a population One Thousand Six Hundred and Fifty (1650) in secondary schools in Oruk Anam L.G.A. Questionnaire was the main instrument for data collection. Independent t-test analytical tool was used to analyze the research hypotheses at 0.05 level of significance. Finding revealed that agriculture, hawking and domestic child's labour play a negative role on students' academic performance in Biology. Based on the findings, it was concluded that agricultural, hawking and domestic child's labour influenced biology student's academic performance. It was recommended that parents should prevent children from been labored as such influence students' academic performance in Biology.

**Keywords:** Child labour, Hawking, Agriculture, Domestics, Academic Performance

### **INTRODUCTION**

Education is described as an instrument of change and a general improvement in quality of life which should be continuous and persistent (Jhingan, 2012). Nneji and Otaru (2016) stated that educational institutions perform a significant function of providing learning experiences to lead students from the darkness of ignorance to the light of knowledge. Education consists of two components (inputs and outputs) (Lokoko, Mutsotso and Nasongo, 2013). According to them, inputs consist of human and materials resources and outputs are the goals and outcomes of the educational process. Education is all round symbol for the nation's development and transformation the aspects of science, economic, social and the political activities of the nation.

Science which is an important area of study at the secondary school level include the following subjects ; Biology, Chemistry, Physics , Physical and Health Education, Agricultural Science, Mathematics and others which should be vigorously , curiously , consecutively and concordancelly taught for better students' outcomes. Science is important in school due to its relevance to the universal application in problem-solving and critical thinking skills. These are lifelong skills that allow scientist to generate ideas, weigh decisions intelligently and even understand the evidence behind public policymaking (Federal Ministry of Education, 2013).

Biology involves the study of life and living organisms include their structure, functioning, growth, evolution, distribution, identification and taxonomy (Miller and Levine, 2012). Being a life science, Biology occupies a very

important position in the secondary school curriculum. In Nigeria, the Secondary School Biology Curriculum is designed to prepare students to acquire adequate experimental and field skills which are meaningful and relevant knowledge in Biology enable students apply acquired scientific knowledge to everyday life in matters of personal, community, health, environment and agriculture among others (FME, 2013).

In all spheres of human endeavors, Biology plays a vital role in the fields of medicine, pharmacy, agriculture, brewery, geology, nursing among others (Institute of Biology, 2013). Maduabum (2009) highlighted the importance of Biology to include: helping individuals to understand the parts of his/her body and their functions; enabling one to question superstitions due to sustained interest arising from comprehension of the cause of events; understanding and appreciating life; bringing into focus the need to maintain good health; preparing the individual for choice of careers; inculcating in the individual scientific skills and attitudes in his approach to personal and societal problem; imparting factual knowledge and stimulate scientific reflective thinking so as to produce a better informed individual. Biology as a science subject is related to physical and health education, chemistry agricultural science and others, much emphasis has been placed on instruction especially at the secondary school level.

The philosophy Biology education as stipulated in the National Policy on Education (FME 2013), the study of Biology in senior secondary schools is expected to equip students with useful concepts, principles and theories that will enable them face the challenges before and after graduation (Ibe, 2004). Its aimed at equipping the learner with knowledge, skills and attitudes that are necessary for controlling and preserving the environment; enabling the learner to appreciate humans as the broader community of living organisms (Karen, 2005). Biology has contributed to the growth and development of new and better drugs and vaccines against many human and animal diseases and has also contributed towards the conservation of the environment and endangered species (Institute of Biology, 2013).

Inspite of numerous functions of Biology, many factors like school related factors, lack of instructional materials and child Labour seem to hamper academic performances of students in biology. Child labour is a far-reaching and highly complex problem in developing countries like Nigeria. The types of child Labour vary according to the country's culture, the family culture, rural or urban residency, socio--economic conditions , and existing level of development, among other factors (Pinzon, 2013).

The main sector in which child labour in Nigeria is concentrated is agriculture (Kim and Zepeda, 2014). A great proportion of child labour is carried out in family businesses and within the home settings in the form of housework or as non-remunerated work. This type of labor, which can equally negatively affect the social and educational development of the child, has been taken into consideration less frequently than the remunerated labour performed outside of the family context (Buonomo, 2011). In the short-term, the importance of investigation child labour and its consequences is related to the involvement of children and teenagers in menial labour and its exploitative tendencies , sometimes without the child's willingness and often over their physical resistance. In these cases, aspects of child's minor is rights become factors of concern. In the long term and from a practical point of view, child Labour is about a disinvestment of social and human capital, a compromising of the development of the individual, and a hindering of the development of skills, abilities, and knowledge necessary to make significant contributions to society (Psacharopoulos, 2017).

Although majority of studies that analyzed the genesis, impact, and consequences of child Labour derive from an economic point of view and several authors do analyze the social and communal causes that underpin the employment of child and youth labor. Hence, the impact of diverse forms of child Labour on education has not been adequately addressed, given the importance of education context as the main agent of socialization and development of childhood and adolescence (Orazem and Gunnarsson, 2014). The effectiveness of the intervention

policies and programs designed and implemented to deal with child Labour increases if the policies and programs are based on adequate knowledge of the causes that drives children to enter the Labour market. These causes of initiation and continuation of child's Labour are related to economic factors, as well as to social and cultural factors.

Child Labour generates negative effects that hinder the child's cognitive, emotional and social development (Amar, 2018). Many of these child laborers are in a critical period of their psychosocial development during which key aspects of their personality and social behavior, such as self-esteem and self-concept, are being molded and defined. In this sense, the school context, the relationship with peers, and the family environment are all factors that can affect the formation of these key personality concepts (Omokhodion, 2016). Likewise, child labour generates negative consequences on the quality of life and on the mental health of minors. Amar (2018) found that in addition to the perception of poor physical health, child laborers presented greater emotional wear. Furthermore, the minors who participated in their study perceived that their physical and emotional health are interfered with in their functioning within family. Children and youth can be much more vulnerable than adults to the psychological and physical impact of labor, due to their psychophysiological immaturity and the process of growth and development in which they are immersed (O'Donnell, 2012).

Social and economic consequences of child labour have also been identified as factors associated with poor performance. Emerson and Portela (2013) opined that they exist a generational link to child labor on income variable. It is possible that this generational link is associated with the persistence of certain social norms or educational patterns in the family. Thus, child labor does not only have immediate and short-term effects on the child, but rather, these effects are also present in the long term throughout the whole human lifecycle. Taking on labour-related activities at an early age reduces work opportunities during adulthood, hinders the achievement of an adequate educational level, and even impedes the formation of a stable family unit (Beegle, 2017, Seebens and Wobst, 2013).

Child labour is generally interpreted as “all cases in which children less than fourteen years or less are exposed to harm at work (UNICEF, 2015). It is the exploitation of children through any form of work that deprives them of their childhood, interferes with their ability to attend regular school, and is mentally, physically, socially and morally harmful. Such exploitation is prohibited by legislation worldwide, although these laws do not consider all work by children as child labour; exceptions include work by child artists, family duties, supervised training, and some forms of work. Child labour means that children are forced to work like adults and take part in an economic activity. According to the International Labour Organization (ILO) the term is applied to people up to age thirteen, or seventeen in case of dangerous work. Only about a fourth of the ILO members have ratified the respective convention, but the age limits are generally accepted. When children work like adults, this will deprive them of their childhood: Very often, they cannot attend regular school either. This kind of work is mentally, physically, socially or morally dangerous and harmful. Child labour is fundamentally different from casual work done by children, like guarding other children, or helping here and there. Child Labour is forbidden in most countries. In some places minor boys and girls work in tea stalls, restaurants, hotels and other small shops. Some work in huge factories like brick factories.

The International Labour Organization categorized child labour as follows:

- (i) Agricultural labourers.
- (ii) Domestic labourers.
- (iii) Street hawking labourers and

- (iv) Factory labourers with wages.

Golden and Prather (2019) stated that “child labour ” is exploitative, as the latter potentially impairs the health and development of the children. By contrast, James and James (2018) concluded that agencies such as ILO, and UNICEF working on child labour issues originally had different concepts on child labour and following the establishment of the worst form of labour convention 182 in 1999, as well as inter-agency research cooperation such as understanding children’s work in 2000, a growing consensus has emerged that child labour refers to unacceptable forms of child work.

According to UNICEF (2015), current official definitions of child labour include the following

- (i) Child work or children’s work is a general term covering the entire spectrum of work and related tasks performed by children.
- (ii) Child labour refers to the subset of children’s work that is injurious to children and that should be targeted for elimination.
- (iii) Hazardous work refers to physical, psychological or sexual abuse.

The worst form of child labour includes “children of age below 18 who are involved in forms of slavery and forced labour , including forced recruitment for use in armed conflicts, commercial sexual exploitation (prostitution or pornography), illicit activities (particularly the production or trafficking of drugs) and hazardous work that jeopardizes their lives, health or moral”.

On the other hand, the International Labour Organization’s official defines child labour in the following categories:

- (i) In ages 5-11 = all children at work in economic activity.
- (ii) In ages 12-14 = all children at work in economic activity minus those in light work.
- (iii) In ages 15-17 = all children in hazardous work and other worst forms of child labour

According to Golden and Prather (2019) the following forms of child Labour are identified:

**1. Hawking:** In Nigeria many school aged children make sales carrying goods, moving several hours daily to wherever they can find a buyer. Many children hawk for the upkeep of themselves and their families, while some others hawk for wages, or for people they live with outside their biological parents. Hawking is more prevalent in Nigerian cities than in rural areas. At any angle child hawking is perceived, it has a lot of health implications on the child hawker. Child hawkers trek very long distances or wander about selling goods they carry about on their heads. Children by nature suffer fatigue easily and as hawking poses long hours of strenuous trekking (heavy loads on the head), the fatigue increases the demand for rest which may not be satisfied. Consequently, the fatigue leads to chances for accidents and stress related diseases.

Educationally, hawking among school-aged children leads to truancy, missing lessons, total absenteeism in the class, low academic achievement and high rate of school dropouts. This is because, children who hawk before going to school are bound to miss lessons. Thus, they are deprived of the opportunity to learn. Those who hawk after school do not have time and energy for their take home assignments and home studies as they always go

home late in the night and are too tired to do any academic work. Most child hawkers are not allowed to go to school at all. Lack of education becomes a ditch in the road to their progress in life.

Chukwuma (2018) investigated some factors associated with street hawking among children of school age in Enugu North Local Government of Enugu State. To guide the study, four research questions were formulated. The design adopted for the study was survey design. The population of the study consisted of 779 teachers. This included 690 female teachers and 89 male teachers in the 9 government secondary school in Enugu North Local Government Area of Enugu state . Out of the nine schools, six schools were sampled using simple random sampling. Proportionate sampling technique was used in selecting the final respondents from each stratum numbering two hundred and sixty four (264) teachers. The findings of the study from the teachers' perception revealed : high cost of living as one of the factors associated with street hawking among children; large family size a factors another factor associated with street hawking among children; poverty, another factor associated with street hawking among children and Ignorance .

**2. Agriculture:** Agricultural work can be a sort of child labour if under aged children work in farm lands and agricultural firms. Many agricultural families take their children to the farms and due to lack of enlightenment allow or force the children to do all sorts of work in regular and longer hours along with adults. They may not know that children and adults according to Child Labour today should not do the same work and or spend the same period of time in any work due to physical and developmental differences. There are still other children who are employed in agricultural farms and or firms to perform a lot of tasks that are not appropriate for children, such as application of chemicals on the farms in hazardous environment, and handling certain farm implements.

Educationally, working in agricultural sites may deny children of regular school attendance and lead to poor academic performance and low grades. This is because in predominantly agricultural settlements, children are not allowed to attend school regularly due to farm demands. Children work longer hours in farms on empty stomach and are expected to and forced to work as hard and as long as adults. When this happens, school activities are neglected. Ofuoku, Idoge and Ovwigho (2014) conducted research to determine the level of child Labour involvement in arable crop farming. A multistage random sampling method was used to select the respondents. Data were collected with the use of a structured interview schedule and questionnaire. Most farming household heads were males (60.61%) of them and 65% had no formal education, with an average age of 42.28 years, an average household size of 11persons, annual average income of N192,000.00, and average farm size of 1.13ha. The children participated in field preparation, planting, weeding, pesticide and fertilizer application, harvesting, transportation and processing. Many (43.33%) of the children combined schooling with farming operations. The decision of the ,household heads to use child Labour was influenced by socioeconomic variables such as gender, age, level of education, household size, farm income, farm size, culture, economic factors and political factors.

**3. Domestic chores:** In Nigerian society, children are expected to render unpaid domestic services in their homes, doing all kinds of household chores. Sometimes the older ones take the responsibility of parenting other younger siblings, cooking, washing and managing the home.

However, when children are over loaded with tasks that are too much for them to an extent that their education, health, rest and sleep are affected, then it becomes child labour. Domestic child labour in Nigeria takes the form house helps, cooks and errand boys. No matter the nomenclature, domestic child work is characterized by long working hours and lack of rest days or vacation. Domestic servants are made to wake up earlier than adults to work, and retire to bed in the night later than other members of the family. Working late, most of them are denied care, affection and love, schooling and leisure. Nwamaka (2014) examined the history of child domestic worker in rural and urban areas of Nigeria and its implications for national development. Children in Nigeria are engaged in the worst forms of child labour, particularly in domestic service. Sometimes the children placed in this way are

seen as family servants, subjected to working long hours, cooking, cleaning, tending livestock, and looking after children and elderly people in the family. Some of them are given inadequate food, poor sleeping quarters, and little or no remuneration. Some are subjected to physical and verbal abuse when they are tired and slow or unable to accomplish tasks that are too hard or heavy for them. The study traced some of the reasons why child domestic worker thrive in Nigeria. It is discovered that if the trend continues, the future of Nigerian child will be in jeopardy. The study observed that though substantive legislation against child labour is now in place in Nigeria, legal enforcement remains its biggest challenge.

Generally, according to Fred (2016), ways of checking child expose to Labour include the following:

Developing statistical visibility and further enhancing knowledge on child domestic work to better capture child labour and youth employment in domestic setting ;

awareness-raising and advocacy to transform social attitudes and to address the widespread acceptance of child labour in domestic work and the beliefs amongst employers and parents that these situations represent a protective and healthy environment for children – especially girls;

Promoting the ratification and implementation of the child labour

Constitution No.138, No. 182 and of Convention No.189 concerning decent work for domestic workers;

Taking legislative and policy action to end child labour and to protect young workers in domestic work:

Setting a clear minimum age for domestic workers not lower than 14 years .

Identifying types of hazardous domestic work for children;

Academic performance is regarded as participants' examination grade at the end of a particular term or programme. It could be seen as the level of performance in a particular field of study. Higher scores indicate better academic performance . Available statistics between 2017 to 2020 from West African Examination Council and National Examination Council show that students continue to perform less than 50% in Biology in the May/June examinations. Research also had it that, the poor performance of biology students are attributed to some home factors like family size, parental education level , socio-economic status of parents, child labour and others.

### **Statement of the Problem**

The deteriorating state of our educational system is quite worrisome. The problem teachers and students encounter in our educational system include inadequate teaching, learning materials, student home factors and teachers characteristics. Nevertheless, it has been realized that there is need for teachers to look at different engagements of students in domestic, agricultural and business participation as child Labor. This will help reduce most of the problems in the teaching and learning process. In spite of this, the problem associated with child labour that hinders effective learning of biology in schools include , Child labour, lack of qualified teachers . Hence, the researcher tends to find out if Child Labour could have influence on students' academic performance in Biology in secondary schools in Oruk Anam L.G.A, Akwa Ibom State.

### **Purpose of the Study**

The purpose of this study is to investigate child labour as determinant of student's academic performance among secondary school students in Oruk Anam local Government Area. Specifically, the study sought to;

- (i) determine the influence of agricultural child labour and students academic performance in Biology In Oruk Anam local Government Area
- (ii) determine the influence of Domestic child labour as determinant of students academic performance in Biology in Oruk Anam Government Area
- (iii) determine the influence of street hawking child labour as determinant of students academic performance in Biology in Oruk Anam Local Government Area

### **Research Questions**

The following research questions were formulated by the researcher as a guide to this study:

- (i) what is the influence of agricultural child labour on students academic performance in Biology in Oruk Anam Local Government Area
- (ii) what is the influence of domestic child labour on students academic performance in Biology in Oruk Anam Local Government Area
- (iii) what is the influence of street hawking child labour on students academic performance in Biology in Oruk Anam Local Government Area

### **Research Hypotheses**

The following research hypotheses were formulated by the researcher as a guide to this study:

- (i) There is no significant influence of agricultural Child Labour on Students academic performance in biology in Oruk Anam Local Government Area
- (ii) There is no significant influence of domestic Child Labour on Students academic performance in biology in Oruk Anam Government Area
- (iii) There is no significant influence of street hawking Child Labour on Students academic performance in biology in Oruk Anam Local Government Area

### **Significance of the Study**

It is therefore the researchers' expectation that upon completion of this study, the findings of the study will be beneficial to the teachers, government and the general public in more ways than one. Since child labour is a situation that has negative effect in the sense that it does not encourage learners to achieved better outcome academically. It will enable government and parents to proffer solutions to these affected students .It is seen and believed that most children under child labour dropout of school as traced to some home related factor that do not allow the students full participation in school and learning activities.

### **Scope of the Study**

This study is to determine agricultural, domestic and street hawking child labour as determinant of students academic performance in Biology in Oruk Anam Local Government Area. The study is also delimited to senior secondary two biology Students in 2022/2023 academic session.

## **Operational Definition of Terms:**

Child Labor: act of over engaging student to work in the farm, selling of goods, and other related practices.

- (i) Agricultural child labor: an act of over engaging students in agricultural work in the house
- (ii) Domestic child labor: over engaging students or child on much domestic activities.
- (iii) Street hawking child labor: act of giving underage goods like groundnut, maize, fish, Akara and others to sell on the street during or after school hours.

## **RESEARCH METHODOLOGY**

### **Design of the Study**

The design of the study was survey research design. This design was adopted as the researcher had no control and could not manipulate the independent variables in the study.

### **Area of the Study**

Oruk Anam is a Local Government Area located in the south western part of Akwa Ibom State, Nigeria. It may be ranked as the largest LGA in Akwa Ibom due to its land mass. It lies within the coordinates of 4°49'0"N 7°39'0"E. Its headquarters are located in the town of Ikot Ibritam. It is one of the eight Annang -speaking local government areas. It consisted of two major political units, namely, the Oruk zone , and the Anam zone. Oruk zone used to be a Local Government Area with headquarters at Urua Anwa. Anam was called Anam or Annang County Council in the former Opobo Division.

In 1989, the Local Government Areas was created. It shares boundaries with Ikot-Abasi /Mkpat-Enin (Ibibio speakers) by the south/east and Ukanafun (Anaang speakers) by the west. Its population according to the 2006 census is 172,000. Their inhabitants are mostly farmers, craftsmen and civil servants. The area is a major gateway to Port Harcourt and Aba as such there is much commercial activity along the major road points like Ekparakwa . The area hosts some government interest like the general hospital located in Ikot Okoro, police stations and schools such as the Akwa Ibom State University (AKSU),in Obio Akpa (Obio Akpa Campus).

### **Population of the Study**

The population of the study comprised all biology students of 2022/2023 academic session in the five secondary schools in Oruk Anam L.G.A. The total number of student was one Thousand Six Hundred and Fifty (1,650) biology students in Oruk Anam L.G.A

### **Sample and Sampling Technique**

The study sample consisted of One Hundred (100) Biology students drawn from secondary schools Oruk Anam L.G.A using simple random sampling.

### **Instrument for Data Collection**

Questionnaire was used for data collection. The instrument had fifteen items constructed from the concept of child Labour (agriculture, hawking and domestic) and student academic performance. Four Likert scales was used to

elicit the respondents' opinions on their biology academic performance, that is; Strongly Agree (SA) =4, Agree (A) =3, Disagree (D) =2 and Strongly Disagree (SD) =1

## Validation

Face validation were assured with the help of two expert from the Department of Test and Measurement from university of Uyo, Uyo.

## Data Analysis

Based on the hypotheses, the researcher analyzed the data using independent t-test at 0.05 alpha level of significance.

## RESULT AND DISCUSSION

### Result

**Hypothesis 1:** There is no significant influence of agricultural Child Labour and Students academic performance in biology in Oruk Anam L.G.A.

Independent t-test statistical tool was used in testing Hypothesis 1 and result presented in Table 1

Table 1: Independent t-test showing influence of agricultural Child Labour and Students academic performance in biology in Oruk Anam L.G.A.

Response (Variables)	N	$\sum d$	$\sum d^2$	t-cal	df	t-crit	Decision
Positive (X <sub>1</sub> )	100	1167	315406	4.21	99	1.98	significant
Negative (X <sub>2</sub> )							

In Table 1, the calculated t-test value of 4.21 is greater than the critical value of 1.98 at 0.05 level of significance. Therefore, the null hypothesis stating no significant influence of agricultural Child Labour and Students academic performance in biology in Oruk Anam L.G.A. is rejected. Hence, there is significant influence of agricultural Child Labour and Students academic performance in biology in Oruk Anam L.G.A.

**Hypothesis 2.** There is no significant influence of domestic Child Labour on Students academic performance in biology in Oruk Anam L.G.A.

Independent t-test statistical tool was used in testing Hypothesis 1 and result presented in Table 2.

Table 2: Independent t-test showing influence of domestic Child Labour on Students academic performance in biology in Oruk Anam L.G.A.

Response (Variables)	N	$\sum d$	$\sum d^2$	t-cal	df	t-crit	Decision
Positive (X <sub>1</sub> )	100	1021	1042441	3.84	99	1.98	significant
Negative (X <sub>2</sub> )							

In Table 2, the calculated t-test value of 3.84 is greater than the critical value of 1.98 at 0.05 level of significance. Therefore, the null hypothesis stating no significant influence of domestic Child Labour on Students academic performance in biology in Oruk Anam L.G.A. is rejected. Hence, there is significant influence of domestic Child Labour on Students academic performance in biology in Oruk Anam L.G.A.

**Hypothesis 3.** There is no significant influence of street hawking Child Labour on Students academic performance in biology in Oruk Anam L.G.A.

Independent t-test statistical tool was used in testing Hypothesis 1 and result presented in Table 3

Table 3: Independent t-test showing influence of hawking Child Labour on Students academic performance in biology in Oruk Anam L.G.A.

Response (Variables)	N	$\sum d$	$\sum d^2$	t-cal	df	t-crit	Decision
Positive ( $X_1$ )	100	510	260100	3.45	98	1.98	significant
Negative ( $X_2$ )							

In Table 3, the calculated t-test value of 3.45 is greater than the critical value of 1.98 at 0.05 level of significance. Therefore, the null hypothesis stating no significant influence of hawking Child Labour on Students academic performance in biology in Oruk Anam L.G.A. is rejected. Hence, there is significant influence of hawking Child Labour on Students academic performance in biology in Oruk Anam L.G.A.

### Findings

Findings of this study from Tables 1,2,3 are summarized as follows:

- (i) There is significant influence of agricultural Child Labour on Students academic performance in biology in Oruk Anam L.G.A.
- (ii) There is significant influence of domestic Child Labour on Students academic performance in biology in Oruk Anam L.G.A.
- (iii) There is significant influence of street hawking Child Labour on Students academic performance in biology in Oruk Anam L.G.A.

## DISCUSSION

Influence of agricultural Child Labour and Students academic performance in biology in Oruk Anam L.G.A.

Results in Table 1 shows that there is a significant influence of agricultural child labour on students academic performance in Biology. The effect of agricultural child labour could affect a child's time of going to school or at times, the child becomes so weak and tired that he can stay away from school as such collectively affect their academic performance .

This result is in line with finding made by Ofuoku, Idoge and Ovwigho (2014) who conducted research to determine the level of child Labour involvement in arable crop farming and the performance of students in public secondary schools in Imo State.

Influence of domestic Child Labour on male Students academic performance in biology in Oruk Anam L.G.A.

Results in Table 2 shows that there is a significant influence of domestic child labour on student academic performance in Biology. When a child is exposed to so much domestic work , such engagement may cause the child no to be present in school and at times may retard the child chance of going to school due to fatigue . This result is inline with finding made by Nwamaka (2014) who examined child domestic worker in rural and urban areas of Nigeria and its implications for national development.

Influence of street hawking Child Labour and Students academic performance in biology in Oruk Anam L.G.A.

Results in Table 3 shows that there is a significant influence of hawking on students academic performance in Biology. Street hawking by students play an a impact on students motive to take studies serious. This means that a child after street hawking may not be able to do homework given by them teachers. This result is inline with finding made by Sambe (2021) who identified negative impacts of hawking child labour practices in urban and rural areas and students academic performances in Cross River state.

## **SUMMARY**

The study investigated child labour as determinant of students academic performance in Biology in Oruk Anam L.G.A, Akwa Ibom State. Three research hypotheses were formulated to guide the study. The concept of child labor: agricultural, Hawking and domestic forms of child labour were reviewed. Related empirical studies were also reviewed. A survey research design was adopted for the study. A sample of One Hundred (100) SSII Biology students were drawn from a population One Thousand Six Hundred and Fifty (1650) Biology in secondary schools in Oruk Anam L.G.A, Akwa Ibom State. Questionnaire was the main instrument for data collection. Independent t-test analytical tool was used to analyse research hypotheses at 0.05 level of significance. Finding revealed that agriculture, street hawking and domestics child labour play a negative role on students' academic performance in Biology.

## **RECOMMENDATIONS**

Based on the findings, the researcher wishes to recommend that; Parents and other persons should prevent children from been labored as such do influence students academic performance in Biology.

## **CONCLUSION**

Based on the findings, it was concluded that agricultural, hawking and domestic child Labour do influence biology students academic performance.

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## **Computer Based Simulation Strategy and Acquisition of Business Education Skills among College Of Education Students: Implications for National Development**

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### **Abstract**

The effect of Computer based simulation on development of Business Education skills was investigated. The quasi experimental design was used to compare the effect of utilizing computer simulation only, computer simulation with hands-on activities and hands-on activities alone in teaching manipulative and keyboarding skills in Business Education in College of Education Afaha Nsit. Two research questions and two hypotheses were stated to guide the study. The population was 84 NCE1 and NCE 2 students of Business Education. The intact classes formed the sample. The students were grouped into two experimental groups and one control group. The treatments of computer simulation only and computer simulation before hands-on activity were done on the experimental groups A and B. the control group was taught using the traditional Hands-on activity. An on-the-spot assessment was done using Students' Manipulative and Keyboarding Skills Rating Scale (SMKRS). The scale which had 10 items for each skill was rated out of four. Data obtained were analyzed with mean, standard deviation and Analysis of Variance statistics. Findings showed that students exposed to computer simulation before hands-on activity performed significantly different from those that were exposed to computer simulation alone. It was concluded that Computer Simulation in learning skills cannot be a stand-alone exercise but must be combined with activity based Hands-on exercise for better skills development. It was recommended that lecturers and students of Business Education should employ computer simulation and other ICT media in skill development for generation of self-employment after graduation.

**Keywords:** Computer based simulation, Business education, Skills, Employment, National Development

### **INTRODUCTION**

Acquisition of Business Education skills is of utmost importance to generation of employment for NCE graduates of Colleges of Education. With unemployment indices in Nigeria being on the increase and in double digits percentage of the population, the continued production of graduates of the NCE programmes from Colleges of Education in Nigeria, without requisite skills for employment generation, would further complicate the rather complicated situation. Unemployment, according to CFI Team (2023), is a term referring to having individuals who are employable and actively seeking a job but are unable to find a job. Unemployment according to Okafor cited in Umeh (2021), can also be seen as a phenomenon that arises when members of a country's labour force are unable to obtain their goals of participation in gainful occupation due to a situation in which supply of labour significantly exceeds demand for it. Fajana (2000) cited in Anah, Nwosu and Ezeji (2016) defines unemployment as the inability of people who are willing and capable of working to secure suitable paid employment. Such situation impacts the national economy negatively leading to vices and multiple social problems. Nowadays,

Nigeria is battling insecurity from all fronts which Adesina (2013) averred that high rate of unemployment in the country is directly responsible for the increasing security challenges and proposed that for sustainable development to be achieved, the government must urgently address the unemployment crisis facing the country so as to be able to adequately tackle its security challenges. The menace of unemployment is geometrically increasing and the effects falls heavily on the economic development of this nation (Nwankwo & Ejiofor 2014).

To address the societal issues caused by unemployment requires cutting the root cause of it. The only way of solving unemployment problems as postulated by Opara (2018) is the equipping individuals with quality education needed for self-employment. The lack of requisite skills or the possession of obsolete ones have been identified as the major reasons why most Nigerian graduates in the labour market are unemployed or unemployable (Enelama 2016; Nwokike & Ezenwafor, 2021; Ariyo, 2023). Since government cannot provide employment opportunities to all, it is imperative that individuals should develop skills needed for self-employment and entrepreneurship.

Skills, as stated by Adedeji and Ibironke (2022) refer to abilities, capabilities, aptitude, and expertise acquired through deliberate, systematic and sustained training necessary to adaptively perform job functions effectively. Uchendu (2015) defined skill as the learned ability to carry out a task with pre-determined results often within a given amount of time, energy or both. A skilled worker therefore has ability to deliver accurate service based on what he or she must have been exposed to during the training period. Skill as an ability to do perform a task well requires experience and is usually gained through training or experience. The nine attributes of any act considered as skill identified by Masumeh (2014) based on psychological perspective include that

- (i) skill is learned,
- (ii) skills are performed and transferred in the presence of specific stimuli,
- (iii) skill involves problem solving relevant to the context,
- (iv) skill involves relative judgements with individual differences in skill performance evidence, standards of excellence are important,
- (v) skill involves comparable replication, and
- (vi) considerable periods of time are required to reach high levels of skill.

From the above, skill acquisition requires exposure to the necessary stimuli over a period of time for the expertise to be inculcated. Skill acquisition is the process of training a learner on the manual dexterity involved in performing given functions or tasks until they can expertly perform them (Nwokike and Ezenwafor, 2021). Adedeji and Ibironke (2022) noted that skill acquisition involves a gradual change from less effective behaviour to extremely proficient one. This is why Udo and Babangide (2007) cited in Umeh (2021) stated that skill acquisition is the capacity to be trained on a particular business occupation and become a proficient professional in it.

Such Business Occupation is done under Business Education at the Nigeria Certificate in Education level. Various authors have given diverse yet similar definitions and views about Business Education. Business Education, according to Olowu (2019), is education for and about business, which primary purpose is to prepare individuals for gainful employment in business occupations. According to Iwu (2016) business education is the study that equips the individual with the occupational skills and knowledge that will enable him/her fit into, and find job satisfaction. Business education as a component of vocational education prepares individuals for career in business and also to be intelligent consumers of economic goods and services (Umeh, 2021). It is a programme that prepares its students with skills and competencies needed for self-reliance and employment. Akinpelu (2017) viewed business education as an aspect of total education programme that provides functional and saleable skills, knowledge, understanding; attitudes or value needed to perform in the business world as producer or consumer of goods and services that all business offers. Business education which is an essential aspect of education is concerned with the impartation of business orientation and knowledge for personal and national development (Iweyah, 2023).

In the words of Ajua (2020), business education plays a significant role in the economic development of a country by providing knowledge and skills to the learners which enables them to impart knowledge to others, handle sophisticated office technologies and information system aimed at producing competent, dynamic and skillful business teachers, office administrators, business men and women that can comfortably compete in the workplace. Udo and Babangida (2017) asserted that business education is that aspect of vocational education which provides skills, knowledge, competencies and attitudes necessary for effective employment in any specific business occupations. Aliyu in Umezulike (2015) defined business education as education for the development of skills/competencies, attitudes and attributes which are necessary for the efficiency of the economic system. Ajoma (2021) viewed business education as that education which provides its graduates with training in business skills and economic competencies necessary for them to advance a business career or establish a business enterprise. The Business skills acquired by studying Business Education, according to Mshelia (2019), Omidiji and Ogwu (2019) include communication skill, reading skill, manipulative skill, shorthand skill, keyboarding skill, computer skill, book keeping skill etc. Skills like keyboarding skills and computer skills can be employed to solve problems of others for a fee which turns out to be generating income. Thus Business Education skills can provide a foundation for self-employment and even generation of employment for others.

For business education to achieve its goals there must be appropriate strategies for promoting skill acquisition for the production of quality graduates for sustainable national development (Olufunwa, Waziri and Olonmagoh, 2013, cited in Adedeji and Ibronke 2022). Several teaching methods have been employed in teaching Business Education. While the products graduate, they still flood the market without employable and employment generation skills. Saliu and Okoro (2016) identified the mismatch between the expectation of industry and the content of what is taught in our schools as having affected the skills acquisition process in secondary schools. Shortage of relevant learning equipment has been identified by Emeasoba (2018) as greatly affecting the quality of learning in business studies in secondary schools generally. Omidiji and Ogwu (2019) observed that effective vocational skill acquisition in business education programme is faced with some challenges which are teacher-related, Government-related and students-related. The teacher-related challenges have to do with the method of service delivery by the teachers as regards the training of students to develop pre-requisite vocational skills. Utebor and Enwemasor (2021) highlighted the issue of business teachers' negative attitude towards adopting appropriate instructional strategies for teaching students. To collaborate this, Onajite and Aina (2017) noted that despite undergoing professional development programmes, some teachers tend to fall back to their traditional ways of teaching their students despite learning new innovative teaching methods. As a result of these, Utebor and Enwemasor (2021) observe that business studies students fail to acquire the appropriate business skills and knowledge needed in the world of business. Appropriate teaching strategies are required to ensure that students acquire the desired skills during and by the end of a lesson.

According to Mariani (2002) strategies play a cognitive role in learning, because they facilitate and optimize processes, especially in new tasks, where one cannot rely on routine, automatic behaviour; in tasks which require and/or allow conscious thinking and accuracy. Shinn, (1997) cited in Irukaku and Noeleen (2018) defined teaching strategy as a complex educational behaviour of a teacher in using methods, techniques, tools, discipline and communications in order to achieve goals. Strategies, to Nwazor & Onokpaunu (2016), are laid down framework of plans and actions of an organization geared towards achieving its set objectives in the short and long run. In terms of teaching, Nwazor & Onokpaunu (2016) maintained that teaching strategies entail how institutions of learning equip students with the desirable competitive advantage beyond mere classroom performances to deal with the problems of the society. Okeke-Ezenyanwu (2021) is of the opinion that the quality of the teachers and the utilization of the right strategies by the teachers play an important role in improving employability skill acquisition of the students. Yinusa (2014) opined that the most appropriate teaching methods to adopt in teaching skill acquisition should be that which can motivate the students and sustain their interest in the course of instruction. Such strategies and methods should be that can bring out the entrepreneurial, manufacturing process and exploration of materials into the classroom situation. Some of the methods and

strategies identified by Godstime (2016) include regular embarking on excursion, use of apprenticeship system, students' industrial work experience scheme (SIWES) programme, and skills acquisition programme, use of models and computer simulations and Cooperative training programmes. These are believed to be relevant alternatives to the traditional methods teaching of practical skills vocational education institutions in Nigeria. Skills can be learnt through hands-on activities and by imitation. The use of Computers has made instruction much less energy consuming and highly effective.

The use of computer and Information Communication Technology has given rise to a new order called the e-world otherwise called electronic world. According to Enang and Okute (2019), the evolving nature of the e-world requires individuals to adjust to new skills that are demanded globally. The acquisition of relevant skills for the e-world means leveraging on new technologies to improve the access and the quality of education and training of business education. The employment of computers has been able to bring real live situations into the classroom through Simulation. Krummel cited in Vergis and Steigerwald (2018), defined simulation as "a device or exercise that enables the participant to reproduce or represent, under test conditions, phenomena that are likely to occur in actual performance. A simulation-based teaching environment, according to Nahvi cited in Taher and Khan (2015) enables students to acquire experience and consider their previous results. Kabigting (2021), states that Computer simulations are computer-generated dynamic models that present theoretical or simplified models of real-world components, phenomena, or processes. They can include animations, visualizations, text, images, video clips and interactive laboratory experiences (Bell & Smetana, 2011). Computer simulations offer a great variety of opportunities for modeling concepts and processes. Simulations provide a bridge between students' prior knowledge and the learning of new physical concepts, helping students develop understanding through an active reformulation of their misconceptions (Jimoyiannis & Komis, 2000). In particular, the gaming approach utilizing interactive media and/or simulation has been shown to be effective in improving teaching and learning of various subjects (Hsieh & Hsieh cited in Taher and Khan 2015). By reducing practical learning time for students, and for schools and programs, simulation reduces costs for practice oriented educational methodology.

In spite of the advantages of simulations, Taher and Khan (2015) noted that hands-on labs remain tremendously important in the technology curriculum, which is based on Dewey's experiential learning theory. The basic premise of this theory is as proposed by Dewey cited in Taher and Khan (2015) that students learn as a result of doing or experiencing things in the world, and learning occurs when mental activity is suffused with physical activity. Archarya (2019) highlighted that those hands-on activities had a high degree of positive effect on students' achievement. Practical work as hands-on activities allows students to absorb more information by doing rather than listening or seeing. According to Sreelekha (2018), hearing alone may give room for forgetfulness, while seeing promotes retention, and doing brings about an understanding of concepts. Modern science teaching emphasizes a hands-on approach as well as students' active participation. Through hands-on activities or labs, students explore, manipulate, and make connections between concepts with concrete manipulatives. Laboratories provide students with the opportunity to develop problem-solving and science process skills (Adebusuyi 2019). In terms of Business Education, exposure to practical aspects in the Computer Laboratory enhances effectiveness in information management and typing skills.

In a study on Effectiveness of Simulation versus Hands-on Labs: A Case Study for Teaching an Electronics Course, Taher and Kahn (2015) found out that simulation by itself is not very effective in promoting student learning. Simulation becomes effective only when it is followed by hands-on activity. Simulation for technical skill acquisition in open vascular surgery was understudied by Falconer et al. (2020), the study found that simulation is effective in improving confidence and/or competence in performing open technical skills when assessed by previously validated metrics.

Adebusuyi et al. (2019) in a study the effectiveness of computer-based simulations and traditional hands-on activities on secondary school students' performance and science process skills in practical Chemistry, mean gain of students' performance and science process skills (SPS) using computer-based simulation and traditional hands-on instructional strategies were compared. The findings of the study showed that traditional hands-on activities

had a higher mean gain on students' performance while computer-based simulation improved students' science process skills more than traditional hands on.

This study sought to compare the level of skills acquisition in typing and computer operation between those exposed to simulation and those exposed to hands-on traditional practice.

### **Purpose of the Study**

This study was designed to investigate the effect of Computer Simulation and Hands-On laboratory activity on Business Education Skills and specifically, Keyboarding and manipulative skills development of NCE students of Business Education in College of Education, Afaha Nsit.

### **Research Questions**

- (i) To what extent does Computer Simulation and Hands-on activity affect development of manipulative skills in Business Education?
- (ii) How does Computer Simulation and Hands-on activities affect development of Keyboarding skills in Business Education?

### **Research Hypotheses**

- (i) There is no significant difference in the development of manipulative skills by Business Education Students between the students exposed to only computer simulation, those exposed to computer simulation before hands-on activity and those exposed to only hands-on activity.
- (ii) There is no significant difference in the development of manipulative skills by Business Education Students between the students exposed to only computer simulation, those exposed to computer simulation before hands-on activity and those exposed to only hands-on activity.

## **RESEARCH METHODOLOGY**

The quasi-experimental design using a pre- and post-test design involving both control and experimental groups was employed. Two research hypotheses were stated in the null form to guide the study. 2021/2022 NCE 1 and NCE 2 Business Education students of College of Education Afaha Nsit formed the population. Three intact classes of the NCE 1 and NCE 2 students that offered BED 117 KEYBOARDING I, BED 127 KEYBOARDING II and BED 218 COMPUTER APPRECIATION were used for the study. A total of 84 students shared into three equal groups formed the sample

The class was sub divided into three groups of two experimental and one control groups. The first experimental group learnt the simulation; the second experimental group was exposed to simulation before the laboratory hands-on activity. The control group was taught using only the traditional laboratory hand-on activity. The treatment took six weeks. The Students' Manipulative and Keyboarding skills were measured using an on-the-spot assessment. The instrument used for the study was a Students' Manipulative and Keyboarding Skills Rating Scale. The instrument was divided into three sections. Section A contained the bio-data of the student to be assessed. Sections B and C carried ten (10) items each, rated out of four, intended to rate the manipulative skills and keyboarding skills respectively. The instrument was validated by two experts from Vocational Education Department of University of Uyo.

The instrument was pilot-tested on some University of Uyo students who offer keyboarding in Business Education to test the reliability. The Cronbach Alpha reliability technique was used. Data obtained was subjected to correlation and Cronbach Alpha reliability coefficient of 0.68 was attained and accepted to be within range of high internal consistency. The respondents were therefore brought in groups into the laboratory and exposed to the real life situation of keyboarding test to assess their skills development. Each respondent was rated on-the-spot by the researcher.

Data obtained were analyzed using mean, standard deviation and Analysis of Variance ANOVA.

## RESULT

**Research Question 1.** To what extent does Computer Simulation and Hands-on activity affect development of manipulative skills in Business Education?

The mean and standard deviation of data obtained for the study is presented on table 1 below.

Table 1: Mean and standard deviation of manipulative skills of the students

Groups	Mean	N	Std. Deviation	Range	Minimum	Maximum
Comp. Simulation	21.2143	28	3.75507	15.00	15.00	30.00
Simulation & Hands on	25.3929	28	4.68520	17.00	18.00	35.00
Hands on	22.7143	28	3.55754	15.00	17.00	32.00
Total	23.1071	84	4.34372	20.00	15.00	35.00

Research hypothesis one: There is no significant difference in the development of manipulative skills by Business Education Students between the students exposed to only computer simulation, those exposed to computer simulation before hands-on activity and those exposed to only hands-on activity.

The Analysis of Variance was used to test the hypothesis. Result is as presented on table 2.

Table 2: Analysis of variance showing manipulative skills of different groups

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	250.929	2	125.464	7.728	.001
Within Groups	1315.107	81	16.236		
Total	1566.036	83			

The calculated F ratio of 7.728 is greater than the table value of 3.11 at 2 and 81 degrees of freedom and 0.05 level of significance. The null hypothesis one is thus rejected for the alternative.

**Research question 2:** How does Computer Simulation and Hands-on activities affect development of Keyboarding skills in Business Education?

Mean and standard deviation of the data obtained are presented on table 3 below.

Table 3: Descriptive statistics of keyboarding skills development

Groups	Mean	N	Std. Deviation	Range	Minimum	Maximum
Comp. Simulation	21.0000	28	3.34443	13.00	15.00	28.00
Simulation & Hands on	24.9286	28	3.64060	13.00	18.00	31.00
Hands on	22.1429	28	3.08778	11.00	17.00	28.00
Total	22.6905	84	3.71573	16.00	15.00	31.00

From the above, students who were taught using simulation before hands-on activity had the highest mean score of 24.93 with a standard deviation of 3.64 while those exposed to simulation only had the lowest mean score of 21.00 and standard deviation of 3.34.

**Research Hypothesis two:** There is no significant difference in the development of manipulative skills by Business Education Students between the students exposed to only computer simulation, those exposed to computer simulation before hands-on activity and those exposed to only hands-on activity.

The data for this hypothesis was analyzed using ANOVA and the result is presented on table 4.

Table 4: Analysis of Variance of keyboarding skills

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	228.667	2	114.333	10.096	.000

Within Groups	917.286	81	11.325
Total	1145.952	83	

The calculated F ratio of 10.096 is greater than the table value of 3.11 at 2 and 81 degrees of freedom and significance level of 0.05. This signifies a significant difference in keyboarding skills development between students exposed to computer simulation only, computer simulation and hands-on activity and those exposed to only traditional hands-on activities only.

## DISCUSSION

Skills development in Business Education has been found to be highly affected by exposure of students to computer simulation before hands-on activity. The mean rating score of the students in development of manipulative skills was highest when they were exposed to both simulation and hands-on activity. The findings confirm that of Taher and Kahn (2015) who found out that simulation by itself is not very effective in promoting student learning but simulation becomes effective only when it is followed by hands-on activity. Equally the exposure to computer simulation before practical hands-on activity, was found to have a significantly different effect in the development of Keyboarding skill in Business Education. This finding corroborates that of Falconer et al. (2020) who found out that Simulation can be an effective adjunct to traditional operative experience for technical skill acquisition in open vascular surgery.

## RECOMMENDATIONS

Based on the findings of this study, it is recommended that

- (i) Business Education lecturers expose students to computer simulation before their hands-on activity to boost their skills development.
- (ii) Lecturers should be ICT compliant to be able to employ such devices in teaching learning process.
- (iii) Students should be encouraged to utilize ICT facilities in learning so as to improve performance.
- (iv) Government should provide ICT facilities to institutions to make it available for teaching and learning.

## CONCLUSION

Computer Simulation in conjunction with Hands-on activity has been very useful in the development of skills in Business Education. This is based on Dewey's experiential learning theory. What is learnt through lecture may be easily forgotten, while what is seen promotes retention but activities taken part in ensure proper learning of both concepts and skills. Skill development occurs when mental activity is suffused with physical activity. The use of Computer Simulation in learning skills cannot be a stand-alone exercise but must be combined with activity based Hands-on exercise.

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## Achieving Quality Teaching in the Era of Insecurity: Implications for Chemistry Education

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### Abstract

This study investigated ‘Achieving Quality Teaching in the Era of Insecurity with implication on Chemistry Education among Secondary Schools in Uyo Local Government Area of Akwa Ibom State, Nigeria’. The survey design was adopted for the study. The study used proportional sampling technique to select the teachers. A total of 60 secondary school Chemistry teachers were selected for the study. Two research questions guided the study, two hypotheses were formulated and tested at 0.05 level of significance. The instrument used for the study was “Achieving Quality Chemistry Teaching Questionnaire (AQCTQ). Data was analyzed using mean, standard deviation and t-test. The result of the study indicated that there is significant influence of utilization of modern technological devices and qualified teachers with knowledge of modern technological devices for teaching on the quality teaching of Chemistry in secondary schools. This study therefore recommends that Government both at the federal and state level, school owners, principals and school administrators should make virtual teaching compulsory in the educational sector among others.

**Keywords:** Quality teaching, Insecurity, Chemistry teachers, Uyo

### INTRODUCTION

Chemistry Education has been identified to be one of the major bedrock for the transformation of a nation’s economy. It is needed for the production of the needed technologists, technicians, engineers, medical practitioners who are required to turn the nation’s economy around and usher in the desired technological advancement which is very much required for sustainable development. Chemistry is a branch of pure and basic science which deals with the study of nature, composition, properties (physical and chemical) and uses of matter, and the changes matter would undergo under different conditions (Adeyemo, 2010). Chemistry in its entirety has a central role to play in promoting sustainable development through basic research skills, chemical innovations and technology. No nation can develop without sound education. Education has over the years been given much attention and priority in African countries, especially in Nigeria. The government has discovered that the quality of education offered in Nigerian educational system determines the quality of development experienced. So, even in the face of insecurity, quality education should still be given to students using whatever means necessary. Insecurity and terrorism have been a major challenge to the Nigerian government in recent times. The activities of Boko Haram have led to loss of lives and properties in the country especially in the Northern part of Nigeria. Some of these activities include bombings, suicidal bomb attacks, sporadic shooting of unarmed and innocent citizens, burning of police stations, churches, kidnapping of school girls and women among others. Kidnapping, rape, armed robbery, and political crises, murder, destruction of oil facilities by Niger Delta militants alongside the attacks carried out by Fulani Herdsmen on some communities in the North and South have been a major insecurity challenge facing the country. According to Precious and Adamu (2010), Nigeria has been included among one of

the terrorist countries of the world. Many lives and properties have been lost and a lot of citizens rendered homeless. Families have lost their loved ones; women have lost their children and husbands. This has implications for education, especially Chemistry education. Ofcourse, schools cannot function in the midst of insecurity. Schools at various levels have been closed down for months in the country due to insecurity. Students cannot meet in class to obtain lectures. Government had made frantic effort to curb the menace of insecurity in the country but the rate of insecurity is still high.

Education prepares the citizens for variety of functions within the economic, social, political, religious and other structures of the societies. It makes individuals responsive, responsible and fit into the society. Teachers continually ought to be updated with the changes in educational delivery globally.

According to Precious and Adamu (2010), Chemistry education is considered as a key agent of development, either as a way of developing human capacity, increasing the skilled workforce for modernization, or as a matter of personal freedom, developing capability and empowerment. Chemistry education is the study of the teaching and learning of Chemistry in all schools, colleges and universities. Chemistry education also includes the understanding of how students learn Chemistry, how best to teach Chemistry, and how to improve learning outcomes by changing teaching methods and appropriate training of Chemistry instructors (Taber, 2012).

## **RESEARCH METHODOLOGY**

The method adopted in the investigation of the problem of the study was organized under the following sub-headings: research design, area of the study, population of the study, sample and sampling techniques, instrumentation, validation of the instruments, reliability of the instrument, research procedure and method of data analysis.

### **Research Design**

The survey research design was adopted for the study. This is because it examined ways of achieving quality teaching of Chemistry education amidst insecurity in secondary schools in Uyo LGA, Akwa Ibom. The study was centered on utilization of modern technological devices like computers, phones, projectors and online platforms like zoom in teaching and knowledge transfer by teachers as they influence quality teaching of Chemistry in secondary schools in Uyo without the researcher manipulating the independent variable.

### **Area of Study**

Uyo Local Government is the capital of Akwa Ibom State, Southern part of Nigeria. It became the capital on September 23, 1987 when Akwa Ibom State was created from the former Cross River State. Uyo lies between Oron and Ikot Ekpene. Ibibio is the primary indigenous language spoken. It has a vast number of educational facilities like the world class E-library among others. There are many secondary schools located in Uyo LGA, both public and private.

### **Population of the Study**

The population for this study consisted of 60 Chemistry teachers randomly selected from 20 secondary schools in the study area.

### **Sample and Sampling Technique:**

A proportional sampling technique was used to select 60 Chemistry teachers from 20 secondary schools in Uyo LGA which formed the sample frame for the study.

### **Instrument of the Study:**

The instrument for the study was a researcher-made questionnaire tagged, “Achieving Quality Chemistry Teaching Questionnaire (AQCTQ) which had 12 items.

### **Validity and Reliability of the Instrument:**

The instrument was subjected to face validity by two experts in Science Education, University of Uyo, Uyo. This ensured that the contents were relevant, clear and unambiguous. The corrections made by them were incorporated into the final draft. The instrument, which had 12 items, was adopted after due validation and tested for reliability using the Cronbach alpha formula, with a reliability estimate of 0.69.

**Data Analysis:**

The secondary schools were visited and the relevant data were collected using the instrument. The data was analyzed using independent t-test compared at 0.05 level of significance.

**Data Collection:**

A letter was gotten from Department of Science Education, University of Uyo, Uyo by the researcher to be given to the principal of secondary schools used for the research purpose. Thereafter the instrument issued out was collected for analysis.

**Method of Data Analysis:**

Mean and standard deviation were used to answer the research questions. All hypotheses were tested at 0.05 level of significance and analyzed using independent t-test.

**RESULTS**

Data analysis was carried out on the two hypotheses, the results were interpreted and discussion of findings.

**Research Question 1**

How does the utilization of modern technological devices like computers, phones, projectors and online platforms in teaching influences quality teaching of Chemistry in secondary schools in Uyo Federal Constituency?

Mean and Standard Deviation were used in answering the research question and summary data shown in Table 1 below. The upper limit of these numbers was regarded as point of crossing from one level of agreement to the other. For a four point scale, 2.4 was used to cross from agree to disagree.

Table 1: Mean and Standard Deviation of teachers who agreed to the influence of utilization and those who disagreed (N = 60)

Group	N	$\bar{X}$	SD
Teachers who agreed	40	24.45	4.23
Teachers who disagreed	20	12.11	2.83

Table 1 reveals the mean of teachers who agreed with 24.45 greater than teachers who disagreed with 12.11. Therefore, the utilization of modern technological devices influences quality teaching of Chemistry in secondary schools.

**Research Question 2**

How do qualified teachers with knowledge of modern technological teaching devices like computers, phones, projectors and online platforms influence quality teaching of Chemistry in secondary schools in Uyo Federal Constituency?

Mean and Standard Deviation were used in answering the research question and summary data shown in Table 2 below:

Table 2: Mean and Standard Deviation of teachers who agreed and those who disagreed (N=60)

Group	N	$\bar{X}$	SD
Teachers who agreed on influence	40	23.77	2.48
Teachers who disagreed	20	12.41	2.16

From Table 2, it is revealed that the mean of teachers who agreed to the influence was 23.77 greater than those who disagreed with mean of 12.41. Therefore, qualified teachers with knowledge of modern technological teaching devices influence quality teaching of Chemistry in secondary schools.

### Test of Hypothesis 1

There is no significant influence of the utilization of modern technological devices like computers, phones, projectors and online platforms on the quality of teaching of Chemistry in secondary schools in Uyo Federal Constituency.

The independent t-test was used in testing the hypothesis and summary data are shown in Table 3.

Table 3: Independent t-test of influence of utilization of modern technological devices

(N – 60)

Group	N	$\bar{X}$	SD	df	t-cal	t-crit
Teachers who agreed to influence	40	24.45	4.23	198	4.37	1.96
Teachers who disagreed	20	12.11	2.83			

The null hypothesis is rejected since the computed t of 4.37 is greater than the critical t of 1.96 at degrees of freedom of 198 and 0.05 level of significance. Therefore, there is a significant influence of utilization of modern technological devices on quality teaching of Chemistry in secondary schools.

### Test of Hypothesis 2

There is no significant influence of qualified teachers with knowledge of modern technological devices like computers, phones, projectors and online platforms for teaching on quality teaching of Chemistry in secondary schools in Uyo Local Government Area.

The independent t-test was used to test the hypothesis and summary data are shown in table 4.

Table 4: Independent t-test of influence of qualified teachers on quality teaching of Chemistry (N – 60)

Group	N	$\bar{X}$	SD	Df	t-cal	t-crit
Teachers who agreed to influence	40	23.77	2.48	198	3.18	1.96
Teachers who disagreed	20	12.41	2.16			

\*Significant  $P < 0.05$ ;  $df = 198$ .

The null hypothesis is rejected because the obtained t value of 3.18 is greater than the critical t value of 1.96 at degree of freedom of 198 and 0.05 level of significance. This therefore implies significant influence. Hence, there is a significant influence of qualified teachers with knowledge of modern technological devices on the quality of teaching of Chemistry in secondary schools.

### Major Findings

- (i) There is a significant influence of utilization of modern technological devices on quality teaching of Chemistry in secondary schools.
- (ii) There is a significant influence of qualified teachers with knowledge of modern technological devices on the quality of teaching of Chemistry in secondary schools.

### DISCUSSION

Data analyzed in hypothesis 1 revealed the mean score of group of respondents who agreed to significant influence of utilization of modern technological devices like computers, phones, projectors and online platforms in teaching on the quality of teaching of Chemistry in secondary schools was greater than the mean score of group of respondents who disagreed. Also the calculated t-value was 4.37 greater than the critical t-value of 1.96

signifying significant influence of utilization of modern technological devices like computers, phones, projectors and online platforms on the quality of teaching of Chemistry in secondary schools. This finding is supported by Ololube (2005) who observed that the advent of information and computer technology has taken the educational sector to a great height. Nowadays technological devices have taken over school libraries and textbooks. Most students rely on the internet for all their researches. According to Umar (2016), information technology makes management of information easier due to technological devices used. This has really influenced quality teaching processes positively in schools. He further opined that the advent of computers has brought total changes in the educational system and that with the help of computer aided instructions or computer based technology, desired information from the internet is downloaded by students. Furthermore, according to Mulkey (2005), a great number of schools both secondary and tertiary now exist online. Innovations in Information and computer technology have tremendous potentials in teaching processes. Insecurity in the country is one of the factors militating against quality education, but with technological devices, e-learning is achieved stress-free in the comfort of one's home. Data analyzed in hypothesis 2 revealed the mean score of group of respondents who agreed to significant influence of qualified teachers with knowledge of modern technological devices like computers, phones, projectors and online platforms for quality teaching of Chemistry in secondary schools was greater than the mean score of group of respondents who disagreed. Also the calculated t-value was 3.18 greater than the critical t-value of 1.96 signifying significant influence of qualified teachers with knowledge of modern technological devices like computers, phones, projectors and online platforms for quality teaching of Chemistry in secondary schools. This is in agreement with this study as Abu (2013) opined that it is one thing for a teacher to have a good curriculum material and an effective teaching method and that it is another thing to have the knowledge of the instructional materials to enable him communicate the content very well to his students. He further revealed that the knowledge of technology assisted tools known as technical devices are employed by teachers to facilitate teaching processes. A teacher with a good modern technological knowledge functions very well in his line of work. He will be able to use the technological devices to teach the students well. According to Mulky (2005), the knowledge of the use of technological devices like still projection materials such as filmstrips, microform slides, transparencies and projected materials, motion projected materials, audio materials, flat graphic materials, three dimensional materials and programmed materials enhances the teacher to function in all levels of education. This is in agreement with this study that there is a significant influence of qualified teachers with knowledge of modern technological devices on quality of teaching of Chemistry in secondary schools in Uyo LGA.

### **Recommendations**

- (i) Teachers should be trained on the use of technological devices at all levels of education and give room for upgrade so as to compete with the world at large.
- (ii) Virtual learning should be made a compulsory part of the educational system by decision makers in the educational sector.

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## **Psycho-Personal Variables on Social Media Engagement of Students in the College of Education, Afaha Nsit**

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### **Abstract**

The study investigated the influence of psycho-personal variables on social media engagement of students in the College of Education, Afaha Nsit. The descriptive research design was used for the study. Three research questions and three corresponding hypotheses were formulated to guide the study. The population of the study consisted of all Year Three (300L) students in the College of Education, Afaha Nsit. A sample size of 200 students was drawn from the population using simple random sampling technique. A structured questionnaire titled “Psycho-personal Variables and Social Media Engagement Questionnaire” (PVSMEQ) was used as instrument for data collection. A face-validation method was adopted to establish the validity of the instrument. The reliability of the instrument was ascertained using the test-retest method and a reliability coefficient index of 0.70 was obtained. Mean and standard deviation were used to answer the research questions while independent t-test was used to test the null hypotheses at .05 level of significance. The findings showed that: there is no significant difference in social media engagement of students based on age and gender. The result also revealed that there is significant difference in social media engagement of students based on self-concept. Based on the findings, it was recommended among others that parents should encourage their children/wards to engage only in meaningful and productive social media activities.

**Keywords:** Psycho-personal, Social media, Age, Gender, Self-concept

### **INTRODUCTION**

Social media has become popular among youths especially University students, considering the fact that social media sites allow people to stay connected with friends and family, make new friends, share pictures and exchange ideas. Accordingly, Undiyaundeye (2014) noted that social media engagement can offer adolescents deeper benefits that extend into their view of self, community and the world. Davis, Summers and Miller (2012) define social media as web-based and mobile applications that allow individuals and institutions to communicate in a digital environment in a variety of ways to create, participate in, and share user-generated new or existing content.

Social media do not only serve social purposes, they also provide huge platform for commercial and educational activities. Tayo, Adebola and Yahya (2019) averred that social media platforms such as Facebook, WhatsApp, Twitter, MySpace, Instagram, LinkedIn, and Google Plus help students and educators to access information and educational-related materials and allow students to interact with one another, their teachers and communities that share in their education and related activities (Pardo 2013).

Although studies on social media engagement are replete, most of these studies (Bryson, 2014; Bawa and Suleiman, 2017; Koranteng, Wiafe and Kauda, 2019) have focused attention on the influence of social media

engagement on learning outcomes of university students. Studies on influence of selected variables such as age, gender and self-concept on social media engagement have not been explored.

Age refers to the length of time somebody has existed on earth. Literature on age and social media engagement are limited (Oko, 2016). While, findings from available literature are inconsistent, most of them (Zaphiris and Sarwar, 2006) indicated that social media engagement is most prevalence among younger people. Specifically, Wrzus Hänel, Wagner and Neyer, 2013) reported social media engagement decreased with increasing adult age. Koironen, Keipi, Koivula and Räsänen (2020) found that the significance of age is higher in activities having to do with work and politics as well as those activities linked to entertainment and leisure. Those in the prime of their careers are more likely than others to use social media for work and career purposes. Ekanem (2020) reported that there was a slight difference in students' Instagram engagement base on their age.

Gender comprises a range of differences between men and women, extending from the biological to the social. It refers to socially constructed and socially learned behaviours and expectations associated with females and males. Pfeil, Arjan and Zaphiris (2008) argues that gender differences can also be found in social media usage. Similar work (Verhaagen, 2005) has found that females, more than males, tend to participate in online chat rooms. Herring (2004) also found that females, to a greater extent than males, tend to use ICT in order to socially engage with others.

According to Kumari (2013) self-concept is the cognitive aspect of self and generally refers to the totality of a complex organized and dynamic system of learned beliefs, attitudes and opinions that each person holds to be true about his or her personal existence. As Tabone (2011) reported: "Self-concept is a type of self-appraisal that is created through interaction with one's environment and the influence of significant others. Self-concept is one's self-perception surmise from attitudes, feelings, and knowledge about one's skills, abilities, appearance, and social acceptance" (Tabone, 2011).

Bergagna and Tartaglia (2018) reported that scholars have found contradictory results regarding the relationship between self-concept and Facebook use. Tazghini and Siedlecki (2013) found that people with lower self-concept spend more time on Facebook. Thus, people who experience difficulties in social relations, such as individuals with low self-esteem, socially anxious individuals, and introverts, are more motivated to use social networks in order to compensate for their unsatisfactory face-to-face interactions (Bergagna and Tartaglia, 2018).

Sari, Siswadi and Sriati (2018) conducted a study on the use of social media with self-concept and social adjustment of adolescents at SMPN, Singingi Hilir Riau. This research aimed to know relationship between social media user and self-concept at SMPN Singingi Hilir Riau. This research was a descriptive correlation research with cross sectional design. There were 252 respondents as samples. Social Networking Time Use Scale (SONTUS), Sriati Academic Self-concept (SASC), and Social Adjustment were instrument used for data collection. The result of this research showed that majority of adolescent who use social media at SMPN 2 is low; most of them have positive self-concept and a quite good in social adjustment. The result of the correlation analysis showed that variables of social media usage have weak relationship between self-concept variable ( $r_s = 0,224$ ) and social adjustment variable ( $r_s = 0,254$ ). Based on result of canonic analysis, self-concept is a dominant factor in case in social media relation.

Booker, Kelly and Sacker (2019) conducted a study on Gender differences in the associations between age trends of social media interaction and well-being among 10-15 year olds in the UK. The aim of this study was to examine whether the changes in social media interaction and two well-being measures are related across ages using parallel growth models. Data come from five waves of the youth questionnaire, 10-15 years, of the Understanding Society, the UK Household Longitudinal Study (pooled  $n = 9859$ ). Social media interaction was assessed through daily frequency of chatting on social websites. Well-being was measured by happiness with six domains of life and the Strengths and Difficulties Questionnaire. Findings suggest gender differences in the relationship between interacting on social media and wellbeing. There were significant correlations between interacting on social media and well-being intercepts and between social media interaction and well-being slopes among females. Additionally higher social media interaction at age 10 was associated with declines in well-being

thereafter for females, but not for males. Results were similar for both measures of well-being. High levels of social media interaction in early adolescence have implications for well-being in later adolescence, particularly for females. The lack of an association among males suggests other factors might be associated with their reduction in well-being with age. These findings contribute to the debate on causality and may inform future policy and interventions.

Sponcil and Gitimu (2015) researched on the use of social media by college students: Relationship to communication and self-concept. The purpose of this study was to examine social media use among college students and how it affects communication with others, and college students' self-concept. In this study, students completed a questionnaire which assessed personal use of social media, communication skills with friends and family, and effects on self-concept. Results indicated that all of the sampled college students were using at least one form of social networking website. There was a .586 Pearson correlation between usage of social media and communication with family and friends. There was a .658 Pearson correlation between usage social media and self-concept. These findings provide implications for future research on why these social networking sites have gained popularity.

Jan, Soomro and Ahmad (2017) also conducted a study on impact of social media on self-esteem. The upward comparisons made using social networking sites have caused people to have lower self-esteem. In order to test the hypothesis 150 students from institute of business management were surveyed through questionnaires and interviews. This research was limited to the students of IoBM and Facebook, being the most popular social networking site was used as the representative of social media. Correlation and regression model was applied to the data with the help of SPSS statistics to test the relationship between social media and self-esteem. The major findings suggest that approximately 88% people engage in making social comparisons on Facebook and out of the 88%, 98% of the comparisons are upward social comparisons. Further this research proves there that there is a strong relationship between social media and self esteem. Increase in social media usage causes the self-esteem of individuals to decrease. One hour spent on Facebook daily results in a 5.574 decrease in the self-esteem score of an individual.

Ekanem (2020) investigated the influence of personal variables on social media engagement of students in the Faculty of Education, University of Uyo. The descriptive research design was used for the study. Three research questions and three corresponding hypotheses were formulated to guide the study. The population of the study consisted of 6,719 Year Three (300L) students in the Faculty of Education, University of Uyo. The sample for the study consisted of 200 Year Three (300L) students in the Faculty of Education, University of Uyo. A random sampling technique was used in selecting the sample for the study. A structured questionnaire titled "Personal Variables and Social Media Engagement Questionnaire" (PVSMEQ) was used as instrument for data collection. A face validation method was adopted to establish the validity of the instrument. The reliability of the instrument was ascertained using the test-retest method and a reliability coefficient index of 0.70 was obtained. Mean and standard deviation were used to answer the research questions while independent t-test was used to test the null hypotheses at .05 level of significance. The findings showed that: There is no significant difference in social media engagement of students based on age; there is significant difference in social media engagement of students based on gender; there is no significant difference in social media engagement of students based on self-concept.

Osharive (2015) examined the influence of social media and academic performance of students in University of Lagos. Five research questions and five research hypotheses guided the study. To achieve this, the descriptive survey research design was adopted. The study focused on University of Lagos hence, population consists of all the 24,661 full-time undergraduate students. The simple random sampling technique was used to select a sample of 378 students. A four point Likert Type Rating Scale Questionnaire type, titled: Social Media and Academic Performance of Students Questionnaire (SMAAPOS) was used to collect data from the participants. The descriptive statistics of frequency counts and percentage, were used to analyze the demographic data while inferential statistics of Chi-square( $\chi^2$ ) was used in testing the research hypotheses. Research findings showed that a great number of students in University of Lagos, are addicted to social media. To this end, the researcher

recommended that social media should be used for educational purposes as well; Social Networking Sites should be expanded and new pages should be created to enhance academic activities and avoid setbacks in the students' academic performance; and Students should be monitored by teachers and parents on how they use these sites. This is to create a balance between social media and academic activities of students to avoid setbacks in the academic performance of the students.

Owusu-Acheaw and Larson (2015) assessed students' use of social media and its effect on academic performance of tertiary institutions students in Ghana with a focus on Koforidua Polytechnic students. Questionnaire was used for collecting data. Out of one thousand five hundred and seventy-eight copies of the questionnaire distributed, one thousand five hundred and eight were retrieved which represented a response rate of 95.5 %. The study revealed that majority of the respondents had mobile phones which also had Internet facility on them and had knowledge of the existence of many media sites. The study further confirmed that most of the respondents visit their social media sites using their phones and spend between thirty minutes to three hours per day. In addition the study revealed that the use of social media sites had affected academic performance of the respondents negatively and that there was direct relationship between the use of social media sites and academic performance. The study recommended among others that, students with mobile phones having internet facility should be encouraged to use it to supplement their research in the library rather than the usual chatting with friends all the time. Students should be encouraged to limit the time they spend on their social media sites per day and advise them to rather substitute those hours to read novels to improve their knowledge. Although studies have been conducted on social media utilization, little empirical studies exist on how psychological and social variables influence social media engagement. Therefore, this study attempts to examine the influence of the mediate influence of psycho-personal variables on social media engagement of students in the College of Education, Afaha Nsit.

### **Statement of Problem**

The use of social media provides students with the ability to get more useful information, to connect with learning groups and other educational systems that make education convenient. It also affords students and institutions multiple opportunities to improve learning methods. However, frequent engagement in social media has turned most university students into addicts which affect students' ability to manage time for academic activities. In this regard, Bawa and Suleiman (2017) reported that students become distracted from academic engagement when they spend much time on Instagram or Facebook checking his/her profile to have a hint on the number of "likes" and "comments" their latest post got from viewers. This off-task behaviour results in poor performance in examinations and assignments because of less academic commitments. Tayo, Adebola and Yahya (2019) also documented that some students have diverted social media usage towards non-educational, unethical and inappropriate actions and behaviours. This situation has resulted in the proliferation of cybercrime tendency, sexual harassment and other anti-social behaviours among tertiary institution students. The situation is further compounded by the vulnerability of students as a result of low self-concept, age, and sex. From the aforementioned issues, the study examines psycho-personal variables (age, sex, and self-concept) on social media engagement of students in College of Education.

### **Purpose of the Study**

The purpose of the study was to examine the influence of psycho-personal variables on social media engagement of students in the College of Education, Afaha Nsit. Specifically, the objectives of the study were:

- (i) To determine the difference in social media engagement of students based on age.
- (ii) To assess the difference in social media engagement of students based on sex.
- (iii) To find out the difference in social media engagement of students based on self-concept.

### **Research Questions**

The following research questions were formulated to guide the study:

- (i) What is the mean score difference in social media engagement of students based on their age?
- (ii) What is the mean score difference in social media engagement of students based on their sex?
- (iii) What is the mean score difference in social media engagement of students based on their self-concept?

### Research Hypotheses

The following null hypotheses are formulated for the study at .05 level of significance.

- (i) There is no significant difference in social media engagement of students based on age.
- (ii) There is no significant difference in social media engagement of students based on gender.
- (iii) There is no significant difference in social media engagement of students based on the self-concept.

## RESEARCH METHODOLOGY

### Research Design

The descriptive research design was used for the study. In a descriptive research which is a form of non-experimental research, questionnaire was used to gather information and the goal was to understand the opinion of the respondents about the influence of psycho-personal variables (age, gender and self-concept) on the social media engagement of students.

### Population of the Study

The population consisted of all students in the Akwa Ibom State College of Education.

### Sample size and Sampling Technique:

A sample size of 200 was drawn from the population using a simple random sampling technique.

### Instrumentation

A structured questionnaire was used for the study. The instrument was subjected to a face validation and reliability test. A reliability coefficient index of 0.70 was obtained.

### Method of Data Analysis

Mean and standard deviation were used to answer the research questions while independent t-test was used to test the null hypotheses at .05 level of significance.

## RESULTS

Data generated for the study were first arranged in a coding sheet before subjected to statistical analysis, using the Statistical Package for Social Science (SPSS). The use of SPSS was necessitated on the ground of the quantity of data obtained from the 200 respondents which was very large for the researcher to embark on manual analysis.

**Research Question One:** What is the mean score difference in social media engagement of students based on the age?

Table 1: Mean and Standard Deviation Analysis of Social Media Engagement of Students Based on the Age

AGE	N	$\bar{X}$	SD	REMARKS
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Below 20	135	24.74	3.02	Slight difference
Above 20	65	22.21	2.98	

The analysis of data in Table 1 shows that students below 20 years of age obtained mean and standard deviation scores of 24.74 and 3.02 respectively in social media engagement while their counterparts aged above 20 had mean and standard deviation scores of 20.21 and 2.98 respectively. This implies that students differ slightly in their social media engagement based on age. However,

**Research Question Two:** What is the mean score difference in social media engagement of students based on the sex?

Table 2: Mean and Standard Deviation Analysis of Social Media Engagement of Students Based on the Sex

SEX	N	$\bar{X}$	SD	REMARKS
Males	100	20.52	2.35	High difference
Females	100	31.77	3.62	

The analysis of data in Table 2 shows that male students obtained mean and standard deviation scores of 20.52 and 2.35 respectively in social media engagement while their female counterparts had mean and standard deviation scores of 31.77 and 3.62 respectively. This implies that students differ in their social media engagement based on gender.

**Research Question Three:** What is the mean score difference in social media engagement of students based on their self-concept?

Table 3: Mean and Standard Deviation Analysis of Social Media Engagement of Students Based on their Self-concept

SELF-CONCEPT	N	$\bar{X}$	SD	REMARKS
Negative	96	23.02	2.57	High difference
Positive	104	36.59	3.86	

The analysis of data in Table 3 shows that students with negative self-concept obtained mean and standard deviation scores of 23.02 and 2.57 respectively in social media engagement while their counterparts with positive self-concept had mean and standard deviation scores of 36.59 and 3.86 respectively. This implies that students differ in their social media engagement based on their self-concept.

**Hypothesis One:** There is no significant difference in social media engagement of students based on age.

Table 4: Summary of Independent t-test Analysis of Social Media Engagement of Students Based on the Age

AGE	N	$\bar{X}$	SD P-VAL	REMARKS
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Below 20	135	24.74	3.02 4.872	Not Sig.
Above 20	65	22.21	2.98	

The analysis of data in Table 4 reveals that the p-value of 4.872 is greater than .05 level of significance. Thus, hypothesis one is accepted implying that there is no significant difference in social media engagement of students based on age.

**Hypothesis Two:** There is no significant difference in social media engagement of students based on gender.

Table 5: Summary of Independent t-test Analysis of Social Media Engagement of Students Based on the Sex

SEX	N	$\bar{X}$	SD P-VAL	REMARKS
Males	100	20.52	2.35 .002	Sig.
Females	100	31.77	3.62	

The analysis of data in Table 5 reveals that the p-value of .002 is less than .05 level of significance. Thus, hypothesis two is rejected while the alternate hypothesis is retained implying that there is significant difference in social media engagement of students based on gender.

**Hypothesis Three:** There is no significant difference in social media engagement of students based on their self-concept.

Table 6: Summary of Independent t-test Analysis of Social Media Engagement of Students Based on their Self-concept

SELF-CONCEPT	N	$\bar{X}$	SD P-VAL	REMARKS
Negative	96	23.02	2.57 .000	Sig.
Positive	104	36.59	3.86	

The analysis of data in Table 6 reveals that the p-value of .000 is less than .05 level of significance. Thus, hypothesis three is rejected while the alternate hypothesis is retained implying that there is significant difference in social media engagement of students based on their self-concept.

## DISCUSSION

The findings of the study showed that students differ slightly in their social media engagement in favour of those aged below 20 years. However, the test of corresponding hypothesis one revealed that there is no significant difference in social media engagement of students based on age. This implies that there is no gender difference in social media engagement among students. This finding aligns with Ekanem (2020) who found that social media engagement among students did not differ based on students' age.

The findings of the study revealed that students differ in their social media engagement in favour of the female students. More so, the test of corresponding hypothesis two revealed that there is significant difference in social media engagement of students based on gender. This present finding lends support to Booker, Kelly and Sacker (2019) who had earlier reported gender differences in the relationship between interacting on social media and wellbeing.

Lastly, the findings of the study showed that students differ in their social media engagement in favour of students with positive self-concept. More so, the test of corresponding hypothesis three revealed that there is significant difference in social media engagement of students based on self-concept. This present finding agrees with the findings of Sari, Siswadi and Sriati (2018) that social media engagement was associated with positive self-concept of users. The finding is also supported by Sponcil and Gitimu (2015) who revealed that self-concept of social media users was a significant predictor of their engagement.

## **RECOMMENDATIONS**

Based on the findings of the study, it was recommended that:

- (i) Parents should encourage their children/wards to engage only in meaningful and productive social media activities such as engagement in educational pages and sharing of educational ideas.
- (ii) The College of Education should ensure that free regular internet services is provided to students to enable them compete technologically with their counterparts in other countries of the world.
- (iii) College of Education students should always have positive self-concept about themselves.

## **CONCLUSION**

Based on the findings of this study, it was concluded that; students differ slightly in their social media engagement in favour of those aged below 20 years; students differ in their social media engagement in favour of the female students; students differ in their social media engagement in favour of students with positive self-concept.

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## **Reward System and Teachers' Job Performance in Public Secondary Schools in Urueoffong/Oruko Local Government Area of Akwa Ibom State, Nigeria**

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### **Abstract**

This study examined the influence of reward system on teachers' job performance in public secondary schools. The study specifically sought to find out whether incentives, pay structures and recognition of teachers in public secondary schools influence their job performance. Based on three objectives, three research questions were posed and turned into three hypotheses. Related concepts were reviewed also equity theory was used in the study. The study adopted survey research design and stratified random sampling technique was used in selecting 120 teachers from four public secondary schools in the study area. Data for the study were gathered through the administration of a researchers' self-designed questionnaire. The instrument was face validated was subjected to a split half reliability test to establish the reliability of the instruments. The data collected were subjected to statistical analysis using chi-square inferential statistics, and all the findings were tested at 0.05 level of significance. The result obtained from the analysis showed that "there is a significant influence of incentives, pay structures and recognition of teachers in their job performance. It was recommended among other things that every establishment be it private or public should ensure fairness in its reward system for their workers. The study also recommends that teacher's salary and remuneration should be harmonized to correspond to their competencies and qualification.

**Keywords:** Reward system, Influence, Teachers' job performance

### **INTRODUCTION**

Reward system is an important tool that management can use to motivate employees in desired ways (Alila & Abiola, 2014). In other word, reward systems seek to attract people to join the organization to keep them coming to work, and motivate them to perform to high levels. The reward system consists of all organizational components - including people processes, rules and decision making activities involved in allocation of compensation and benefits to the employees in exchange for their contribution towards the development of the organization. In order for an organization to meet its obligations to shareholders, employees and society, its top management must develop a relationship between the organization and employees that will fulfill the continually changing needs of both parties. At a minimum, the organization expects employees to perform reliably the tasks assigned to them and at the standards set for them, and to follow the rules that have been established to govern the workplace. Management often expects more: that teachers take initiative, supervise themselves, continue to learn new skills, and be responsive to institutions' needs. At a minimum, teachers expect their institutions to provide good pay, safe working conditions, and fair treatment.

Like management, employees often expect more, depending on the strength of their needs for security, status, involvement, challenge, power, and responsibility. Just how ambitious the expectations of each parties are, vary from organization to organization. For organizations to address these expectations an understanding of employee motivation is required (Beer, Spector, Lawrence, Mills, & Walton, 2014). Thus, every institution has some form of reward system. Reward systems are often used as a management tool for achieving desirable objectives. One of the most common purposes is to motivate employees to perform better (Alexander, 2016).

In today's educational system, rewards, recognition and an enjoyable workplace have become extremely important for many reasons; Motivation is the key that gets people to do what they do. In line with the knowledge of what is most important, creative solutions and the appropriate financial resources can be devoted to addressing the key issue. Without this knowledge, too much well-meaning effort might be expended trying to fix things that are not all that important to employees (Kreitner, 2008). It is in the light of this that issues concerning the teachers are considered the driving force of every institutions of learning and must be given the needed attention, as it will affect the teachers' performance and the institution at large. One of the key issues that concern every worker in an organization has to do with the reward or compensation for their effort.

Employees reward refers to "all forms of pay and rewards received by employees for the performance of their job" (Belcourt, 2009). Compensation includes employee wages and salaries, incentives, bonuses and commissions (Belcourt, 2009). The reward systems may differ from one organization to the other and may change from time to time This arguably makes motivating employees the most complex of all management functions (Bowen & Radhakrishna 2011) However, a basic feature of any reward system is that it must cause employees to give their best to the organization. As Lucey (2014), puts it, properly organized and well planned reward system, benefits both the institution and its teachers. Humans are all different; their needs, thoughts and experiences are different and they are all motivated by different ways. Would it not be more correct if the rewards also were individualized? It is important for every employer to find what motivates each employee. In a perfect world, the company has resources to ensure that all employees have a meaningful job, but this is far from reality. People want to feel that what they do make sense. What motivates us will change over time. What was seen as meaningful 25 years ago may not be meaningful today. We are motivated by different ways depending on where we are in our development. A young worker is likely to be keener on development possibilities, while an older one is more anxious about security and to be able to use his experience (Jagult, 2015).

Teachers are the heart and soul of any institution of learning. In order for an institution to truly succeed, it is vital that they are managed effectively. For education to succeed in today's competitive global market place, it must have teachers that perform at the top of their ability. This top performance can only be achieved when they are driven by enjoyment for the work itself. It is therefore, undeniable fact that the teachers as the human resource of every institution of learning remain the most important resource. Therefore every effort should be made to ensure their effectiveness since without them the institution cannot function. Organizations are seeking ways to beat the competition and be profitable. Nothing is more critical to this goal than human energy - a strategic approach to motivating the total organization (Ben, 2009). This means that giving close attention to how individuals can best be motivated through such means as incentives, pay adequate remuneration, recognition, leadership and importantly, the work they do and the organization's context within which they carry out their work. Reward represents is the most important and contentious element in the employment relationship, and is of equal interest to the employer and employee in any social system and organisation. To the employer because it represents a significant part of his costs, it is increasingly important to his employees' performance and to competitiveness and affects his ability to recruit and retain a quality labour force. To the employee it is fundamental to his standard of living and is a measure of the value of his services or performance. It is thereby hoped that this study would contribute constructively towards increasing organizations as well as the employees understanding and acceptance of the influence of reward systems on individual performance and therefore the corporate performance of teachers in public secondary schools.

The initiative to bring about the achievement culture within the education has to be aligned with appropriate managerial approaches that appreciate the contemporary role of motivation in improving the quality of performance of teachers. Reward systems offered in different institutions may come in various and concrete forms. These may either be monetary or non-monetary, tangible or intangible, physical or psychological, and are usually offered to the employees as compensation for the productive work they execute and the rewards might also be meant to encourage them (Nelson & Eddy, 2013). Since teacher plays a vital role in education system as they builds up a nation, their roles remain a complex one. They are expected to help students' work in complex multicultural educational settings and to provide good educational experiences for all children. Hence to motivate them and to make their performance effective reward is very important.

In a study conducted by Bello and Adebajo (2014) on reward system and teachers performance in Lagos State public secondary schools, using a sample of 300 respondents, it was found that there is a significant relationship between teachers' performance and salary package, teachers' job allowances and in-service training. The researchers thus explained that for teachers to perform maximally, good salary structure, allowances in terms of housing, health, hazard mitigation, transfer, involvement of teachers in decision making establishment of teachers salary scale in line with other profession so as to play vital role. In collaboration, Shamir (2014) conducted a study on impact of reward on teachers' performance at secondary level in Yobe State using a sample of 200 respondents. The study revealed a significant correlation between extrinsic reward and teacher's performance. There is no correlation between intrinsic reward and teachers' performance.

Another study conducted by Onyene (2011) studied on issues in incentive administration for effective workforce retention in Ini Local Government Area of Akwa Ibom State. The researcher adopted a descriptive survey design in studying a sample of 300 teachers. The researcher's made questionnaire was used for data collection and the result revealed a significant influence of incentives to teachers on teachers' effectiveness. Similarly, Udofia (2013) also discovered a significant relationship between incentives to teachers and job performance after studying a sample of 400 secondary school teachers in Ibiono Ibom Local Government Area. Muthoni (2013) also conducted a study on effects of reward strategies on the performance of staff in public secondary schools in Ikom Local Government Area of Cross Rivers State. He specifically examined the effects of incentives to teachers and good working condition on teachers' job performance. The researcher adopted a descriptive survey design in studying a sample of 260 teachers. The researcher's made questionnaire was used for data collection and the study revealed a significant influence of incentive to teachers and their performance, no significant influence of working condition was observed influencing teachers job performance.

Mark (2012) conducted a study to establish the effect of motivation on organizational performance in the Public secondary schools in Akwa Ibom State. The study adopted a descriptive survey research design. Sample size was 315 targeting administrators, heads of department, teaching staff and non-teaching staff. A structured questionnaire was used to collect data from the respondents. An interview was also conducted with the administrators and heads of department. The study used two content theories that explain the specific factors that motivate people and two process theories which are centered on the psychological and behavioral processes that motivate an individual. The study found that teachers in the public secondary schools in Akwa Ibom State are not receiving incentives from their employers

Another research carried out by Rufus (2013) discussed reward system and performance of librarians in public secondary schools in Akwa Ibom state. The study examined motivation of librarians, the effect of reward system on performance, the views of librarians on motivation the level of satisfaction of librarians and the effort the public university managements are making to motivate librarians. The study employed a descriptive survey research design, questionnaire were designed and distributed to seventy-two targeted librarians in six public secondary schools in Akwa Ibom State, out of this, sixty returned the duly completed questionnaire. The questionnaire sought to identify factors which motivate librarians and how they affect their performance. The study revealed that the reward package in terms of incentive of librarians in public secondary schools is low and

that the reward package affects majority of librarians negatively. All these attest to the reward system and teachers' job performance.

### **Statement of the Problem**

Educational institutions were established to accomplish specific objectives. The institution that wishes to achieve these objectives must have a competitive and perhaps a comprehensive total reward system that is aligned with the institution's effective teaching strategies and that reflects the competitive reality of the global labour market. Reward is the centerpiece and manifestation of an exchange relationship between the employees and employers. The social exchange theory supports this. In today's world where people have become more and more demanding about their lives and surroundings, the reward system could have been the best tools, used to motivate employees by satisfying these demands. In situation of high competition in the educational sector, the attainment of high performance is highly prioritized but there is need to recognize, inspire and motivate the teachers via the design. The establishment and implementation of a robust reward system that could call out the best in the teachers in terms of their performance, commitment, dedication and loyalty remained the key challenge. It is thus observed that the process of effectively managing any organizations reward systems is undoubtedly one of the most complex and problematic issues in human resources management in social system. This situation demotivates employees and encourages industrial disputes and fluctuations in productivity. It is this unfair reward system and its associated industrial disharmony in educational institutions that this study is conducted to investigate the impact of reward system on teachers' performance in secondary schools.

### **Objectives of the Study**

The main purpose of this study is to determine the influence of reward system on teachers' job performance in public secondary schools. Specifically, the study sought to

- (i) Determine the influence incentives on teachers' job performance in public secondary schools.
- (ii) Determine the influence of pay structure on teachers' job performance in public secondary schools.
- (iii) Determine the influence recognition on teachers' job performance in public secondary schools.

### **Research Questions**

Based on the above specific objectives, the following research questions are posed to guide the study.

- (i) What is the influence of incentives to teachers on their job performance in public secondary schools?
- (ii) What is the influence of pay structure of teachers on their job performance in public secondary schools?
- (iii) What is the influence of recognition of teachers on their job performance in public secondary school?

### **Research Hypotheses**

Based on the above research questions the following research hypotheses were formulated to direct the study.

- (i) Incentives to teachers do not significantly influence teachers' job performance in public secondary schools.
- (ii) Pay structure of teachers do not significantly influence teachers' job performance in public secondary schools.
- (iii) Recognition of teachers do not significantly influence their job performance in public secondary schools.

## **RESEARCH METHODOLOGY**

The descriptive survey research design method was used in this study. The area of study was Urueoffong/Oruko Local Government Area of Akwa Ibom State. The population consists of all the principals, vice principals and teachers in all the thirteen public secondary schools in Urueoffong/Oruko Local Government Area. The sample of study consisted of 120 teachers selected from four public secondary schools in the study area using a simple random sampling technique. The structured questionnaire designed by the researcher titled "Reward System and Teachers' Job Performance Questionnaire (RSTJPQ)" was used for data collection. The questionnaire consisted of two sections - A and B. Section A sought for information on the demographic data of the respondents while section B sought for information concerning the variables advanced in this study. The

questionnaires were designed in a four point Likert type of strongly agreed, agreed disagreed and strongly disagreed.

The instrument was face validated and was subjected to a split half reliability test to establish the reliability of the instruments. The instruments were administered to 20 teachers who were not part of the study. The data generated were analyzed and the result of the test showed 0.87 reliability coefficient, which indicated a high degree internal consistency of the instrument. Hence, the instrument was considered reliable by the researcher. The researcher with a research assistant from his institution visited the selected schools and administered the instrument to the respondents. Data generated from the instruments were analyzed using Chi-square ( $X^2$ ) statistical method. All the three hypotheses were tested at 0.5 levels of significance.

## RESULTS

**Hypothesis 1:** Incentives to teacher in public secondary schools does not significantly influence teachers' attitude towards teaching.

Table 1: Chi-square ( $X^2$ ) Analysis of influence of incentives to Teachers and their job performance

S/N	SA	A	D	SD	Total	$X^2$ cri.	$X^2$ cal.
1.	66 (63.5)	32 (24.5)	16 (15.5)	6 (15.5)	120		
2.	72 (63.5)	20 (24.5)	16 (15.5)	12 (15.5)	120		
3.	31 (63.5)	35 (24.5)	22 (15.5)	32 (15.5)	120	16.91	67.94
4.	85 (63.5)	11 (24.5)	12 (15.5)	12 (15.5)	120		
Total	254	98	62	62	480		

\* Significant at  $P \leq 05$ ,  $df = 9$

Table 1 shows a calculated  $X^2$  – value of 67.94 greater than the critical  $X^2$  value of 16.91 at 9 degree of freedom and 0.05 levels of significance. Since the calculated  $X^2$  – value is greater than the critical  $X^2$  – value, the null hypothesis, which earlier claimed a no significant influence of incentives to teachers on teachers' attitude towards teaching is rejected in favour of the alternative hypothesis. The implication is that, incentives to teachers in public secondary schools significantly influence teachers' attitude towards teaching.

**Hypothesis 2:** Pay structure of teachers in public secondary schools does not significantly motivate teachers to be committed to work.

Table 2: Chi square ( $X^2$ ) Analysis of influence of pay structure of Teachers and their job performance

S/N	SA	A	D	SD	Total	$X^2$ cri.	$X^2$ cal.
5.	43 (41.5)	51 (43.5)	21 (19.5)	5 (15.5)	120		
6.	39 (41.5)	36 (43.5)	26 (15.5)	19 (15.5)	120		
7.	27 (41.5)	43 (43.5)	21 (15.5)	29 (15.5)	120	16.91	43.07
8.	57 (41.5)	44 (43.5)	10 (15.5)	9 (15.5)	120		
Total	166	174	78	62	480		

\* Significant at  $P \leq 05$ ,  $df = 9$

Table 2 shows the influence of pay structure of teachers on teachers' commitment to work, a calculated  $X^2$  – value of 43.07 is observed to be greater than the critical  $X^2$  – value of 16.91 at 9 degree of freedom and 0.05 levels of significance. Since the calculated  $X^2$  – value is greater than the critical  $X^2$  – value; the null hypothesis

(H<sub>0</sub>) which claimed a no significant influence of pay structure of teachers on teachers' level of commitment to work is rejected while the alternative hypothesis (H<sub>1</sub>) is accepted. This implies that teacher pay structure in public secondary school is a determinant of teachers' level of commitment to work.

**Hypothesis 3:** Recognition of teachers in public secondary schools does not significantly influence their job performance.

Table 3: Chi-square (X<sup>2</sup>) Analysis of influence of Recognition of Teachers and their Job Performance

S/N	SA	A	D	SD	Total	X <sup>2</sup> cri.	X <sup>2</sup> cal.
9.	51 (44.5)	43 (34.5)	5 (15.5)	21 (19.5)	120		
10.	35 (44.5)	36 (34.5)	26 (21.5)	23 (19.5)	120		
11.	43 (45.5)	27 (34.5)	29 (21.5)	21 (19.5)	120	16.91	27.64
12.	49 (44.5)	32 (34.5)	26 (21.5)	13 (19.5)	120		
Total	178	138	86	78	480		

\* Significant at  $P \leq 0.05$ ,  $df = 9$

From Table 3, the analysis on hypothesis 3 shows a calculated X<sup>2</sup> – value of 27.64 greater than the critical X<sup>2</sup> – value of 16.91 at 9 degree of freedom and 0.05 levels of significance. Since the calculated X<sup>2</sup> – value is greater than the X<sup>2</sup> - value, the null hypothesis which claimed that recognition of teachers in public secondary schools does not significantly influence their job performance is rejected in favour of the alternative hypothesis. This therefore implies that recognition of teachers significantly influence their teachers' job performance in public secondary schools.

## DISCUSSION

The analysis on hypothesis one as shown in Table 1 revealed a significant influence of incentive to teachers on teachers' attitude toward teaching. From the findings, it was observed that teachers now a days use their personal money to rent an apartment since there is no housing allowance given to them. Also, teachers if sick, they don't receive any medical assistance from their employer. Majority of teachers exhibit 'I don't care' attitude towards work because there is no fringe benefit given to them. From the findings it is believe that if workers are given bonuses they will be satisfied and put in their best. This finding confirms earlier finding by Ade (2015) who discovered a significant relationship between incentives and teachers' efficiency and productivity. In agreement also was that of Etuk (2012) who found a positive correlation between reward packages such as incentives fringe benefits and bonuses and employees job satisfaction.

Findings on hypothesis two revealed a significant influence of pay structure of teachers on teachers' commitment to work. From the finding, it was observed that wages paid to teachers is not encouraging compared to other professions and as such most teachers left school before time for other businesses to complement their salaries. This finding is in agreement with earlier findings by Judge (2014) who in his study a significant negative relationship between teachers attitude towards job as a result of delay in salary payment Also in agreement was that of Alexandra (2014) whose result showed a significant negative impact of delay in salary payment to teachers on teachers' commitment and effectiveness.

The analysis on hypothesis three on the influence of recognition of teachers on their job performance showed a significant influence of recognition of teachers on their teachers' job performance. From the observation, teacher do not receive thanks and praise no matter their efforts, this goes a long way in reducing their input thereby reducing productivity Also, most teachers exhibit "I don't care" attitude towards work because they are not recognize by the management.

The teachers believe that if they are recognized by their employer they will put in their best. This finding collaborate with earlier finding by Ben (2015) who in his study found recognition to be a high driver of staff performance as those who had been recognized in one way or another were found to have been satisfied and motivated This finding is also in line with a study conducted by Nkereuwen et al (2010) which found that those recognize significantly increase their performance compared to those who are not recognized. It was noted that when employees receive feedback about their performance especially praise for work well done, they experienced feeling of happiness and therefore they are intrinsically motivated to keep performing well.

## **RECOMMENDATIONS**

Arising from the findings of this study, it is recommended that every establishment be it private or public should take the following measures to ensure fairness in its reward system:

- (i) Relevant educational agencies need to be set up to harmonize all entitlements, fringe benefits or incentives to be enjoyed by teachers to be in fine with their counter parts in other professions.
- (ii) The Government should provide car loans, housing loans, health insurance schemes, and overseas traveling opportunities to teachers to make them have first-hand knowledge of what is obtainable in other parts of the world and for them to discharge their duties with utmost good faith
- (iii) The schools should establish criteria for recognizing good performance. The schools should also involve employees in identifying the rewards that are appropriate to their individual needs.
- (iv) The Head should personally thank and appreciate the teacher for a specific job well done.
- (v) The study recommends that the teacher's salary and remuneration should be harmonized by employer to correspond their competencies and qualification.

## **CONCLUSION**

The importance of reward in the day-to-day performance of teachers' duties cannot be over emphasized, especially when it comes to being rewarded for a job done. The results obtained from the study showed that teachers placed great value on the different rewards given to them by their employers. Hence, when these rewards are not given, teachers tend to express their displeasure through poor performance and non-commitment to their job. It is therefore imperative for the organization to consider the needs and feelings of its work force and not just over look them in order to safe guard industrial harmony because "a happy worker they say is a productive worker". A careful design of reward system such as incentives, good pay structure and recognition which links with the performance measurement is essential for the long-term success of school system.

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## **Security Agencies in the 2023 General Elections in Nigeria: A Comparative Analysis of Their Roles, Activities and Achievements during 2015 And 2019 Elections.**

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### **Abstract**

Politics is the struggle for power, influence and authority. Since it involves allocation of resources of a state it is often viewed as warfare between contestants with security implications. One of the determinants of free, fair and credible election is the security of lives and property before, during and after the electioneering process. Security is the freedom from danger or damage, be it physical or emotional, it is important in the electoral process. Election in Nigeria has never been a smooth journey from the inception of Nigeria as a sovereign state. Security during election has remain a challenge to election umpires and the citizens as political parties and their supporters see the election process as a ‘‘Do Or Die’’ Affairs. The 2023, 2019 , 2015 general elections were not an exception as some of the elections were characterized by reports of violence and security breaches despite the independent National Election Commission’s preparation for a smooth elections. This paper takes a look at the security Agencies in the 2023 general election comparing their roles, numbers, activities and achievements during the 2015 and 2019 Elections.

**Keywords:** Security, Elections, 2023 General election

### **INTRODUCTION**

Elected representative are servant of the people because they are expected to represent the interest of their people. Naturally, nobody prefers to be a servant since he has no authority of his own except those given to him by his master. Overtime, elected representatives of the people who are servants learned the art of converting the authority ceded them by their ‘‘masters’’(people) into power to make wealth. From then onward, servanthood became a very attractive endeavor requiring cut-throat competition to achieve. Crude tactics including violence are now employed to win elections. Such situations in several African countries in the post- colonial era including Nigeria are very serious and requires the use of security agencies to maintain peace during election. Elections are contests for legitimate power fought within a political arena, elections by their nature are confrontational and therefore requires the assurance of equitable security to retain participants confidence and commitment. Consequently, security is integral to the electoral process. The frequent occurrence of insecurity during elections and the apathy it creates among the citizens has given vent to this work with the hope of proffering solutions that could aid in reducing electoral violence requiring use of security agencies to maintain peace during elections.

Ogundiya and Baba (2007) agree with Jegede (2003) that electoral violence in Nigeria manifest in such criminal acts as murder, arson, abduction, assault, violent seizure and destruction of electoral materials.

It is the responsibility of the police to foster security during elections. The Electoral act recognizes the police as the primary government institution charged with that responsibility with a total manpower 350,000 policemen to man 119,973 polling booth in 2015 elections and 400,00 personnel to cover 119,973 polling booth in 2019 general elections, the slight increase from 2015 elections as regards personnel reflects the growing security concerns and need for heightening vigilance in volatile regions. With the increase in polling booth to 176,846 in 2023 elections and the growing volatile electoral environment, it was impossible for police alone to keep security in the 2023 general elections. It is against this background that this paper uses the term security agencies in this study to demonstrate the facts that, other enforcement agencies like the Civil Defence, Immigration service, National Drug law Enforcement Agency, Directorate of state security, Road Safety Corp, Correctional personnel, Customs personnel among others were co-opted to maintain law and order and secure peaceful voting on the election day. This is in line with the formation of (ICCES) Inter-Agency consultative committee on election security in 2011 as a deliberate Platform for consultative, coordination and harmonization of election security in the country. Since then, the committee has been serving the commission as an advisory body for the efficient deployment of personnel and resources for ensuring peaceful and violent free election. Below is the list of membership of (ICCES) Inter- Agency consultative committee on election security:

- (i) INEC Chairman
- (ii) Office of the National security Adviser
- (iii) Nigerian police force
- (iv) Police service commission
- (v) Ministry of police Affairs
- (vi) Nigerian Navy
- (vii) Nigerian Army
- (viii) Department of State Security
- (ix) National Drug law Enforcement Agency
- (x) Federal Road Safety Corps
- (xi) Nigerian security and civil Defense
- (xii) Nigerian Correctional Services
- (xiii) National Youth Service Corps

Ordinarily, election embraces the periods of party candidate nomination, electioneering campaign, voting and announcement of election results. Of these afore-mentioned periods, it is only on voting day that myriads of security agencies are given electoral responsibility in Nigeria. The objective of this paper is to appraise the role, number of security agencies, activities and achievements of these agencies in the 2023 general elections as compared with what was recorded in 2015 and 2019 general elections.

## **Conceptual and Theoretical Frame Work**

### **Conceptual Framework**

- (i) **Security:** The concept of security is a very elusive one. To some, it is freedom from harm, danger, risk or lose. It may also be a situation of absence of insurrection, sabotage or espionage. To Umaru (2019) security is the ‘absence of danger to your person, assets and infrastructure wherever you are located’(Umaru, 2019;12). However, measures taken to prevent such danger from occurring is also regarded as security. To Akpuru-Aja (1999) security can be looked at from both objective and subjective angels. To him security at objective angel measures absence of fear, anxiety, tension or apprehension of

being in danger of losing life, liberty, property and core values. When there is absence of fear or threat to life or property whether they are public property or private property then there is security.

The police is statutorily charged with the responsibility of keeping security during election. According to Ekhomu (2004) election security fails under non-core function by co-opting other sister security agencies to assist on voting day, apart from the police, other para-military or security agencies used in election are Civil Defence, Immigration Service, Nation Drug law Enforcement Agency, Directorate of State Security, Road Safety Corp, Correctional Service, Custom Service and recently Economic and financial Crime commission(EFCC) was added to check buying of votes on polling day. The reason for this action is that the number of polling booths far outnumber available police strength

- (ii) **Election:** Election according to Dowse and Hughes (1982) is a procedure "...where all, some of the members (of an organization or a state ) choose a smaller number of persons to hold office, or offices, of authority within that (organization or state)" (1982;322). It is a method of peaceful transfer of power from one group of persons to another. Election is an embracive concept that is used to describe procedures for choosing a new government. It starts from nomination of candidates by political parties, electioneering campaign by political parties, voting by electorate and announcement of winners by electoral body. It may also extend to court litigation by aggrieved losers. Voting by electorate is only one activity in an election. It is an aspect of election which requires the highest number of police presence. That is why the police request help of sister security agencies on voting day.
- (iii) **2023 General Election:** This election was special in the sense that it was an end of tenure/transfer of power from one civilian administration to another civilian election. It was also special because three political parties of almost equal strength competed for votes from the electorates It was an election which the electoral body promised voters and political parties that election result will be transmitted electronically to collation centers nationwide. This promise raised the hope of voters that their votes will count this time around thereby facilitating heavy turnout of voters especially the youths.

## Theoretical Framework

### Theory of Security

Security theory focuses on the possibility of developing generalization as principles, assumptions, images, laws or perspectives for the purpose of describing, explaining and analyzing security threat (Akpuru-Aja, 1999:25). Threat is therefore at the center of the theory of strategic studies/S..Threat has to do with any act, behavior or position which is capable of raising the fear or anxiety that one is in a position to lose life, liberty or core values (Akpuru-Aja, 1999:37). The reason why a large number of security personnel from many security agencies were deployed in various election owe principally to the level of threat assessment determined by the police authorities. Prior to the 2023 general election, threat to the smooth conducts of elections was publicly understood to come from IPOB/Eastern security network in the south East, from Bandits/Boko Haram in the North East/north West, from arsonists and thugs in the south. Independent National Electoral commission (INEC) Offices and police stations in various parts of Nigeria were burnt down by unknown arsonists who vowed that the election would not hold. As the threat to the election was profound, the police had to take steps to neutralize them.

Akpuru-Aja (1999) argues that strategies for managing and controlling internal threat generally are sevenfold According to him they are:

- (i) A clear identification of the actual nature or form of the threat
- (ii) Control of information on the security threat in question
- (iii) Investigation of suspects and interrogating them
- (iv) Searching or spying of flash points

- (v) Obtaining of research information on such threat
- (vi) Employment of deterrence measures such as ‘public show of force’ by security agencies
- (vii) Observation of unusual movement of strange people ‘if you see something say something’

It was these strategies that police adopted that necessitated a large number of security agencies noticed in the various elections

## **History of Election Policing in Nigeria**

In some advance democracies, police involvement in electoral process is still either absent or very minimal but in Nigeria, the opposite is the case because of the high premium political actors place on the goal of occupying political positions (Uwak and Esetang, 2023:15). Election is therefore, one of the explosive and volatile issues in Nigeria.

The first national election was conducted under the Richards constitution by the British colonialist in 1947 in two towns only (Lagos and Calabar). Since that election was on property-Suffrage basis, few voters were eligible to vote and policing of election was therefore very minimal. The election however sowed the seed of ethnicity, parochialism and regionalization in future elections. According to Nnadozie (2007) ‘Unlike the situation in the twenties and thirties, politics especially electioneering campaigns and voting during elections were beginning to show features of ethnic sentiments and mudslinging’ (Nnadozie, 2007:47). The second national election took place in 1952 under the Macpherson constitution of 1951. The method of election into the 136 members central legislature was by electoral college system. In view of this, Election policing was not required except in Eastern and Northern regions where every adult male taxpayer was qualified to vote. Western region used acclamation method at the primary collage. The third national election was in 1954. This was the first country wide election and was stipulated in Lytleton constitution of that year. It upheld the operation of different electoral laws for the three regions as stipulated in the earlier constitutions. The constitution instituted federalism for the time in Nigeria including regionalization of civil service. This action brought the control of the police under regional governments.

It was during the holding of 1954 elections that security personnel, mostly police personnel began to be massively used for election security. Political factors that elicited massive police use in the election were emergence and entrenchment of ethnically and regionally based political parties’ rivalry between these political parties on the contest of the election. Nnadozie explains that the three major political parties- NCNC, NPC and the AG won the majority votes cast in their respective region except in the western region where NCNC defeated the AG in the west (Nnadozie, 2007:53). As police operations were regionalized under the constitution, regionally based political parties in power in such regions directed police operations to their advantage This stemmed from the fact the regional commissioners of police were appointed on the recommendation of regional premiers (Sanomi, 1998:110).

The fourth general elections of 1959 were the last under British colonial supervision. During the elections the seed of ethnic and regional politics which was sown and nurtured by both the Nigerian political leaders and the British colonial authorities in 1954 were fully in display. The British colonialist’s objective in the election was to ensure that Nigeria was ruled by a reactionary regime prepared to act as a British satrap’ (H Smith, 2005:41 in Nnadozie, 2005:208). To achieve this objective the British authorities in Nigeria went on ‘to rig and manipulate the last pre -independence general election in 1959 which ushered in Nigeria’s independence ‘ (Nnadozie, 2005:207), police presence was merely to legitimize the process as regional premiers and British authorities influence and pressurized regional commissioners of police to act in their favor.

The 1964/65 federal election was the first post-colonial in Nigeria. The election, first to be conducted by Nigeria post-colonial political leaders was a farce. The ruling Nigeria national Alliance (NNA) made up of NPC, NNPC and MDF did not hesitate to frustrate all the candidates of United Progressive Grand Alliance (UPGA), the opposition coalition parties (made up of NCNC, AG, UMBC and NEPU) by making sure that they are prevented from filing their nomination papers before the close of nomination. As a result of this malpractice, before the election was actually conducted 67 NPC candidates were actually declared elected unopposed (Ademoyega, 1981:19). In reaction, the UPGA opposition coalition parties boycotted the election and called on the government to postpone the election to which the Prime Minister, Sir Abubakar Tafawa Balewa refused. Similar electoral fraud, Interference and mismanagement occurred in the western regional election the following year 1965. In all these, the police either watch helplessly in some place or allowed their personnel to be involved in the malpractice in order places because, according to Sanomi (1998:120), a former Assistant inspector General of police, the regional commissioners of police were still taking directives from regional Premiers.

### **Policing of Election in the Post-Independence Era**

For ease of comparison and analysis, post-independence election policing can be divided into military government conducted elections and civilian government conducted elections. A review of these election shows that apart from 1964 General elections of the first republic earlier discussed, there are more civilian government conducted elections than those conducted by the military. The military conducted election occurred in 1993 and 1998/1999, while that of the civilian conducted elections occurred in 1983, 2003, 2007, 2011, 2015, 2019 and 2023.

According to Sanomi (1998), himself a former Assistant inspector General of police, election policing under military government is less strenuous than under civilian governments. To him the combative character of the military and constant strong warning to planners of violence and election malpractice helped in making the work of security agencies easy to accomplish. A typical example is the 1993 General election between SDP and NRC conducted by the military government of Gen. Babangida which is widely accepted as the fairest, freest and most credible in the history of Nigerian even though it was annulled. On the other hand, most of the civilian government conducted elections are often problematic with the police and other security agencies caught in the middle and blamed by opposition parties for helping the political party in power. According to Kufi "Cases abound where electoral offences were committed in the full glare of policemen who did not take any action to arrest the culprits but rather chose to look the other way. Even in the cases where arrest is made, there was lack of diligent prosecution of offenders in the courts" (Kufi, 2019:280). Sanomi is of the view that such allegation is not entirely true. According to him, "while some of these allegations had some elements of truth, majority of them were exaggerated in order to give the police an undeserved bad image" (Sanomi 1998:119). He referred to justice Babalakin Judicial commission of inquiry into the Affairs of the federal electoral commission in 1985 which exonerated the police from blame in election malpractice to buttress his point.

### **Specific Roles of the Police (Security Agencies in Electoral Matters)**

The power of the police to be involved in electoral process is authorized by various statutes such as the Nigeria constitution, police act, criminal and penal codes, Public order act, Electoral act, criminal procedure code among others (Arase, 2007:259).

Specific responsibilities of the police in electoral process are:

- (i) Maintenance of law and order.
- (ii) Arrest, in accordance with electoral law, of persons who commit electoral offences, on the order of authorized electoral officers.

- (iii) Escort/ security of ballot boxes and other electoral material from one point to another.
- (iv) Maintenance of state guards at places where materials are kept by INEC during elections.
- (v) Protection of Electoral officers when transporting materials from one place to another
- (vi) Security at the polling/counting stations and collating centers.
- (vii) Security of the offices of INEC as well as state Secretariats nationwide.
- (viii) Security of the residence of INEC Chairman, Electoral commissioners and Residents Electoral officers in the state.
- (ix) Protection of the presidential candidates and their residence including their accommodation when on electioneering campaigns outside their stations, and all other VIPS so entitled.
- (x) Protection of the persons of the chairman of INEC, Electoral commissioners and Resident Electoral officers.
- (xi) Protection of Gubernatorial candidates and their residence including their accommodation outside their station during campaign tours.
- (xii) Cooperation and coordination between INEC and the police and request by parties in the following areas:
  - (a) Communication
  - (b) Transport
- (xiii) Quelling of disturbances during political campaigns.
- (xiv) Quelling of disturbances emanating from the elections results.
- (xv) Investigation of election offences.

These are the responsibilities of the police and by extension security agencies.

### **Security Agencies in 2023, 2019 And 2015 General Elections Compared Based on their Role, Number Activities and Achievement**

In 2023 major threat to election in northern Nigeria generally was from bandits, kidnappers and Boko Haram to a lesser extent. In the south East it came from IPOB and Eastern security Network which is the military wing of IPOB. in the south-south and south-west, threat came from kidnappers and criminals In view of these threats security agencies designed their counter-measures to ensure the successful holding of the election. They were: (source: swift Counts of National Democratic Institute (NDI)

**Nigeria Police:** To provide adequate personnel to man/keep order at polling units and other INEC facilities; provide security for election equipment and other material during delivery, election and retrieval; apprehend law breakers and prosecute them; dissuaded public officers from misusing police security details; conduct pre-emptive raids on criminal hideouts; enforce restrictions on movement of persons.

Table 1: The number of policemen used for the election nationwide is as shown below:

S/N	YEARS	NUMBER OF PERSONNEL
1	2015	350,000
2	2019	400,000
3	2023	500,000

Compiled by the authors

The increase in 2023 was partly due to the rising security challenges including insurgence's and widespread election related violence in some regions.

Their activities did not differ significantly from their role earlier identified. The achievement of the Nigerian police force was that the 2023 election was successfully conducted by INEC without major disruption in all parts

of Nigeria. In the 2019 and 2015 the major threat in the north was Boko Haram and Fulani herders' killing in Benue and Plateau states. Also, there was tension in the Northern and South Eastern states, resulting from the ultimatum issued by northern youth and the youth-wing oforhanaze Ndigbo on each other in 2017. However, the role of the police in 2019 and 2015 General Elections was the same as in 2023 election. They recorded the same achievements.

**DSS:** The Department of state security (DSS) was in 2023 given the electoral role of monitoring the election closely and alert INEC and other security agencies on security problems; develop a framework for sharing intelligence regularly with other agencies during election, enforce restriction on movement of person during election day; Conduct mop up operation on illegal weapons and raid criminal hideouts; Confine key trouble makers and supporters ahead of election.

The number of DSS personnel deployed for 2023 election was not ascertain. The activities of DSS did not differ from the role that were allotted to them. Despite the threats highlighted above under the police, the DSS achieved the responsibilities it was expected to achieve in the election.

**Army:** The Nigeria army was responsible for providing surveillance in the surrounding of election; assist in restricting movement during the election; assist in protecting election material where police and other agencies are unable to do so; establish stand by rapid squads in all state in case of serious crises; assist in retrieving INEC election equipment, material and personnel after election.

The number of army personnel used in 2023 was not ascertain. The activities of the army were as expected of them. Their presence in strategic roads and junctions deterred the activities of miscreants who wanted to disrupt the election.

**Nigeria Navy And Airforce:** Both the Navy and Airforce had the responsibility of increasing surveillance in Nigeria's airspace, airport and continental shelf during election; assist in the deployment of INEC equipment and personnel where necessary; assist in restricting movement along waterways where necessary. The Airforce in particular, help to transport sensitive electoral material from Abuja to state capitals around the country.

The number of Navy and Airforce personnel used in the election was not ascertain. The activities of both the Navy and Airforce were in line with the roles given to them and they effectively carried them out.

**National Security Adviser (NSA)** The National security Adviser (NSA) played invisible role in the 2023. He was solely responsible for contacting service chiefs to assist INEC, monitor the performance of security agencies deployed for the election; maintain and increase security surveillance wherever it becomes necessary. The large number of security personnel witnessed in the election and the professional way service chiefs carried out responsibilities as request by INEC shows that office of the National security adviser (ONSA) performed its duties well.

**National Drug Law Enforcement Agency (NDLA)** The NDLA was responsible for increased surveillance of hard drug production; movement and use of pre-emptive strikes on hard drugs dealers and user's hideouts; Closely monitor environment of election area for drugs use likely to lead to election violence

Table 2: The number of NDLA personnel deployed for the election.

S/N	YEAR	NDLA PERSONNEL DEPLOYED
1	2015	140,00
2	2019	200,000
3	2023	300,00

Compiled by the authors

There activities were in line with their role for the election.

**Nigeria Custom Service:** The role of the custom in the 2023 election was to monitor imports into the country at all ports and border crossing to prevent import that could undermine election process for example weapons, fake ballot paper and forms, fire arms and explosives; liaise closely with other security agencies to cover porous borders and routes.

The number of custom service personnel used for the election cannot be ascertain. Again, their activities were in line with their roles in the election.

**Nigeria Immigration Service:** The Nigeria immigration service played the role of closely monitoring entry of foreign nationals likely to undermine the election for example, illegal immigrants brought for election; liaise with custom and air force personnel to monitor flights that might bring in illegal election materials. The number of personnel deployed not known. Similarly, their activities were in line with their roles.

**Federal Road Safety Corps (FRSC):** The FRSC's role was to man major roads to check reckless driving by road users and election personnel carrying electoral materials; rescue and evacuate accident victims to hospital; help to restrict movement of people to their areas; monitor and report the movement of thugs and other miscreants. The number of personnel deployed is uncertain and their activities were in line with role allotted to them

**Economic and Financial Crime Commission (EFCC):** The EFCC personnel were first brought in during the 2023 owing to the emergence of a new type of electoral fraud which was vote buying at polling stations The role of the EFCC was to present at polling centers and to arrest vote buyers and those who share food to voters in order to influence their votes; The number of personnel deployed was unknown The activities were in line with the their roles.

**Nigeria Security And Civil Defense Corp (NSCDC):** The Nigeria security and civil defense personnel were given the role of protecting strategic assets of the government from vandalization and arson for example INEC offices, infrastructural facilities like filling station, bridges, traffic lights; they also provide personal security to electoral personnel and foreign observers and monitors of the election. The number of personnel used for the election not conformed; their activities were as expected of them.

Our study shows that roles undertaken by various security agencies in the 2023 general elections were based on their professional area of specialization. The Airforce, for example undertook to airlift sensitive and non-sensitive election materials under-tight security to state capitals nationwide while National Drug Law Enforcement Agency ensure that polling zone are free from drugs and drug users. Since area of professional specialization determined roles given to them, their roles in the two previous election of 2019 and 2015 were not therefore different from that of 2023. However, their activities between those three elections differed owing to difference in their threat assessment between those elections. The nature of threat to 2023 election, for example, was not the same as that of 2019 nor that of 2015. Security agencies therefore changed their mode of operation or activities to effectively

counter the changing threats. Their overall goal of holding the three general elections without major disruption or postponement was achieved by security agencies.

## **RECOMMENDATION**

- (i) It is a known fact that, no election is perfect anywhere in the world. So, there is always room for improvement. In view of this, the following recommendations are considered towards enhancing future elections in Nigeria.
- (ii) There is need for the existence of an electoral offences commission. This will go a long way to prosecute offenders during election.
- (iii) Security agency/ agencies and electoral umpire should remain a political in the conducts of future elections. It will enhance a level playing ground and eliminate breakdown of law and order.
- (iv) Vote buyers should be jailed and/ or banned from political activities for 10-15 years.
- (v) Based on issues seen in the three elections, the provision of the present Electoral law should be further amended and strictly adhered to buy the stake holders. This will go a long way in conducting free, fair and credible elections
- (vi) The use of electronic voting is a welcome idea since it reduces level of violence during election to a negligible proportion. Political thugs will have little or no influence over proceeding since result could be transmitted within minutes to the collation centers. It will reduce numbers of party agents and less litigation notices if only INEC can be sincere.
- (vii) Enough political education should be given to the electorates before conducting any election.

## **CONCLUSION**

The role of security agencies in the 2023 general election was used in this paper to appraise their role, number, activities and achievements in the two previous general elections (2019 and 2015). Our study shows that the various security agencies deployed for the 2023 elections were given role base on their professional area of specialization. The situation was therefore not different in the two previous elections. Owing to changing threat situations between the three elections, their threat assessment differed accordingly hence their changing mode of operation between the three elections. However, their goal of holding elections without disruption was achieved.

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## **Utilization of Sports Entrepreneurial Skills in the Improvement of Sustainable Economic Wellbeing of the Practitioners in Uyo Metropolis, Akwa Ibom State**

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### **Abstract**

Sports ideally have not benefited the human society only in the aspect of physical and physiological but contribute extensively to the economic improvement and wellbeing of the practitioners. This study focused on the assessment of the effect of utilization of sports entrepreneurial skills in the improvement of sustainable economic wellbeing of the practitioners in Uyo Metropolis, Akwa Ibom State. The study utilized survey design approach. The population of the study consisted of all 46 Table Tennis and Snooker Board Owners. Census sampling technique was employed to sample all the 46 as respondents. Mixed method of data collection was adopted. The data was analysed using percentages and multivariate binary logistic regression model. Results showed that 100 percent of respondents were male; 43.3 percent had tertiary education. Results indicates that sports of Table Tennis and Snooker were significant in contributing to the improvement of economic status of the practitioners in the study area with coefficient regression of 1.891 and odd ratio of .151. It was concluded that sports practitioners should acquire requisite entrepreneurial skills before venturing into the business of sports. Therefore, it is recommended that state Government through its Ministry of Education, youth and Sports should incorporate into the training at secondary schools and tertiary education sports entrepreneurship to enlighten the students on the multi-dimensional effect of sports in improving sustainably the generality of human economic wellbeing.

**Keywords:** Sports entrepreneurial skills, Improvement of economic wellbeing, Sports practitioners

### **INTRODUCTION**

Issues of populace sustainable economic wellbeing cannot be complete without proper consideration to their employment status, income generation base and health. In other words, sustainable economic wellbeing directly or indirectly relate to the level of satisfaction of an individual from consumption of goods and services. In Nigeria, these three cardinal areas have been reported to be far below expectation. For instance, the rate of unemployment in Nigeria has risen to 33 percent in 2022 and projected at 45 percent in 2023 and Akwa Ibom State is regarded as the State with the highest unemployment rate in the South-South states of Nigeria with a rising percent of 52 percent (Ita & Basse, 2022). This status of unemployment has worsened the income generation strength of the people vis-à-vis constitute remarkable influence on the populace health. To uplift the populace from this menace of economic suffering (poverty) resulting from unemployment, government of Nigeria and the Akwa Ibom State have clamoured to diversify into agriculture, manufacturing, and exploitation of natural resources, but the status quo still continues to persist. Thus, continue compounding economic wellbeing challenges of the people.

It is worthy of note that poor economic wellbeing of an individual could have a sedentary implication on their health. This could add up to the rising anxiety for survival which in turn may result in cardiovascular challenges.

To this effect, assessing the potentials of sport skills in the improvement of sustainable economic wellbeing becomes urgently critical.

Utilization of sports for the promotion of individual wellbeing cannot be overemphasized. Sports according to Okediji (2015), are various activities which promote the acquisition of mental, physical, spiritual, aesthetic, emotional and educational wellbeing to make the individual contribute meaningfully to the development of the society. The health benefits of sports transcend from providing a positive outlet for stress and aggression; enhancing self-confidence and improved self-image; improving concentration and mental functioning (Reimer, et al., 2018). It equally assists in weight control, strength building, increases flexibility, enhanced concentration and motor skills, improved cardiovascular health, and pain reduction (Pantelic, et al., 2013). Sports ideally have not only the physical and physiological benefits to human society, but could contribute extensively to the economic wellbeing of the practitioners/implementers. Since sport is an engagement involving labour, the expected growth in the sport industry likely could create employment. European Commission on the contribution of Sport in Davis et al (2020) reported that for the European Union as a whole, the contribution of sports related employment to total employment is 2.12% which in absolute terms equal to 4.46 million employees. This according to the reports is above the sport related share in gross value added (1.76%), which indicate that sport is labour-intensive. The reports concluded that sport industry with share in the national economies is comparable to agriculture, forestry, and fishing combined. However, whether this is the case in Nigeria is a concern for investigation, though it is believed that for sports to help specific niche sector to develop its entrepreneurial education must be improved.

The concept of entrepreneurship revolves around dynamic generative processes aimed at new innovation, willingness to respond to intuition as part of decision making processes; and development of mindset revolving around maximizing opportunities, enhancing creativity, and innovations. Atare (2021) emphasized that entrepreneurial process includes the following stages: discovery, concept development; resourcing, actualization; and harvesting. He further stated that achievement of best entrepreneurial dealings requires entrepreneurial skills which are related to identifying business opportunities and receiving a sustainable income from these opportunities. To this end, sport entrepreneurship becomes essential. This is premised on the fact that sports required carefully designed objectives and plans that will lead to the fulfillment of these objectives; that they are cost effective; and that they adhere to the highest standards of development practice. Also, the knowledge of effectively designing the programs in sport is vital which the sports implementers must look for a way to help participants retain the benefits of their involvement and maintain healthy habits.

Sport entrepreneurship therefore, is education that taught individuals engaging in sports the need to react quickly to various dynamics existing in sport market conditions in order to stay competitive (Fayolle, et al., 2010), as well as behaves entrepreneurially in order to identify new opportunities and make these opportunities profitable in a long term. Examples of sports that can yield economic advantage to the sport practitioners/implementers are snooker and table tennis.

Acquisition of entrepreneurship skills in snooker can yield bountifully in terms of employment, economic impact, and direct spending as the benefits of the game tourism on a community (Kurtzman & Zauhar, 2005). Basically, snooker is a sport that may be played by two or more players, either independently or a side. The skills require to successfully play the game are ingenuity in calculating angles, exercising effective statistical judgment vis-à-vis mathematical addition to scoring, and energy required to accurately move the balls in a desired and specific direction. This sport according to Okediji (2015) has the potency to promote physical health and fitness, recreational activities, relaxation, prestige, economic status, identifies talents, abilities, imparts skills, and encourages sociocultural relationship, which enhances unity among the populace.

Table tennis is also another sport that could improve the wellbeing of the players as well as the economic base of the implementers socially, psychologically, and economically. This sport is fundamentally played on a flat table divided into two equal courts by a net fixed across its width at the middle. The game is played by hitting the ball so that it goes over the net and bounces on the opponent's court in such a way that the opponent cannot reach it or return it correctly.

Utilizing the two sports just like other sports can add values to individuals' implementers' wellbeing. Davis et al., (2020) revealed that for every £1 spent on these sports and other physical activity in England, an economic and social return on investment of £3.91 is generated. The report details exactly how the sports and physical activity add value from the prevention of 900,000 cases of diabetes and 30million fewer hospital visits due to improved health, as well as helping to deliver stronger and safer communities with fewer crime incidents, and the 285,000 jobs that community sport supports. Whether this is true in the case of Akwa Ibom State deserves critical assessment. However, while many studies promoted that the utilization of sport entrepreneurship potency of enhancing sustainable economic wellbeing of the sports implementers, especially in the areas of generating income and employment through manufacturing of sports equipment; serving as training grounds for a new workforce; and teaching skills that makes young people more employable and productive (Hollingsworth, 2020, Davis, et al., 2020), some scholars argued that the sports industry in Nigeria is bedeviled with mismanagement of funds, inadequate personnel, dwindling infrastructural, sporting facilities, and inadequate training. Whether this impedes the efficiency of sports industry in the State in improving the sustainable economic wellbeing of the people in terms of generating income is a source of contemplation. Thus, this resulted in a question: does utilization of sports entrepreneurial skills predicts improvement of sustainable economic wellbeing of the implementer? If yes, what is the extent of prediction?

The study meant to determine the extent to which sport entrepreneurship skills predict improvement in the sustainable economic wellbeing of practitioners. The null hypothesis formulated for the study was the extent to which sports entrepreneurship skills predicts improvement in the sustainable economic wellbeing of practitioners is not significant.

## **RESEARCH METHODOLOGY**

The study was conducted in Uyo metropolis since Uyo is the seat of Government where large number of people converged for entertainment and business operations. Uyo metropolis is located in Akwa Ibom State, Nigeria with *Latitude: 60.00" N Longitude: 7° 55' 59 E*. *Descriptive* Survey research design was adopted. The population consisted of 31 snooker and 15 Table Tennis implementers (owners) in Uyo metropolis. All the respondents were sampled using census sampling techniques. Mixed approach of data collection was utilized combining quantitative and qualitative approaches. This was to get in-depth knowledge through the qualitative approach using interview while statistically organizing the interpretation of the improvement of sustainable economic wellbeing through quantitative approach using questionnaire. In essence, data were collected using researcher's designed instruments entitled: "Sport and Economic Wellbeing Scale (SEWS)" and "Semi-structured interview guide". SEWS was used to gather quantitative data from the respondents. This consisted of eight items which encompasses the gender, age, years of experience in the business of sports, cost of investment, income on the investment per annum, and educational level of the business practitioners. Other were business size and status of sport entrepreneurship skills before venturing into the sport business. Meanwhile, semi-structured interview guide was basically used to gather qualitative details from the respondents. This consisted of five questions eliciting details on the level of their customers' (players) enjoyment and satisfaction on the business of sports. Data collected were analysed using percentages and multivariate binary logistic regression models. A descriptive statistical tool such as frequencies, percentages and averages was used to describe the socioeconomic characteristics of the respondents in Uyo metropolis. To test the hypothesis on the effects of sport entrepreneurship skills on the improvement of sustainable economic wellbeing of the respondents, multivariate binary logistic regression model was adopted since the dependent variables were dichotomous.

### **Model Specification**

The model used for the study is multivariate binary logistic regression model since the dependent variable is a dummy variable. The model is given as:

$$\ln\left(\frac{p_i}{1-p_i}\right) = a_0 + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + a_5X_5 \text{ Equation 1}$$

$$\ln\left(\frac{p_i}{1-p_i}\right) = a_0 + a_1SEX + a_2AG + a_3EL + a_4YSBE + a_5ISPPA \text{ Equation 2}$$

Where  $p_i$  is the probability of having guinea worm and  $1 - p_i$  the probability of not having guinea worm

$a_0$  is constant

$a_1 - a_5$  are the regression coefficients

EL is the educational level

YSBE is the year of the sport business experience

ISPPA is the income of sport practitioner/implementer per annum

## Model 2

$$\ln\left(\frac{p_i}{1-p_i}\right) = a_0 + a_1YSBE + a_2BS + a_3SBEK \text{ Equation 3}$$

Where  $p_i$  is the probability of making gains and  $1 - p_i$  the probability of not making gain (loss)

YSBE is the Year of Sport Business Experience

BS is the Business Size

SBEK is the Sport Business Entrepreneurship Skill

## RESULTS

Table 1: Socio-economic characteristics of the respondents

Variable	Frequency (f)	Percentage (%)
Sex		
Male	41	89.1
Female	5	10.9
Total	46	100
Age (years)		
18-38	2	4.3
39-58	11	23.9
59 and above	33	71.7
Total	46	100
Educational Level		
No formal education	-	-
Primary education	7	15.2
Secondary education	19	41.3
Tertiary education	20	43.4
Total	46	100
Years of Sport Business Experience		
1-5	16	34.8
6-10	22	47.8
11 and above	8	13.4

**Source:** Field Survey, 2023

The Table 1 indicates that the sport practitioners in the study area were mostly male (89.1%), majority within the ages of 59 years and above. Most of these sports practitioners has tertiary education (43.4%), has been in the business for a period of 6 to 10 years.

Table 2: Socio-economic characteristics of the respondents

Variable	Frequency (%)	Percentage (%)
Income of sport implementer per annum		
51,000-100,000	2	4.3
101,000-150,000	2	4.3
151,000-200,000	18	39.2
201,000 and above	24	52.2
Total	46	100
Business Size (No. of Board/Table)		
Less than 2	32	69.6
2 and above	14	30.4
Total	46	100
Cost of the sport equipment procured		
Below 300,000	18	39.2
Above 300,000	28	60.8
Total	46	100
Having requisite sport entrepreneurship skill before venturing into the business		
Yes	29	63.0
No	17	37.0
Total	46	100

**Source:** Field Data (2023)

Table 2 indicates that 52.2% of the respondents yearly income from the sport business ranged between ₦201, 000.00 (52.2%) and above. In terms of business size, the table further revealed that majority had only (69.6%). Regarding the investment in the sport business, majorly ranged from ₦300, 000.00 and above. Of these respondents, majority (63.0%) agreed that they had requisite entrepreneurship skills before venturing into the business of the sports. Deducing from the table, it could be stated that though the sports practitioners did not venture into the business of sport in a large scale, they were able to make profits from the venture. This perhaps may be because of their requisite sports entrepreneurial skills.

Table 3: Results of binary logistic regression (odd ratio) for the effect of sport entrepreneurship skills on the improvement of sustainable economic wellbeing of the practitioners (sport business owners) in the study area

Variables	Economic Wellbeing		B	Odd Ratio	P-Value	95% Interval	Confidence
	Gain	Loss					
Years of Sport Business Experience							
1-5 (RC)	7	10					
6-10	11	13	.854	2.348	.442	.226	20.746
11 and above	10	27	1.094	2.987	.003	3.797	668.785
Business Size							
Less than 2(RC)	21	4	-2.311	.038			

2 and above	5	22	3.266	.611	.002	.005	.313
Having requisite sport entrepreneurship skills before venturing into the business.							
No(RC)	7	10	-1.004		.004		
Yes	23	6	1.891	.151	.05	.042	.545

*RC = Reference Category, \*Significant at .05 error level.*

**Source:** Field Survey, 2023

In Table 3 the result shows the economic wellbeing level of the sport business owners (sport practitioners), years of sport business, business size, and having requisite sport skills before venturing into the business were considered in the economic wellbeing model. Here, the dependent variable, economic wellbeing was measured in two levels (gain or loss). The result gives the odd ratio of 2.348 for sports practitioner with 6 to 10 years of experience, implying that sport practitioner with 6 to 10 years of sport business experience were 2.348times more likely to make gains compared to those with 1 to 5 years of experience. The odd ratio for sport practitioners with 11 and above years of business experience is 2.987; this means that respondents with 11 and above years of experience were 2.987 times more likely to make gains compared to those with 1 to 5 years of experience, and this was statistically significant since  $P=.003<.05$ (level of significance).

The odds ratio of .038 and .611 respectively for sport business size less than 2 and 2 and above. Since the odds ratios of those practitioners with business size of 2 and above is approximately 1 as compared to those less than 2 which is less than 1, it implies that sports business practitioners with business size of 2 and above were more likely to make gains compared to those with less than 2. These were all statistically significant since their respective P-values were all less than .05(level of significance). The coefficients of the regression parameters of those practitioners with 2 and above was positive as compared to those with less than 2, signifying that sport business practitioners' business size had a significant predictor of the economic wellbeing of the practitioners.

The odd ratio for practitioners having requisite sports entrepreneurship skills before venturing into the business in relation to those without the skills was.151 which implies that the practitioners with requisite entrepreneurship skills before venturing into the business of sport were more likely to be sustainably productive with better economic wellbeing compared to the sports business practitioners without the requisite skills. The coefficient of regression was 1.891 implying that a unit change in the acquisition of requisite sport entrepreneurship skill in the business will lead proportionately to a change in the economic wellbeing of the sport practitioner and this was statistically significant.

## DISCUSSION

Arising from the research question raised and stated hypothesis, it was revealed sports contribute to the improvement of sustainable economic wellbeing of the respondents. This aligned with the position of Davis et al., (2020) that for every £1 spent on these sports and other physical activity in England, an economic and social return on investment of £3.91 is generated. The implication is that sports business is a profitable economic venture that can generate enormous income on investment. On the stated hypothesis tested, it was revealed that a unit change in the acquisition of requisite sport entrepreneurship skill in the business may lead proportionately to a change in the economic wellbeing of the sport practitioner and this was statistically significant. This connote that acquisition of sports entrepreneurship skills has the potency of improving the planning, organization, evaluation, and the general management of sports business. On the whole, it can be deduced that sports entrepreneurship has positive effects on the improvement of sports business practitioners in the study area. The findings however reject null hypothesis. The findings corroborate with the assertion of Kurtzman & Zauhar (2005) that acquisition of entrepreneurship skills in snooker can yield bountifully in terms of employment, economic impact, and direct spending as the benefits of the game tourism on a community. Therefore, it is essential to acquire requisite entrepreneurship skills in sports that create know-how for effectiveness and

efficiency in the management of sports. Against the backdrop of the findings, it is recommended that sports education planners should incorporate sports entrepreneurship in the curriculum of primary and secondary schools with emphasis on the economic benefits of sports. This would enhance pupils and students' interest in Physical and Health Education, as well as assist in creation of employment for quality sustainable economic wellbeing.

## **Recommendation**

Based on the findings, it is recommended that;

The Akwa Ibom State Government through the Ministry of Education, Youth and Sports should incorporate sports entrepreneurship training in secondary schools and tertiary education to enlighten the students on the multidimensional effects of sports in improving sustainably the generality of human economic wellbeing.

## **Conclusion**

The conclusion on the light of the analysis conducted is that the practitioners with the requisite entrepreneurship skills before venturing into the business of sports were more likely to be sustainably productive with better economic wellbeing compared to the sports business practitioners without the requisite skills. This according to the result entail that a change in the acquisition of requisite sports entrepreneurship skills in the business may lead to a change in economic wellbeing of the sports practitioners.

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## Impact of Subscription Revenue Model on 21<sup>st</sup> Century Businesses

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### Abstract

Subscription model is a revenue model where customers have to pay some amount of fee for services and products provided by companies before they can use it. This payment can be done daily, weekly, monthly, quarterly or yearly. The development cycle for a sustainable subscription model begins with acquiring customers, deliver consistent, high-quality service, look for opportunities to upsell or cross-sell, work to retain users and reduce churn and rinse and repeat. The types of subscription include subscription boxes / curation, repeat purchases / replenishment and access models. The benefits of subscription model to business owners are recurring revenue, financial forecasting, better inventory management, good relationship with customers, and faster feedback loop. Also, the benefits of subscription model to customers are convenience, personalized experience, assists in budgeting, and discoverability of new and unique products. Business that can use subscription model are those providing services and products such as access to content like video, music, books, membership sites, access to services such as software, utilities, insurance, leasing and access to products: personal care, food, pet care. The challenges of a subscription model include Subscription fatigue, difficulty in acquiring customers, credit card expiration. These challenges can be reduced by regular upgrade of products and services, provision of freemium to new or target customers and provision or recharge or renewal services to customers with expired credit cards.

**Keywords:** Subscription model, Repeat purchases, Recurring revenue, Leasing, Upsell, Cross sell, Freemium

### INTRODUCTION

A revenue model is a framework for generating financial income. It identifies which revenue source to pursue, what value to offer, how to price the value, and who pays for the value. It is a key component of a company's business model. It primarily identifies what product or service will be created in order to generate revenues and the ways in which the product or service will be sold. The revenue model helps businesses determine their revenue generation strategies such as: which revenue source to prioritize, understanding target customers, and how to price their products. Revenue models help business owners determine how to manage their revenue streams and are required to complete a business model. Without a clear and well-defined revenue model, with a clear plan of how to generate revenues, many new businesses will not be able to sustain the running costs. By having a clear revenue model, a business can focus on a target audience, fund development plans for a product or service, establish marketing plans, begin a line of credit and raise capital (Campbell, 2019). With a revenue model, one can set, track, and forecast business growth based on specific customer segments.

A revenue stream is an amount of money that a business gets from a particular source. A revenue model describes how a business generates revenue streams from its products and services. When choosing a model, factoring in costs is paramount to ensure profitability (Campbell, 2020). A good revenue model is not just about squeezing as

much revenue possible out of a sales cycle; it is also about balancing the ambitions in the market with the resourcing requirements. A startup revenue model may be significantly different than one for an established business because their resources are vastly different. In the past 10 to 15 years, there have been a fast explosion of software businesses with the internet stimulating a number of viable revenue models. Choosing which revenue model works best for a business is paramount, the choice will help determine the sales strategy, and from there the growth rates, the amount of money one will need to invest initially. The cost of investing in a revenue model may include the cost of goods, that is how much it will cost to produce the goods or services that a company will sell. The cost of hardware will include the cost of testing and manufacturing; the software cost will include the whole software development cycle. Regardless of what is produced, administrative overheads will also apply. The cost of goods might be considerably less comprehensive metric than cost of revenue, which is the total cost of manufacturing and delivering a product or service to consumers. Similarly, investors must consider the kind of relationship that is likely to build with the customers. These choices greatly determine the future of proposed business.

Unfortunately, most business application developers or business owners do not put much interest in considering the type of revenue models to adopt in their business application development life cycle, some developers seem to adopt any kind of revenue model at the point implementation and deployment, they do not consider their target population, the market competition, and their primary ambition (Fox, 2020). It is against this backdrop that this work is done to review the subscription revenue model, one of the most popularly revenue model used with most business applications, to identify its merits, demerits and the limitations, its designs and the businesses that adopt it.

### **Concept Subscription Revenue Model**

The subscription revenue model generates revenue by charging customers a recurring fee that is processed at regular intervals. Businesses charge a customer every month or year for use of a product or service. Subscription revenue is built on establishing long-term relationships with customers who will pay regularly for access to the product or service, also called recurring revenue. Subscription revenue is a powerful revenues model in the sense that with it, revenue accumulates with each new subscriber. With each new subscriber a company acquires, revenue grows exponentially. The subscription model is perhaps the most popular among companies because of its versatility, promise of recurring revenue, and high value: customer lifetime balance. Customers become more valuable the longer they use their product or service. Companies that focus on keeping their customers will save on acquisition costs, since retention is cheaper than acquisition (Campbell, 2019).

The subscription revenue model has been a staple of industries—publications, utilities, and, more recently, software—since it first emerged in the 17th century (Campbell, 2019). In the past few years, subscriptions have seen a bit of a resurgence, there hardly an industry that has not gotten at least one subscription success, such companies as cars, groceries, airlines, fashion, electronics, software and houseplant. All revenue is deferred and then fulfilled in installments. Customers who use subscription model make regular payments to receive products or services at recurring intervals.

Subscription revenue model is different from regular revenues because of its two main features, namely; *recurring payments and customer retention*.

For a recurring payments, subscription payments happen on a scheduled basis, most often daily, weekly, monthly, quarterly, or yearly. Compared with one-off purchases, each recurring payment is smaller, this makes subscriptions affordable for all categories of consumers, and this implies that companies need to keep customers around longer to capture more revenue. While many subscription companies offer subscribers the flexibility of month-to-month subscriptions, others sell their services on a contractual basis. For example, the mobile data plan is a great example of this, end-users might pay on a monthly basis, but might be locked into an annual (or longer)

contract with the subscription provider. As month-to-month subscriptions are better understood and customers demand more flexibility, though, the contract model is becoming less popular.

For customer retention, subscription companies rely on recurring revenue, they need to ensure customers are happy and are continuously getting value from the product or service over the long term. Companies often have to keep customers for months or even years before they finally see a positive return on their investment to acquire each new customer. Unlike the traditional businesses who don't need to retain customers for long stretches of time—the majority of buyers come in, buy a product maybe once or twice, then move on. Just as it is easy for customers to sign up for subscriptions, it is also very easy for them to cancel the subscription. This means subscription businesses must stay focused on retention. The key to building sustainable subscription revenue is to keep churn low and hold on to customers for as long as possible (Campbell, 2019).

## **Types of Subscription Model**

According to Leary (2019), the three main types of subscription model are:

- (i) Subscription boxes / curation – This is the most popular subscription model, subscribers receive a selection of unique and interesting items on a regular basis, usually tailored to their personal tastes. Often, they don't know exactly what will arrive in their subscription box, which adds an element of surprise to increase appeal. Examples of subscription box services include Birchbox, graze and Barkbox.
- (ii) Repeat purchases / replenishment – here, consumers can automate the purchase of commodity items, thereby saving them time and money. Examples include Dollar Shave Club and Pink Parcel. Replenishment models are the [second most popular](#) type of subscription service.
- (iii) Access models – Here, customers or subscribers who pay regularly receive discounts or what is called member-only perks.

The subscription revenue model benefits both customers and companies. Customers enjoy the convenience of auto-renewals and having access to a high-value offer for a low ongoing investment. Meanwhile, companies offering subscriptions can scale with confidence, with predictable revenue and deeper relationships with their customer base. It's no wonder more and more companies are shifting to a subscription business model. And considering that the average old customer spends more than a new customer because of the fact that an old customer will want to subscribe to product or service with high value (Chen, Fenyo, Yang, and Zhang, 2018).

## **Benefits of Subscription Model for Business Owners**

Recently, there is a meteoric rise of the subscription based business model. Subscriptions present a whole host of benefits for business and for customers, making them an attractive proposition in the modern ecommerce market. Some of these benefits according to Leary (2019), include:

- (i) Increased return on customer acquisition costs

The profit margin of a company is increased when a subscriber stays longer and loyal to the company products brand. The higher the retention rates and the greater their customer lifetime value (CLTV), the greater the profit margins. For subscription services, the customers' repeat business is implied at the time of purchase. Provided the companies make their subscribers happy, this type of model ensures a consistent source of recurring revenue from repeat customers

- (ii) Lower retention spend

Another benefit of having the customers automatically 'buying' from a company on a regular basis is that there's less need to target them with extensive remarketing. Subscribers who are committed to regular payments are less likely to churn, which means you don't have to eat away at the budget with retention marketing.

- (iii) Better financial forecasting

A huge benefit of a subscription-based business model is that a company can accurately and reliably predict her business' revenue stream. The company should be able to go into each month with a clear idea of how much profit the company should expect, unlike regular ecommerce retailers face huge monthly and seasonal fluctuations. Though customers may decide to cancel a subscription without warning, financial forecasting is much easier with a subscription model.

(iv) Better inventory management

A subscription retailer knows how many subscribers he/she has and how much stock her company needs. As a result, the company can anticipate demand and supply with confidence, this helps to make the business processes much more consistent. Merchants can manage and plan for a suitable level of inventory well ahead of time. The subscription retailer can place orders with suppliers and delivery services in advance, possibly even obtaining a discount or early bird' rates. This is not the case with the traditional e-commerce business model.

(v) Opportunities for better relationships with customers

Subscription ecommerce opens up opportunities to engage with customers on a regular basis across a range of channels. This is a valuable opportunity for merchants to build rich conversational relationships with customers. Subscription retailers can use the comprehensive understanding they have of their customers' preferences and usage behaviours to serve personalized content. Merchants can tailor messaging, recommendations and ads to each individual subscriber, providing a personal, memorable experience that fosters loyalty and engagement. Building a strong relationship with customers makes it easier to promote upsell and cross-sell offers. The bond of trust that's developed over the course of the subscription means that subscribers are often more receptive to any additional and complementary services that you promote to them.

(vi) Faster feedback loop

With a constant flow of regular orders, subscription retailers can continuously gather feedback from customers. The companies will become aware of any issues more quickly, enabling them to tackle problems as they arise. The best subscription businesses will learn from the feedback they receive from customers and use it to provide even better products. This business relationship will encourage the existing customers to stay loyal and be retained, it will also improve the company's reputation and attract new subscribers.

(vii) Amplified brand awareness

For subscribers, receiving their regular product or service is something they look forward to every month. There's often a build-up of anticipation before receiving subscription packages, particularly if it's a curated box with surprise items. The subscription becomes something they want to shout about to their friends and family. With regular subscription packages, recommendations are fast and frequent – great news for raising the company's profile. Often, people will also share pictures of the contents of their subscription box on social media, spreading the word about the company's brand to their followers and beyond. Indeed, unboxing videos have taken YouTube and Instagram by storm in recent years. This is a great way to raise awareness of company's brand and build the subscription base without the skyhigh acquisition costs!

## **Benefits of subscriptions model for customers**

According to Chen et al (2018), the benefits of subscription model for customers are as follows:

(i) Convenience

With the subscription model, customers can order and receive for any product or service at anytime and anywhere without any delay. Sometimes even the cost of products and services are at customers leverage.

(ii) Personalized experience

Increasingly, shoppers are demanding personalized ecommerce experiences tailored to their individual needs. Subscription ecommerce can help satiate this compelling desire that consumers have for personalization, where customers can order for specific product or service tailored to meet their specific needs. In particular, curation-based subscriptions enable merchants to deliver an intricately tailored customer experience. When a customer receives their monthly box of goodies that has been curated with their personal tastes and needs in mind, they feel understood, valued and connected. These benefits to the customer translate into significant commercial benefits for a business. It increases customer's engagement, loyalty and overall customer satisfaction, which drives retention and increases return on customer acquisition costs.

(iii) Assists with budgeting

A subscription also allows for easy budgeting. Having a set amount of money taken at regular intervals helps customers stick to their monthly budget and monitor their outgoings more efficiently. Some subscription plans provides a benefit called 'Subscribe & Save' options which enables customers to save money.

(iv) Discoverability of new and unique products

Often, subscription boxes feature samples of new products that the customers hasn't tried before. Subscribers get to embrace new products without the permanence of spending money on that specific item, which is one of the main attractions of a subscription.

#### What kinds of Businesses use a Subscription Revenue Model?

The consistent nature of recurring revenue is what makes the subscription revenue so popular, even with businesses you wouldn't expect. Companies have launched subscription models for all kinds of products and service and these include:

(i) Access to content: video, music, books, membership sites

Companies that provide ongoing access to content—like video, audio, or books—are more likely to offer subscription services to their customers. They provide a limited of their products free to customers as trial or teaser version and ask customers to subscribe for a higher value product. In the streaming-video realm, Netflix, Hulu, and HBO all provide high-quality entertainment for a low price. Music and books are also frequently sold by subscription. Amazon offers a subscription service for ebooks, and Audible offers unlimited access to audiobooks, as long as you remain a subscriber.

(ii) Access to services: software, utilities, insurance, leasing

Many software companies offer their software on a subscription basis instead of as a one-time purchase. With more traditional one-time software sales, it's much more difficult for developers to make changes and improvements to their products, relying on clunky update systems to deliver those improvements to the end customer. Offering remotely hosted software packages on a subscription basis makes it much easier for software companies to improve their product over time and perhaps make more gains through recurring revenue. Customers don't need to worry about how they'll host the software or how they'll keep it up to date.

Leasing an apartment, a house, car or a machine, a land etc is another example of a service-based subscription business that are offered by companies like Excedr. The customer pays rent to landlords or owners either monthly or yearly; landlords deal with retention, churn, and other aspects of a subscription business every day. Insurance Companies also charge customers monthly (or sometimes yearly) for home,

auto, boat, and renters insurance, and customers are free to switch providers at any time their rent expires. The owners of the properties may upgrade the properties and lease or rent them to another, sometimes at higher cost.

- (iii) Access to products: personal care, food, pet care  
Finally, many products are now available on a monthly basis. Subscription products tend to be split into two categories: convenience and curation. Any product that frequently needs replenishing is a good candidate for convenience subscriptions, products like food and drink can be subscribed for at convenience. Curated subscription boxes are generally based on a theme or target market. These subscription services deliver a curated selection of products on a monthly or quarterly basis—for example, Stitch Fix delivers a monthly box of hand-selected fashion items, while Art Crate delivers a similar service for home-decor products.

### **Subscription Revenue Model Life Cycle**

Subscription revenue model life cycle involves the stages of building a sustainable revenue generation through subscription. According to (Campbell, 2020) there are five stages, which include:

- (i) Acquire customers  
The first stage for every subscription company, of course, is to acquire customers. Subscription companies generally rely on the same methods as traditional companies to attract new customers, like inbound marketing, paid advertising, and search. It often takes months or even years to capture enough revenue to cover those customer acquisition costs.  
Some software companies employ a software monetization strategy to offer a freemium model, where customers can use a free, sometimes feature-limited version of a product indefinitely. It widens the top of your funnel considerably and gives you more time to nurture new customer relationships. These products may be upgraded later with more features to a paid plan in the future.
- (ii) Deliver consistent, high-quality service  
At this point, the sales and marketing teams of the company might have successfully completed their job, and have got a solid base of subscribers. The company will then deliver an experience that meets the customers' needs and continues to provide value over time. The hang-up most subscription companies run into here is not spending enough time to understand what their customers' needs are. The only way to solve this is to talk to subscribers constantly to understand their needs.
- (iii) Look for opportunities to upsell or cross-sell  
Acquiring new customers isn't the only way for subscription companies to expand. In fact, it's easier to generate more revenue with existing subscribers through *expansion revenue that is any revenue that is generated in excess from a customer's initial purchasing price or contract*. There are two main ways for subscription companies to create expansion revenue, they are; Upselling by upgrading customers to a larger plan as their need for your product grows, create a pricing scale that increases what is charged as customers increase their usage of the solution and Cross-selling customers additional features and services to augment the service they already have.
- (iv) Work to retain users and reduce churn  
Most subscription companies put all their efforts into acquiring new customers, when often it isn't the most effective way to grow. Retaining customers is even more important for growing your subscription revenue.

(v) Rinse and repeat

This is where the subscription flywheel really starts turning. As more and more happy subscribers stick around, the company will bring in steady revenue every month, without the ongoing acquisition costs that non-subscription businesses face each time the monthly clock resets. As the flywheel starts turning faster, subscription growth begins to compound. The magic of compounding means small improvements to your subscription revenue can accumulate into big money over time. But simple steps like tracking customer credit card expiration dates, communicating charging failures to customers, and keeping security protocols updated are all manageable problems. In isolation, fixing these problems might feel like you're only inching you towards your churn goals. But when you add them all up, they make a difference:

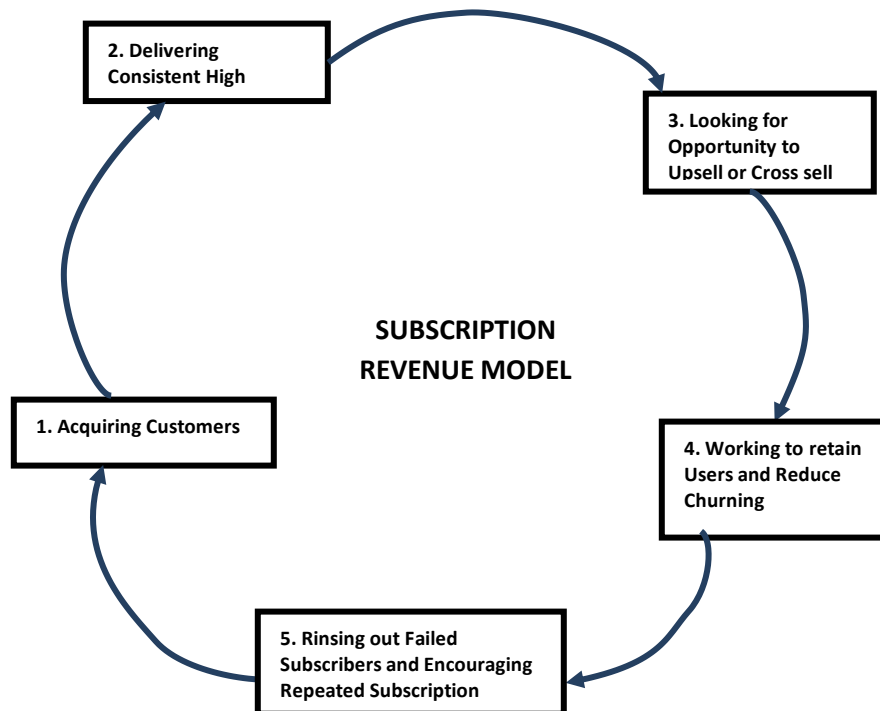


Figure 1: Life Cycle of Subscription Revenue Model

### The Challenges of a Subscription Model and How to solve them

Though no subscription based business model presents challenges to retailers, there are yet few challenges to be known:

- (i) **Subscription fatigue** – Subscribers could become bored of the products, which means merchants need to work hard to upgrade products and services such as to add more new features, the collaborate with related companies to advertise or provide new products and services or even to create awareness on related features in order to maintain interest.
- (ii) **Difficult customer acquisition** – New customers are asked to make a commitment to regular spending, as opposed to a one-off purchase. This can make sign-ups harder to establish. Customers should be given freemium and the paid later for more valued products and services.
- (iii) **Credit card expiration** – Subscription billing can be more vulnerable to changes in payment details, such as card expirations. Luckily, modern subscription platforms like [ReCharge](#) allow customer credit cards to be updated automatically.

### SUMMARY

Subscription model is a revenue model where customers have to pay some amount of fee for services and products provided by companies before they can use it. This payment can be done daily, weekly, monthly, quarterly or yearly. Subscription model attract multiple recurring profit to companies. It makes it easy and cheaper for any category of customers to access products and services. It helps the companies develop good relationship with customers, thereby providing fast feedback which in turn helps business owners to improve on their products and services. The benefits of subscription model to customers are convenience, personalized experience, assists in budgeting, and discoverability of new and unique products. The challenges of a subscription model include subscription fatigue, difficulty in acquiring customers and credit card expiration.

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## **Influence of Principals' Coercive Power on Job Performance among Secondary School Teachers in Eket Educational Zone, Akwa Ibom State, Nigeria**

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### **Abstract**

The study investigated how principals' use of coercive power predicts teachers' job performance in secondary schools in Eket education zone of Akwa Ibom State. Ex-post facto design was used for the study. One research question was raised and a hypothesis formulated to guide the study. The population of the study consisted of all teachers in public secondary schools in Eket education zone with the population of 2436. The sample size of 372 teachers was selected through stratified random sampling technique from 62 public secondary schools out of 234. Data collection was done with the use of researcher's developed instruments tagged 'Principals Use of Coercive Power and Job Performance of Secondary School Teachers Questionnaire' (PUCPJSSSTQ) measured on 4 - point rating scale. The questionnaire had 27 items and a Cronbach reliable index of 0.67. The data collected were subjected to statistical analysis using correlation coefficient and Regression analysis. The hypothesis was tested at 0.5 level of significance. The finding of the study was that Principals' use of coercive power significantly predicts teachers' job performance in secondary schools in Eket Education zone of Akwa Ibom State. It was recommended from the study that Principals should exercise their coercive power with caution so as not to cause unrest, instability and rancour in the school system and that seminars, workshops and symposia be organized to train principals on proper use of power within the school system.

**Keywords:** Principal, Coercive, Power, Performance, School

### **INTRODUCTION**

Work organizations are not only systems of hierarchical structure but also systems of social relationships, status and power. The leadership power of principals on teachers' effective teaching and performance has been an area of constant disputation and contestation. It is often asserted and not refuted that schools are as good as their head teachers. According to Sergon (2005), schools' success depends largely on the teachers.

Effective leadership is crucial to the success of any organization. In fact, the success or otherwise of any organization is often traceable to the leadership of such organizations in terms of ability to inspire, moderate, guide, direct and listen to subordinates. These qualities set the ball rolling with regards to effective management of school personnel.

Managing a school is much more like navigating a ship through turbulent waters. It requires caution, focus, maximum clarity and distinctness, otherwise that ship may wreck. The principal is the captain of the ship. He is the most senior teacher, leader and manager of the school.

The success or failure of the school rests on his shoulder. He either works hard to succeed in his duties or buckle under the weight of responsibilities he bears. The school principal is the one who coordinates and controls the actions of his staff in order to achieve stipulated goals and objectives. According to Uyanga (1995), the principal

through his managerial behaviour influences to a great extent, the ways and means by which goals are achieved in his school, the direction to be pursued, and the various priorities to be considered within the school system.

Power refers to the ability of an individual to influence others who are in a state of dependence. In order to exercise power, the actor requires some measure of authority. Authority is defined as the right to make decisions, direct others' work and give orders (Ekang, 2014).

Simon (1976) defines authority as "the power to make decisions which guide the actions of another". According to Weber (1947), authority is "the probability that certain specific commands (or all commands) from a given source will be obeyed by a given group of persons". Authority helps to define relationship between or among organizational members. In the school system, according to Uyanga (1995), there are student-teachers relationships, teacher-principal relationships, superior-subordinate relationship and others.

Power revolves around the use of force by a superior officer to get things done despite protestations from the subordinates. Power is an indispensable ingredient of leadership and it is always the force behind any authority in management. Power is seen as a form of "raw energy" which is epitomized by involuntary compliance, non-compliance and resistance from the threats or the use of force, be it physical, economic, social or political. It should be noted however that in authority, compliance is voluntary and not by coercion as is the case with power.

Coercive power refers to the application of negative influences on employees. It results from the expectation of a negative reward if wishes are not obeyed. Power is the force behind every authority in any administrative set-up. Coercive power is the use of force to get things done. Subordinates comply only because of fear of punishment from the superior officers. It does not call for wilful compliance (Uyanga, 1995). The principals' power derive from a number of policy documents, for example, section 16A of the Education Laws Amendment Act (ELAA) which defines the duties and responsibilities of the principal with regards to their relation with the school governing body (RSA, 2007). Cartwright (1959) argues that the power of one person to influence another depends upon the role he or she occupies.

Zander, Cohen and Scotland (1959) focus more on a person's perception of his or her power. These scholars contend that power stems from a number of sources with the most common of these being the status differentials implied or explicitly defined by society, the nature and value of the functions included within his or her role and the responsibility he or she has to others or that they have him or her. The major responsibilities of a principal include making decision about the management of the school and coordinating the activities within and outside the school.

A school's ability to improve teaching and learning is strongly influenced by the leadership of its principal. The principal possesses pervasive disciplinary power within the school.

However, the principals' role as a leader in the school is constrained by the context and culture of the school milieu. External factors include issues like the influence of the neighborhood and the immediate community, societal influences that disrupt the curriculum, students' conflict and violence in schools, demography, the geographical location of the school and the socio-economic status of the school community. Internal factors include issues like teachers' and their behaviour, teachers' qualifications, resources, work ethic and teachers' union. Some of these issues will be explored in this study. An important question to ask is how these factors affect the official position and ability of school leaders to influence quality education. Other aspects that will be examined in this study are whether principals are able to use their supposed powers and how principals perceive the powers given to them. Are the principals really able to use their powers to enhance teachers' job performance in Eket Education zone of Akwa Ibom State? This study will attempt to provide answers to this question.

### **Statement of the Problem**

The role of school principals in influencing the performance of teachers is critical for the overall success of the educational system.

However, the use of coercive power – where principals rely on threats, punitive measures, or authoritative control – can have significant consequences on teachers job satisfaction, motivation and ultimately, their performance.

Despite potential impact, there is limited empirical research specifically examining how principals' coercive power influences job performance among secondary school teachers in the Eket Education on Zone, Akwa Ibom State, Nigeria. This study seeks to bridge the gap by exploring the extent of which coercive power impacts teacher's effectiveness, work attitudes and educational outcomes in this region.

### **Objectives of the Study**

- (i) To determine the extent of the use of coercive power by principals in secondary schools in Eket education zone
- (ii) To examine the relationship between principals coercive power and teachers' job performance
- (iii) To assess the effects of principals' coercive power on students' academic performance as an indirect measure of teachers' job performance.
- (iv) To suggest possible strategies for minimizing the negative impacts of coercive power in school administration.

### **Research Questions**

The following research questions will guide the study:

- (i) To what extent do principals in the Eket Educational Zone use coercive power in managing secondary schools?
- (ii) What is the relationship between the use of coercive power by principals and the job performance of secondary school teachers?
- (iii) How does principals' coercive power affect teachers' job satisfaction and motivation?
- (iv) What is the impact of principals' coercive power on students' academic performance as influenced by teachers' job performance?
- (v) What strategies can be implemented to reduce the negative impacts of coercive power in school management?

### **Research Hypothesis**

- (i) HO<sub>1</sub>: There is no significant relationship between principals' coercive power and the job performance of secondary school teachers in the Eket Education zone.
- (ii) HO<sub>2</sub>: Principals' coercive power does not significantly affect teachers' job satisfaction and motivation in secondary schools.
- (iii) HO<sub>3</sub>: The use of coercive power by principals does not significantly impact students' academic performance through its influence on teachers' performance.

## **RESEARCH METHODOLOGY**

The research methodology used for this study was ex-post-facto research design. This design was considered most appropriate for the research as it attempted to check the already existing relationship of the independent variable (the principals' use of coercive power) on the dependent variable (job performance of secondary school teachers). In this type of design, the researcher cannot manipulate the effect but just obtain the effect on already existing natural course of events.

The study population consisted of all public secondary school principals and teachers in Eket Education Zone. They were made up of 234 principals and 2436 teachers respectively. The sample for the study was made up of 32 teachers and 62 principals which is 26% of 62 schools in the study area. Simple random sampling technique was adopted in selecting the 6 teachers with the principal from each school in Eket Education Zone. The balloting system was used in selecting the sample.

The instrument used by the researcher for this study was a research questionnaire. The questionnaire tagged "Principals Use of Coercive Power and Job Performance of Secondary School Teachers' Questionnaire"

(PUCPJPSSTQ) was used to collect data. Section A measured items on the demographic data of the respondents while Section B measured items on the independent variables. To ensure the validation of the research instruments, the items in the questionnaire were properly worded to meet the respondent's level of understanding, and each variable was properly measured.

In order to establish the reliability of the research instrument, Cronbach Alpha reliability method was used in order to test the internal consistency of measuring instrument. From the analysis, the reliability coefficient of 0.67 was arrived at which was high enough to justify the use of the instrument.

The researcher identified the respondents, administered and retrieved copies of the questionnaire for analysis. The items were classified according to the variable measured. Items in the instruments were scored independently. For each sub-variable, scores were obtained by summing up the responses. Each of the respondents therefore, received a separate row of data which was used for data analysis. The responses to the items in the questionnaire were on four-point rating scales of strongly Agree (4 points), Agree (3 points), Disagree (2 points) and strongly disagree (1 point).

The data obtained was analysed using multiple R and R square and simple linear regression analysis. The calculated values were compared with the critical values for test of significance or non-significance of the result at .05 alpha.

## RESULTS

The results of the study was presented and discussed based on the research question and the hypothesis that guided the study. The research question was answered using the correlation coefficient, while the null hypothesis was tested using simple linear regression. The results are presented in table 1 and table 2.

### Research Question

What is the relationship between Principals' Use of Coercive Power and Job Performance of Teachers?

Table 1: Result of multiple R and R square coefficients for the relationship between Principals' Coercive Power and Job Performance of Teachers.

VARIABLE	R	R SQUARE	ADJUSTED R SQUARE	STD ERROR OF THE ESTABLISHMENT
Principals' Coercive Power	.970	.941	.940	.246765

Entries in Table 1 reveal the strength of the relationship between the independent variable (Principals Coercive Power) and the dependent variable (Job Performance of Teachers). R, the correlation coefficient (.970), is the linear correlation between the observed and model-predicted value of the dependent variable (Job Performance). Its high value indicates a strong positive relationship. R<sup>2</sup>, the coefficient of determination (.941) is the squared value of the correlation coefficient. It shows that 94 per cent variation in job performance of teachers is explained by the independent variable (Principals Coercive Power). The result means that there is a very high corresponding linear relationship between Principals' Coercive Power and Job Performance of Teachers.

### Hypothesis

Principals' use of coercive power does not significantly predict teachers' job performance.

Table 2: Results of simple linear regression analysis for the prediction of principals' coercive power on teachers' job performance

VARIABLE		SUM OF DF	MEAN F	SIG.
		AREAS	SQUARE	
Principals' Coercive Power	Regression	5875.996	1	.000
	Residual Total	365.358	60	
		6241.355	61	6.089

Significant at 0.5 alpha levels; df = F1, 60, Critical F = 4.00; N=62

Table 2 shows the calculated F-value of 964.969 at .05 with 1 and 60 degrees of freedom and critical F-value of 4.00. Since the calculated F-value is greater than the critical F-value, it means that principals' coercive power significantly predict the criterion variable which job performance of teachers. This therefore leads to rejection of the null hypothesis that principals' use of coercive power does not significantly predict teachers' job performance. Meaning that, changes in principals' coercive power scores also cause changes in teachers' job performance.

## DISCUSSION

Analysis of data in the hypothesis showed a significant relationship due to the fact that the obtained F-value (964.969) was greater than the critical F-value (4.00) at .05 level with 1 and 60 degrees of freedom. This result implies that there is significant relationship of principals' coercive power on teachers' job performance. The significance of the result is in agreement with the findings of Zamani (2012) who concluded that if a manager moderates his/her use of coercive power employees will be committed and satisfied with their job and the organization. The significance of the result caused the null hypothesis to be rejected while the alternative hypothesis was upheld.

A study was conducted by Iffon (2009) on The Effects of Principals' Power on the Performance of Secondary School Teachers' in some selected schools in Tanzania. The researcher adopted ex-post facto design for the study and used a simple random sampling technique to draw 300 respondents. From the results of the analysis, it was revealed that principals' power has significant effects on the performance of secondary school teachers in some selected schools in Tanzania.

In another study conducted by Bromley (2010) to assess the influence of power-style of the principal as a driving force to achieve organizational objectives of public secondary school in New York, a stratified random sampling technique was used to select a sample size of 500 respondents. It was observed that organizational objectives of any public school are significantly dependent on power style of the principal. According to Bromley (2010), as part of conclusion, principals' power, though vital to the effective and efficient management of school goals has been implicated in the literature as a major contributor to school problems.

There exists findings where coercive power was not associated with employees satisfaction (Lee and Tui, 2008), thus suggesting no statistical significance between the two variables. Afza (2005) also found no significant influence of coercive power on employees' satisfaction. Despite these results, researchers are agreed that extensive use of this power does not lead to employees' satisfaction (Rahimi, 1988, Hinkin and Schriesheimi 1989). Similar relationship was found in a study by Burke and Wilcox (2001) that indicated a negative relationship between coercive power and job satisfaction consistent with these findings; the results of Elangovan and Xie (2000) that use of coercive power by the supervisor lowers employees' satisfaction with the job and also the commitment level. Burke and Wilcox (2001) further revealed that coercive power produces least degree of employees' satisfaction.

Similarly, Zamani (2012) in his study concluded that if a manager increases his/her use of coercive power, employees will be least committed and satisfied with their job and organization. However, this is not always the

case, as a study by Nadaee (2012) indicated a significant positive relationship with referent, expert and legitimate powers but it showed no significant relationship with reward and coercive powers. Richmond and Hannes (1986) findings revealed that coercive and legitimate powers are negatively associated with job satisfaction whereas reward-power had little impact on job satisfaction. Coercive power is not perfectly correlated with legitimate power. Lower level organizational members can also apply their own share of coercion. For instance, in a work-to-rule strike action that slows down productivity by adhering religiously to organizational procedures are usually organized and carried out by low-level organizational members. The use of coercive power to control workers' behaviour is usually very problematic because of emotional side effects. Thus, it is not surprising that when managers use coercive power, it is generally ineffective and can provoke considerable employees' resistance. Mitsubishi plant was imposing lots of coercive power on its employees and the results were most unwelcoming. Coercive power finds expression in the ability of a person to provide someone with the things he does not desire and to remove those things which he desires. In coercive leadership, subordinates are grounded mainly on fear, threat and force and hence it is labelled negative. The leader insists on strict obedience of rules and regulations and in some cases is not prepared to bend procedures to accommodate peculiar needs of the organization's members. Workers engage in eye service and neglect their work in the leader's absence. (Ekang, 2014).

Coercive use of power may be favourably disposed in organizations when subordinates are new on the job and have no experience either in the managerial decision making process or performing without active supervision, it can increase efficiency and get quicker results especially in a crisis or emergency situation when the decision must be taken promptly; and when the subordinates are not interested in seeking responsibility or when they work better under clear and detailed directives and when the chain of command and division of work is clear and understood by all.

On the other hand, coercive use of power can culminate in one-way communication which may lead to misunderstanding and communications breakdown due to lack of feedbacks; it may create a distance between leaders and organizations' members which discourages an exchange of points of view and may create tensions and antagonisms which may remain latent in normal times and emerge when challenges ensue; it is unsuitable when the workforce is knowledgeable about their jobs and or when the job calls for teamwork and cooperative spirit; since it limits workers freedom, it fails to enhance their commitments to school's goals and objectives and finally it leads to low employee morale which may result in poor productivity in the long run. Coercive power tends to be the most obvious but least effective form of power as it builds resentment and resistance within targets of coercive power.

Ekang (2014) opines that power means getting other people to do something they would not have done under normal circumstances. Exercising this kind of power is usually accompanied by sanctions of some kind.

## **RECOMMENDATIONS**

Based on the findings of the study, the following recommendations are proposed to improve the leadership practices in secondary schools within Eket education Zone, Akwa Ibom State:

- (i) Promote transformational leadership
- (ii) Involve teachers in decision making
- (iii) Professional development for principals.
- (iv) Establish clear communication channels.
- (v) Create a supportive work environment
- (vi) Regular assessment and feedback mechanisms
- (vii) Strengthen teacher – principal relationships in the schools system

## **CONCLUSION**

The study highlights the detrimental effects of principals' coercive power on the job performance, satisfaction and motivation of secondary school teachers in the Eket Education Zone, Akwa Ibom State. It underscores the

importance of adopting more positive and inclusive leadership approaches to create a conducive work environment that enhances teacher effectiveness and ultimately improves student outcomes.

The findings suggest that a shift from coercive power to transformational and participatory leadership could significantly improve the overall performance of schools in Eket Educational Zone of Akwa Ibom State.

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## **Good Practices, Policy and ICT for Inclusive Education in Teacher Training: A Qualitative Approach**

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### **Abstract**

From a qualitative approach, this study gathers the contributions of 28 teachers from a teacher training college in Akwa Ibom State who reflected on how to advance towards a more inclusive college of education. The results indicate barriers to inclusion that Nigerian teachers training colleges must overcome and the strategies that would allow for progress towards a more inclusive best practices, policy and ICT. It concludes with the invitation to an organizational change based on a broader conception of inclusion. Tackling the underlying causes of this situation are the exclusive and inaccessible nature and structure of the school system. Moreover, there is the suggestion for a committed institutional effort that will translate into a greater educational investment that enables the improvement of inclusive learning conditions and the training of teachers in inclusive teaching.

**Keywords:** Inclusive, Policy, Barriers, ICT, Culture, Good practice

### **INTRODUCTION**

Researchers have not reached a common definition for inclusive education with a distinction from what a regular form of education is defined as, however, inclusive education focuses on the well-being of all pupils and aims to develop classroom where all pupils can learn and participate together (Haug, 2017). Inclusive education is a United Nations (UN) innovation through the United Nations Educational Scientific and Cultural Organization (UNESCO). It is one of the main strategies that UNESCO has applied to address the global challenges of marginalization, discrimination and exclusion in response to the fundamental principle of Education for All (EFA). Inclusive education is involved with a particular emphasis on those groups of learners who may be at risk of marginalization, exclusion, or underachievement, such students are categorized as those with Special Educational Needs (SEN) (Ainscow, 2020). Regular classroom teachers fundamentally and routinely encounter student diversity. To ensure that all students have access to learning in an inclusive classroom the application of complex and highly skilled content knowledge by the classroom teacher is essential (Florian and Black-Hawkins 2011). Under inclusive education as entrenched in the United Nations Educational, Scientific and Cultural Organization (UNESCO) Sustainable Development Goal 4 (SDG4), Quality Education seeks to “Ensure inclusive and equitable quality education and promotion of lifelong learning opportunities for all” (UNESCO 2019). Access to an all-effective inclusive education within the regular education system falls within this goal, which highlights that the principle of inclusion is far-reaching and applies to all students. UNESCO fact sheet report indicates that over 10m children are out of school in Nigeria, while UNICEF, reports that almost 95%

of children with disabilities in developing countries are out of school and 90% of them may never gain access to basic education in their lifetime. The 2030 Agenda for Sustainable Development clearly states that disability cannot be a reason or criteria for lack of access to development programming and the realization of human rights, with the challenge to higher education institutions. The study aims to investigate the perception of teachers in a teacher training college about the inclusion of students with disabilities in a teacher training education setting, it would be beneficial to gather the perspectives of the parents of children with disabilities too, to get a fuller picture of the experiences and challenges related to inclusion in Akwa Ibom State at a tertiary institute.

## **Policy on Inclusive Education**

Inclusive education as defined by United Nations Educational, Scientific and Cultural Organization (UNESCO) is “a process of addressing and responding to the diversity of needs of all learners through increasing participation in learning, cultures and communities, and reducing exclusion within and from education” (Anderson 2014). In 2006, the United Nations ratified the Convention on the Rights of Persons with Disabilities (CRPD). National policy on Special Needs Education, spells out that Nigeria is involved in Special Needs Education “but the present practices are not fully consistent with existing global best practices”, Special Needs classrooms laboratories in the country are not yet technology driven (SNE, 2015). The Policy further states that the gifted education programme in Nigeria is organized like that of a regular school. In other words, techniques and strategies (such as curriculum compacting, enrichment, bibliotherapy and so on) that drive gifted education are not generally being practiced.

Access to appropriate education for Persons with Special Needs is the main thrust of inclusive education. Making appropriate education available to children and youth with Special Needs is one sure way of achieving access and equity as prescribed by UNESCO for inclusive education programmes. It is of great importance that Government of Nigeria urgently makes all levels of education (public and private) schools inclusive of, and accessible to all children including those with disabilities/gifted/talented. That way there will be a drastic reduction in the number of out of school children, this also will reduce the social burden of unproductive and unskilled population a direct translation to increase the actual human resource

## **Capacity of the Nigerian Nation**

The Special Needs Education (SNE) policy of 2015 highlights that there is no functional legislation on Special Needs Education even though Nigeria had signed and ratified the UN Convention on Rights of Persons with Disabilities (CRPD), Article 24, which provides that all schools must be inclusive of, and accessible to all children including those with disabilities (Ademefun 2020). There are no clear laws or policies today different from the ones that existed then, there were mainly that of “grants-in-aid”. According to the SNE (2015) document some of the laws in some states are now moribund. What exist now are policies with no legislation back up and the role of Special Education teachers in the context of the policy is not highlighted. At the state level in Akwa-Ibom State, Government has to provide all existing and newly established primary and secondary schools with inclusive and accessible infrastructures like classrooms, playgrounds, toilets, etc; adaptive teaching/instructional aids and technologies; well-trained teaching and non-teaching staff; initiate public awareness programmes and strengthen relevant legal and policy frameworks on inclusive education.

Ademefun (2020) points to a list of challenges and poor state in SNE, the confinement of the education of children with disabilities to very few, poorly staffed, poorly equipped and outdated special schools; very low public awareness on issues of inclusive education; inadequate institutional and human capacities required to implement inclusive education; and inadequate, poor implementation or non-availability of appropriate legal and policy frameworks required for the implementation of inclusive education for children with disabilities.

## **Good Practices**

The provision of effective technology-based teaching and learning in Nigerian public schools, tertiary and higher education system would enhance competitive global learning and development. Nigeria's philosophy of education is based on the development of the individual into a sound and effective citizen whose training would facilitate the understanding of the world; the acquisition of appropriate skills and the development of mental, physical, social abilities and competencies as equipment for the individual to live in and contribute to the development of the society NPE (2004). Such learning could be accessed through various media, like the multimedia electronic technology, classroom devices, the web and Internet, computer applications and online assessment and research resources for all students and teachers, including assistive devices for exceptional student. In recognition of the relevance of technology and quality learning in the public school's system in Nigeria, the students with disabilities equally require appropriate assistive technology devices, tools, resources and related services to aid their learning, job skill development, life skills training and transition into adulthood, and the community by special education teachers/qualified professionals Obiozor, (2010).

Going with Anderson et al., (2014)'s, definition of Inclusive education adopted from the United Nations Educational, Scientific and Cultural Organization (UNESCO) as a process of addressing and responding to the diversity of needs of all learners through increasing participation in learning, cultures and communities, and reducing exclusion within and from education. But Inclusion as noted by Slee (2018) must involve more than participation of students with disabilities in mainstream classes. There is the need for participation to be accompanied by structural changes in terms of organization, curriculum and teaching and learning strategies, other than that, it cannot be termed as inclusion. Barriers posited by other studies, Zwane and Malale (2018) noted that there is a need for an inclusive curriculum along with in-service and pre-service training for teachers to increase their capacity to teach in inclusive classrooms, teachers' perspectives on the acceptance for inclusion of SEN in general education is only accepted by teachers in theory (Naraian, 2014; Tiwari et al., 2015). Even though the social constructivist perspective suggests that there are socio-cultural factors that mediate in a students' success in school, there are limited studies of how teachers, who are already in the field, are equipped to teach all students and also are willing to implement inclusive education.

## **ICT in Inclusive Education**

Speedy development of Information Age brings possibilities and dangers to people with special needs. Whilst it can be very empowering, providing for a chance to be involved in the society otherwise inaccessible to the disabled, it can also create new threatening barriers excluding them even more. The educational needs of people with disabilities are vastly diverse. In this context, ICT application is very important as it plays an essential role in providing high quality education for students with disabilities. ICTs have been introduced into the teaching-learning process in order to improve quality, support curricular changes and new learning experiences. In this way it is possible to meet the specific learning needs of different learner groups, including students with disabilities. UNESCO (2006).

Several researches are of the opinion that teaching and learning can successfully take place through the application of electronic communication facilities between teachers and students is one which had generated sometimes, hope and dismay and at other times, excitement and fear (Lugard, 2023; Sofi-Karim, et, al. 2023). Hope when viewed that many more learners can be reached at a more convenient pace that had the infrastructures necessary for deploying an effective ICTs platform is lacking in low- income countries (Cueva and Inga, 2022). However, the use of information and communication technologies in the education process has been divided into broad categories: ICTs for Education and ICTs in Education. ICTs for education connote the development of information and communication technologies specifically for teaching/ learning purposes, while the ICT in

educational involves the adoption of general components of information and communication technologies in the teaching/learning processes

The applications of ICTs are extremely diverse and varied; they may be grouped into the following main categories: Compensation uses; that is the use of new technologies as a technical assistance that allows students with special needs to take active part in the process of interaction and communication. Didactic uses; ICTs used as a learning tool have prompted a new dimension of education and launched the transformation of the educational approaches. ICT application brings a variety of new teaching and assessment strategies for students with different educational needs and Communication uses; Technologies can mediate communication with people having disabilities. Assistive devices and software to meet the needs of students with definite communication difficulties are specific to every disability. Moore and Taylor (2000)

On the other hand, gifted and talented children are naturally endowed with special traits (in arts, creativity, music, leadership, intellectual precocity, psychomotor prowess etc.) and therefore find themselves insufficiently challenged by the regular school/college/university programmes in relation to pace and curricula. UNICEF (2022) suggest the introduction of assistive technology including wheelchairs, prosthetics, glasses, hearing aids and screen-reading software to helps in the development and participation of children with disabilities, by enabling their communication, (Joseph, 2003), mobility and self-care.

The use of technology will allow each child to explore the worlds of family relationships, friendships, education, play (Jansens and Bonarini, 2021) and household tasks, enhancing their quality of life and that of their families. For the vast majority of children with disabilities, however, inadequate access to assistive technology, or none at all, excludes them from education, resulting in lifelong consequences for their participation in civic life and employment (UNICEF, 2022). However, there are very few studies on the usage and effectiveness of digital technologies and related assistive technologies by children with disabilities (Lynch, Singhal & Francis, 2021). In a World Health Organization (WHO) report by Shuksin, (2005) it is the believe that children with disabilities are statistically the poorest among the poor, and that it is reasonable to expect, that their disadvantages will tend to be advance prominently through poverty. Studies identifying the barriers prevailing among the poor, such as inadequate internet connectivity, are likely to be relevant to children with disabilities (UNICEF, 2020).

Studies related to teachers' perspectives on inclusive education have suggested that the inclusion of SEN in mainstream education is only accepted by teachers in theory (Tiwari et al., 2015). In developed nations like the United States of America has not yet signed the ratified CRPD, however, Dudley-Marling and Burns (2014) argued there were two dominant perspectives held by educators regarding inclusive education. The first being a deficit position or medical model indicates that students are said to be lacking skills and/or the ability to successfully thrive in general school/education. The second position is a social constructivist perspective, this is grounded in the notion that the burden of the disability does not rest with the student allowing structural reform to take precedence over remediation. Expressed in a different way to mean that social constructivist perspective indicates that there are socio-cultural factors that mediate a students' success in school. Exploring further on how teachers, who are already in the field, are equipped to teach all students as well as their willingness to implement inclusive education are scare in literature. This study reflects on how to advance towards a more education, examination to barriers of inclusion that must overcome and the strategies that would allow for progress towards a more inclusive best practices, policy and ICT.

Two research questions serve to guide this study: (1) How is inclusive best practices followed by teachers, with working with diverse learners? (2) What are the policies that allow teachers who participate in inclusive practices function within their development?

## **RESEARCH METHODOLOGY**

The research is advanced by a social constructivist epistemology that acknowledges meaning as emerging through conscious engagement (Crotty 1998). Employing an ethnographic methodology, the research draws on qualitative approach derived from interactions, observations (by participants), and conversations with each of the teachers in

the study. Qualitative methodologies allow researchers to probe into meanings, structures, and thoughts associated with human interactions (Greene and Hogan 2005). Twenty-eight teachers at a teacher training college in Akwa Ibom State participated in the study. All twenty-eight participants who have taught at the college for more than 15 years, within the period they have supervised student’s teachers and have been exposed to many schools’ system in the course of student teaching practice supervision. They also have first-hand knowledge of whether a school runs an inclusive education or not. Data from this study consist of descriptions to facilitate deep understanding about the participants’ professional teaching life’s, their knowledge of policy, culture and best practices experiences, challenges, and supports for inclusive education.

The data were collected through semi-structured qualitative pair interviews during free times of the participants. The interviews were conducted in pairs with the intention to increase the informant’s participation and reflection (Denscombe, 2017). Since the researchers are staff of the teacher training college the interviews were conducted at the convenience and schedule time to all. This approach was chosen for according to Cohen et al., (2013), “the major justification of using interview in research is that it is believed that an interpersonal encounter with people, they are more likely to disclose aspects of themselves, their thoughts, their feelings and values” (p.282).

Central themes in the interview guide were the (a) Special Needs Education (SNE) policy, (b) culture of school/society. (c) best practices for inclusive education, (d) ICT/assistive technology, (e) their positive experienced and challenging aspects concerning common planning and the meeting of diverse needs for inclusive education. The interviews lasted from 30 to 45 min and were recorded. In addition, the participants completed an individual questionnaire with open-ended questions focusing on experience and expectations. The questionnaire offered the participants the possibility to put forward perspectives that they might not have been comfortable mentioning during the pair interviews.

**Data Analysis**

The recorded interviews were transcribed. Analyses of the interviews and questionnaires were conducted through thematic analysis, described by Braun and Clarke (2006). In order to enhance the trustworthiness of the results, data from the interviews and questionnaires were analyzed (Denscombe, 2017). However, each data set was independently coded before the data could be relatively understood and connected into themes. Despite this, the analysis proceeded according to the following steps, as described by Braun and Clarke (2006). The analysis started with familiarization of the data.

The transcripts and the answers in the questionnaire were read a few times to reach familiarization. Sub heads in the data that had relevance to the topic were marked. After that a manual coding began, using the questionnaire as a guide. Manual coding was individually performed through the use of an inductive approach. In this phase, the analysis was close to the participants’ descriptions. In the next step, themes were put together and compared, reflectively discussed and sampled into a thematic map. Some initial themes collapsed into other themes from the initial transcripts and the codes identified at the beginning of the analysis. Each theme and its relation to other themes were discussed, and subthemes were identified. Eventually, two overall themes regarding possibilities for inclusive education as well as six overall themes regarding challenges were identified. Two sub-themes for each theme were also identified that can be linked to the research objective.

Table 1: Emerging Categories and Themes

Categories	Primary Theme	Secondary Themes
Policy		
Challenges of the Profession	Severity of disabilities	
Physical	Physical disabilities	Autism
2wce exceptional		

Wheelchair bound

Blind/deaf/dumb

Psychological

Negative pattern

Acceptance

Family background

Assistive Technology

Equipment

Aids and Devices

Professional Development

Special Needs Training

## RESULTS AND DISCUSSION

The results provide insight into what the participating teachers know, do, and believe, and how these teacher knowledge and actions impact on their capacity to implement inclusive practices in their schools and classrooms. Participants actively seek to identify and break down the barriers to learning and participation that students encounter not only Special Needs (SN) Students. When teachers adopt an inclusive pedagogical approach and assume responsibility for teaching everyone (Florian and Spratt 2013), they are also embracing effective practices that align with quality teaching and learning for all members of the classroom community (UNESCO 2009,). Also, the practices of providing access to learning for all students enable the realization of SDG4 Quality Education to ensure inclusive and quality education for all and set learners on the path to lifelong learning (Elvey & Burke, 2023).

### Interview

#### No Professional Training

Findings from the interview sessions indicate that all the participants perceived a lack of adequate professional training as a challenge to effectively teach children with disabilities in an inclusive classroom. Participants during the interview admitted that they have participated in training sessions, seminars, and workshops, but that these training programs had nothing to do with Special needs (SN) children, but for ICT or their areas of specialty, even when their training failed to produce the desired outcomes.

The teachers expressed the need to participate in a well-designed and well-executed professional training programs that would enable them to incorporate new and improved practices in their inclusive classrooms.

What is the level of your professional training inclusive education?

#### Interviewee 19

*I have received so many in-service training sessions that I cannot apply in practice. If the inclusive has to be, we teachers need to have the special needs training, or on that specifically, focusing on new and advanced teaching practices in inclusive classrooms, as what we are taught would reflect practices that can make a negative or a positive difference for children learning in an inclusive setting. Such training has to be really focused on Special Needs.*

#### Interviewee 12

*This college has no such training for its student teachers, so it is right to say teachers in general have not been invited to attend training sessions on the nature and severity of disabilities and inclusion by the Ministry of Education, agents, companies. This will be difficult, it is like going back for a degree program to build the practical ability or skills to identify children with disabilities, distinguish between different behaviors.*

Teachers have to adjust teaching practices to meet these children's learning needs, and the needs of other children without any form of disability in the same class, to also adequately address these children's challenging behavior in an inclusive classroom, teachers must be provided with routine professional in-service training. Teachers who lack knowledge of disabilities and inclusive education usually perceive children with disabilities negatively.

## **Large Class Size**

All the participants identified large class sizes as a barrier if they have to effectively teach children with disabilities in an inclusive classroom. They find their present classes with 50 or more students too large to accommodate children with different types of disabilities as challenging to manage, which will prevent them from effectively focusing on children's individual needs, and which takes the focus away from the children and the quality of the lessons.

### **According to interviewee # 8,**

Inclusive classroom is difficult. I am a general education teacher, “In my class, the number of students is over 90 in my group; one of them has disabilities, he is blind and with this large number of students, it is challenging to control and manage the class and pay attention on their needs and to teach them effectively.

### **Another general education teacher, added,**

It has a huge impact on the student's learning if the number of students is too large, this is even in a college talk less of secondary schools and primary schools. They ignore the teacher; some do not pay attention and distract others. This situation increases the pressure on the teachers, especially with the absence of teacher aides and the lack of special education teachers.”

## **Lack of Special Education Aides**

The participants' responses illustrate that the absence of special education aides for an inclusive classroom is a barrier to the success of inclusive teacher education. They discussed the need for teacher aides to encourage the involvement of children with disabilities in the classroom, manage large classes, and support individual children with disabilities.

### **Interviewee 7,**

*Stated, “children with disabilities need a one-to-one aide, and special needs child inclusion is impossible to be implemented considering the absence of teacher aides and a large number of children in the classroom.*

## **Severity and Nature of Children's Disabilities**

Children with disabilities were traditionally not enrolled in education, and when such enrolment became available, they were automatically placed in segregated settings. The belief was that those children needed an education that was different and separate from that of their peers (Francisco et al., 2020). In the interviews, almost all the teachers highlighted the nature and severity of children's disabilities as one of the most significant barriers to implementing successful inclusive education in a teacher training setting.

Teachers felt they were better equipped to manage certain types of disabilities than others, blindness, wheelchair bound. teachers felt they could address the learning needs of children with this type's disabilities, but found it difficult to meet the learning needs of students with other types of disabilities.

### **Interviewee 6**

*An English education teacher, noted that some children with severe disabilities, such as intellectual disabilities, autism, and behavioral disorders, are the ones of the greatest challenges teachers will face in our inclusive class, because it is not an appropriate placement for them. I and other teachers are not qualified or trained to meet their learning needs in any inclusive setting, and I believe these children need to receive their learning and training in a special class, center or school where they*

*will be in an appropriate environment with qualified specialists who can manage their behavior and meet their learning needs.”*

### **Inappropriate Physical Environment**

All teachers who were interviewed indicated that an inappropriate physical environment is one of the significant barriers to implementing inclusive classrooms. They indicated that their classrooms and facilities do not support inclusion; some buildings are too old, have small doorways, have inappropriate layout and classroom spacing, lack of stairways and ramp for wheelchairs.

### **As interviewee 16, stated**

*“An inadequate physical and educational environment is also a significant barrier to inclusive teaching and learning, government should consider all these buildings when the talk is on implementing inclusive education. This college is not a welcoming environment for students with disabilities, take a look around you, does this place look right? It is out of order and has been for more years. Classrooms have small spaces and doorways, which do not allow any child with a walker or a wheelchair to pass through easily, and the toilets are not adapted for children with disabilities. How will the use their wheelchairs when the access roads are not conducive”*

### **ICT and Special Education Teachers**

Special education teachers have to teach children with disabilities, to make teachers to teacher children in the inclusive classroom is outside their specialization. Teachers have strong concerns, and these were raised by almost all the interviewees about a shortage of special education teachers who are specialized in multiple subjects. They made a case for ICT training and intervention on all tools and devices for an all-inclusive teaching and learning. The participants mentioned that only a few schools in the State have experts at this level; generally, most schools recruit special education teachers for a specific subject.

Where the schools are located for the SN students is far off from urban areas, internet connectivity are issues they face. All participants support new policy frameworks for inclusive education.

### **Limitation**

In addition to the mentioned implications, the findings of this study have several limitations. The sample of participants interviewed is small to serve as representative of all teachers of children with disabilities in Akwa Ibom State. Reason for the small sample was non availability of experts with a strong command of the study topic. While the study only investigated teachers in a teacher training college perception of the inclusion of students with disabilities in a teacher training education setting, it would be beneficial to gather the perspectives of the parents of children with disabilities too, to get a fuller picture of the experiences and challenges related to inclusion in Akwa Ibom State at a tertiary institute.

### **Implication**

Several implications for school policy, teachers’ professional development, research, and practice were derived to guide and help advance knowledge in this field of education. The most important social implication is that there are negative attitudes towards the inclusion of students with disabilities among educators in our education system. There is the suggestion for a committed institutional effort that will translate into a greater educational investment that enables the improvement of inclusive learning conditions and the training of teachers in inclusive teaching. Furthermore, the implications for policy and best practice are that further work is needed to support the inclusion of children with disabilities in teacher training institutions as they will be best fit for the job of teaching and learning.

## **Conclusion and Recommendation**

Findings indicate that, teachers in the teacher training college perceived several barriers to the successful participation of children with disabilities in inclusive education in their college. The outstanding barriers were the nature and severity of the child's disability, the absence of special aides in inclusive classrooms, and their lack of adequate professional training.

The current findings, the voices of teachers are to shape recommendations that could assist education officials to effect the necessary changes in policy, resourcing, and good practice to successfully implement effective inclusivity in teacher training settings. Such policy and practice shifts could assist government realize its 2030 vision to ensure a fair, good quality, and inclusive education for all children with disabilities.

Government on the other hand has to be committed to Special Needs Education for a successful admission of disable children into classrooms across school levels in the country.

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