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# **RIMA INTERNATIONAL JOURNAL OF EDUCATION**

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Sokoto State University,  
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### **EDITORIAL NOTE**

I have the delight and privilege to write as Editor-in-chief of the *Rima International Journal of Education (RIJE)*, an official research publication of the Faculty of Education, Sokoto State University. This edition (Volume 2: No. 2) of the *RIJE* has twenty four (24) articles from distinguished scholars and educators, poised to report cut-edge research findings and discourse on contemporary educational issues with implications for pedagogy, national and global development.

The dictum of “publish or perish” is in vogue in any worthwhile research-based institutions, hence strict adherence to publications in any reputable and recognized Journal, as such *RIJE* is recognized as complimentary to contemporary dissemination and propagation of knowledge. Therefore, the Editorial Board of *RIJE* wishes to use this medium to solicit well researched articles for publication from teeming population of academics and researchers globally. The Journal would always be subjected to thorough peer review and proper editorial vetting.

Prof. M. U. Tambawal,  
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The Editorial Board invites interested scholars and researchers to submit original manuscripts for publication. The Journal is a bi-annual publication of the Faculty of Education, Sokoto State University, Sokoto, designed to disseminate relevant research findings related to all fields of education. Both empirical and theoretical papers that are articulately written based on contemporary educational issues that have national and international relevance shall be accepted for publication. The manuscript shall not be under consideration elsewhere for publication.

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## EFFICACY OF VIRTUAL LEARNING ENVIRONMENT (VLE) AS AN INNOVATIVE APPROACH FOR IMPROVED LEARNING OF BIOLOGY AMONG SECONDARY SCHOOL STUDENTS IN SOKOTO STATE, NIGERIA

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### Abstract

*The incorporation of virtual learning environment (VLE) into the biology education is capable of bringing innovative and transformative opportunities for STEM (Science, Technology, Engineering, and Mathematics) education. This study therefore examined the efficacy of virtual learning environment (VLE) as an innovative approach for improved learning of Biology among secondary school students in Sokoto State, Nigeria. The study employed quasi experimental design with a population of 3716 senior secondary schools (SS II) in Sokoto metropolis. A sample of 132 students obtained from two intact classes were used for the study. Two objectives, two research questions, and two corresponding null hypotheses guided the study. Biology Performance Test (BPT) was used as an instrument for data collection which was validated by experts and exhibited reliability of 0.79 using test re-test method and Pearson Product Moment Correlation Coefficient PPMCC). Mean, standard deviation and independent t-test statistics were used for data analyses and results obtained showed that there was significant difference between the performance of experimental group and control group in favor of the experimental group and no significant difference was found in the performance of male and female students taught with virtual learning environment. It was recommended among others that the use of virtual learning environment should be incorporated at secondary school level for better teaching and learning of biology with special attention given to both male students in virtual learning environments as virtual learning environment is gender friendly. State government and other stakeholders should endeavor to equip all secondary schools within the state with resources needed for virtual learning environments.*

**Key Words:** Virtual Learning Environment (VLE), STEM education, Biology education

### Introduction

There has been a growing concern by stakeholders on incorporating technology into the education system, particularly in the field of biology in 21st century. Alwis, (2018) argued that 21st century skills are expressed as being creative, innovative and thinking

critically, solving problems, having communication skills, working in a team, information and communication technologies literacy, local and universal citizenship awareness, life and career awareness. Conversely, Bybee (2010) addressed 21st century skills as critical thinking, creativity, cooperation, motivation, and metacognitive skills. Hence, it is possible to comment that the emerging science and technology of our present century have shaped both education system and expectations for a future individual. One is this emerging technologies being clamored for advancement of teaching and learning is virtual learning environments.

Virtual learning environment (VLE) is an online platform that facilitates education by providing resources, tools, and communication channels for students and instructors. It typically includes features like course materials, discussion forums, assessments, and sometimes live sessions, allowing for remote learning and collaboration. It's a digital space where learners and educators conduct online courses. This means, through VLE, educators may deliver course materials through video presentations, audio recordings, virtual classes or any other digital means

Science, Technology, Engineering, and Mathematics education (STEM) which is refers to an interdisciplinary approach to learning that integrates concepts and principles from Science, Technology, Engineering, and Mathematics required application of 21st century technologies (Corlu, Capraro, & Capraro, 2014). STEM education equips students with the knowledge, skills, and competencies needed to succeed in the 21st-century workforce and address complex global demands of the societies. Core Components of STEM Education is Science education which focuses on developing students' understanding of natural phenomena, scientific principles, and the scientific method. Students learn to ask questions, query issues, make observations, and conduct experiments to explore and explain the world around. Technology education introduces students to various tools, technologies, and digital platforms used in today's society. According to Şahin (2015), technology facilitated the discovery of new products and enhanced the implementation of STEM activities in different ways. This includes computer programming, digital literacy, and the application of technology to solve real-world problems. Therefore, it is pertinent that core subjects under STEM Education like biology be given an upmost attention through the application of available technologies.

The relevance of always keeping in touch with the recent trends and developments in science education especially in biology education is crucial for educators to provide their students with relevant and effective learning experiences. As the world continues to evolve and new technologies emerge, it is therefore essential that educators keep up to date and prepare to incorporate them in their teaching methods. Along with the critical need for educators to keep up to date, the importance of incorporating emerging technologies such as virtual learning environment is purely for enhancement of teaching and learning process. According to Samuel and Ukpoh (2021), no nation can afford to neglect science education at any level of its education provided they want to thrive in any field of human endeavor. They further stressed that science education is an instrument for producing resources necessary for socio-economic, scientific and technological development needed for advancement of any nation.

Biology which is a branch of science that deals with the study of life, is one of the science subjects offered by secondary school students. The subject is indispensable for the study of medical, para medical and other science related courses at the tertiary institutions (Mahmud, Muhammad & Ibrahim, 2022). According to Ejeh, Adejoh, Ochu and Egbe-

Okpenge (2021), biology is very important science subject and a requirement for higher learning in a number of science related professional courses like Medicine, Agriculture, and Pharmacy among others. Looking at the relevance of this subject, therefore, the learning of these living organisms and their interactions with environment must be made friendly and real to students in the class rooms with the help of Virtual learning environment.

### **Theoretical Basis**

The theoretical basis of using Virtual learning environment (VLE) is hinged upon, Kwon (2017) who introduced technology in education and further added technological knowledge as a critical component to it. By integrating component of technological knowledge to the three previous components, which are mastery of course, content knowledge, and pedagogic knowledge, which they focused on teacher professional development. Koehler and Mishra (2005) in Kwon (2017) introduced three essential components of teacher professionalism: CK, PK, and TK. From the thoughts, the term (Technology, Pedagogy, Content, and Knowledge) TPCK emerged. This emphasized the idea that science teachers should address TPCK, and take into account the educators' and students' needs, by using various kinds of up-to-date technology that is available to teachers and students which include but not limited to using free smartphone apps or software, technological gadgets that teachers and students have free access to. The TPCK model is relevant to this study, because the model sees technology as a major part of the teaching and learning process. While the increasing use of technology as educational tools has technically changed the previous ways of imparting knowledge; the TPCK model seeks to be the modern-day solutions and the way forward.

### **Literature Review**

Investigations in to virtual learning environments and its related variables as well as gender abound. Oladejo, Nwaboku, Okebukola, and Ademola (2023), investigated the gender difference in students' performance in chemistry. Owing to the current growth of the effects of the use of computer simulations on students' performance in science in the literature, this study investigated if the use of computer simulation as an intervention would enhance the performance of female students relative to males in senior school chemistry in Ado-Odo-Ota, Nigeria. The study found no statistically significant difference between the performance of the male and female students. While there was a statistically significant main effect of treatment on the students' performance, the interaction effect of gender and treatment did not attain statistically significant difference. The study concluded that the use of computer simulation can help bridge the gap between male and female students' performance in chemistry and overall, boost the performance of the students. They therefore recommended government, school owners and chemistry teachers to find to implement of the findings of this study for enhanced performance.

Dharriyat (2023) investigated adapting virtual learning on students' performance among colleges of education in north-central Nigeria. The result of the findings showed that virtual learning has a positive impact on the performance of students as compared to conventional learning and that the academic performance of male students was higher than their female counterparts through the use of virtual learning. On the basis of this findings, the study recommended that virtual learning needs to be given topmost priority as it proved superior over conventional method of learning. Similarly, Alves, Miranda, and Morais, (2017) investigated the influence of virtual learning environments in

students' performance and the results showed that there are relatively positive indicators regarding students' access to a virtual learning environment and the relation between such access and their performance.

Neji and Ntibi (2019), studied on the effect of E-Learning devices on chemistry and students' academic performance in Calabar municipality, Cross River State and the result of the analysis revealed that the experimental group taught with e-learning devices significantly outperformed their counterparts taught with conventional method. More so, gender and school location showed a significant difference when taught with e-learning devices. Based on the findings, recommendation were made that secondary schools and tertiary institution teachers should make a consorted effort toward the use of e-learning devices that would enhance students' performance in Chemistry and facilitate creativity in the learner.

### **Virtual Learning Environment (VLE) and Biology Education**

The incorporation of virtual learning environment (VLE) as an emerging technologies into the biology education offers transformative opportunities for STEM (Science, Technology, Engineering, and Mathematics) education (Neji & Ntibi 2019). This fusion of virtual learning environment into biology education provides students with immersive, interactive, and engaging learning experiences capable of enhancing comprehension and retention of information that may be lacking in the traditional teaching method (Kwon, 2017). Real-world application of emerging technologies, such as augmented reality (AR), artificial intelligence (AI), and biotechnology tools like CRISPR, offer students the chance to engage with cutting-edge research and applications in biology. This exposure can inspire students to pursue careers in STEM fields and understand the relevance and impact of biology in everyday life. Students can personalize learning via adaptive learning platforms powered by AI can tailor educational content to each student's learning style, pace, and interests. Virtual learning environment (VLE) where students can work together in virtual labs, conduct experiments, and solve problems as a team can address individual learning needs, fostering a deeper understanding and appreciation for biology. This collaborative environment encourages communication, critical thinking, and problem-solving skills essential for STEM disciplines. Virtual learning environments (VLE) makes biology education more accessible to students worldwide, regardless of their geographical location or physical limitations. This inclusivity ensures that all students have equal opportunities to explore and engage with biology.

Virtual learning environment (VLE) encourages active learning through hands-on exploration, experimentation, and problem-solving, promoting critical thinking, collaboration, and inquiry-based learning among students (Selzer, Gazcon, & Larrea, 2019)

In a related development, Samuel and Ukpoh (2021) stated that digital technologies such as virtual learning environment can serve four main purposes in STEM education classrooms and biology inclusive:

1. **Access to materials:** Information and communication technologies can provide direct access to multimedia (visual, audio, and text) materials that are in fact engaging, authentic, and comprehensible but yet challenging for learners.
2. **Communication opportunities:** Communicative opportunities through technologies include interaction with the computer (e.g., computers and video

games) and interaction through the computer with remote audiences (e.g., blogs, wikis, and 3D virtual worlds).

3. **Feedback:** Certain computer programs have the capacity to provide instant feedback on various practical skills.
4. **Learner motivation:** Students become more engaged and active.

This implies that, virtual learning environment does not only aid in the delivery of information but also help in creating a more engaging and immersive learning environment. For instance, virtual simulations and interactive games can be used to reinforce complex concepts and make learning more enjoyable for students. Moreover, online platforms such as forums and discussion boards can facilitate collaboration and discussion between students and teachers, promoting a more active and participatory learning process and by extension enable efficient and effective assessment methods.

### **Workability of Virtual Learning Environment (VLE)**

Virtual learning environment operates through a blend of technology, content delivery, and interaction mechanisms that simulate a classroom-like environment, in an online setting. Here's a quick breakdown of the pieces based on the submission of (Samuel & Ukpoh 2021) and (Dharriyat 2023)

- ✓ **Digital Platforms:** At the heart of virtual learning are platforms or Learning Management Systems (LMS) like Moodle, Blackboard, or Canvas. These platforms host courses, track student progress, and facilitate interactions.
- ✓ **Content Delivery:** Instructors can upload various materials such as videos, slides, readings, and quizzes. These can be accessed by students anytime (asynchronous) or at scheduled times (synchronous).
- ✓ **Interactive Tools:** Virtual learning is not just about content consumption. There should be interactive components. Platforms often have tools for real-time discussions, forums, and chats, allowing students to ask questions, collaborate on projects, or engage in discussions.
- ✓ **Assessments:** Just like traditional learning, there are typically quizzes, tests, as well as standard classroom assignments. Feedback can be provided directly through the platform.
- ✓ **Flexibility & Personalization:** By nature, virtual learning is its adaptable, often more so than traditional classrooms allow for. Courses can often be tailored to individual student needs, allowing them to progress at their own pace or delve deeper into areas of interest.
- ✓ **Engagement Mechanisms:** To keep students engaged, virtual learning often incorporates multimedia elements and interactive simulations. These not only make learning more enjoyable but also enhance retention.

### **Requirement for Virtual Learning Environment (VLE)**

As an instructor for virtual learning classes, you will need some equipment and a learning content management system to deliver the educational materials.



- **Computer:** Teachers want to have a computer that has sufficient RAM, a decent hard drive storage for files, and is easy to connect to the Internet with an Ethernet cable and Wi-Fi.
- **Internet Connection:** A high-speed internet connection is important if you plan to conduct real-time virtual presentations using video streaming or group chats.
- **Microphone:** You want to have a decent microphone that makes your voice sound good. In my experience, here are some of the best microphone options for eLearning.
- **Webcam:** You need a webcam if you plan to use video streaming.
- **Software:** You need software to help you create virtual learning content and a content management system to present the content in an organized way and track students' progress with quizzes as they finish each section of the course.

### **System Design for Virtual Learning Environment (VLE)**

The design of a virtual classroom system consists of several modules which help it to meet up with its designed objectives. The assignments module enables teachers to grade and provide comments for uploaded files and assignments created on and off line, the chats module allows participants to have a real-time synchronous discussion via the web while the glossaries module enables participants to create and maintain a list of definitions in a way similar to the dictionary (Huertas, 2007 & Gibbs, 2000). The modules for lessons, quizzes and wiki are made up of contents that make them to function optimally in interesting and flexible ways. A whiteboard is also presented as a main presentation window for writing and displaying of images (Huertas, 2007 & Gibbs, 2000). The audio features allow participation in conversations during a classroom session using microphones and speakers (or headset) via Voice over Internet Protocol (VoIP) while the video features allow the transmission and receipt of video broadcasts in real life and interactive manners. Coordinated approach will be used in the system development.

### **Problem Statement**

The litmus test for stability and improved students' academic performance is the senior secondary certificate examination (SSCE) conducted by West African Examination Council (WAEC) on yearly basis. The WAEC chief examiner's report 2018-2022 consistently reported decline in the performance of secondary school students at the examination particularly in biology, chemistry and physics. Some of the reasons raised are connected to lack of mastery of key areas perhaps as a result of poor delivery of such areas to students by their respective teachers. These recurring trend of low scores in these subjects underscores a deeper concern regarding the quality of education and the effectiveness of teaching methodologies. With tertiary institutions placing considerable emphasis on these foundational science subjects, students' proficiency in these subjects do not only determines their academic prospects but also shapes their career trajectories. However, the transition from secondary to higher education proves to be a difficult one for many students, particularly those who struggle to grasp the complexities of foundational sciences i.e. biology, chemistry and physics. The outbreak of the COVID-19 pandemic and other related global crises further exacerbated the challenges facing education in northern Nigeria and particularly in Sokoto state, underscoring the urgent

need for innovative solutions that are technologically based to resolve the crisis of school closure. To this end, efficacy of virtual learning environment (VLE) as an innovative approach for improved learning of biology among secondary school students in Sokoto State, Nigeria

### **Objectives of the Study**

The objectives of this study are to find;

- i. the difference in the academic performance of Sokoto state secondary schools students taught biology using virtual learning environment and those taught using conventional method
- ii. the difference in the academic performance of male and female Sokoto state secondary schools students taught biology using virtual learning environment

### **Research Questions**

The following research questions guided the study:

- i. What is the difference in the academic performance of Sokoto state secondary schools students taught biology using virtual learning environment and those taught using conventional method?
- ii. What is the difference in the academic performance of male and female Sokoto state secondary schools students taught biology using virtual learning environment?

### **Null Hypotheses**

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

- i. Ho1: There is no significant difference in the academic performance of Sokoto state secondary schools students taught biology using virtual learning environment and those taught using conventional method
- ii. Ho2: There is no significant difference in the academic performance of male and female Sokoto state secondary schools students taught biology using virtual learning environment

### **Methodology**

The study employed quasi-experimental pre-test post-test design. The population of the study was (3716) senior secondary school II (SS II) students in Sokoto metropolis. Two schools were purposively selected for the research and two intact classes were selected to participate in the study. A pre-test was administered to the students to establish the equivalence and homogenous nature of the subjects. Two intact classes of secondary school II (SSII) were selected from each school. One class each was assign into the experimental and control groups. Two intact classes which are made up of one hundred and thirty two (132) students (Male 79, Female 53) were used for the study from two coeducational public senior secondary schools which were in existence for more than ten years. The instrument for data collection was Biology Performance Test (BPT) developed by the researcher and it consists of 30 multiple choice items with A to D options. Every

correct response in each item carries one mark while wrong response carries no mark. The test items were developed using SS II biology curriculum. The BPT was used to evaluate academic performance of SS II students both before and at the end of the instructional processes (pretest and posttest). The items in the Biology Performance Test (BPT) were subjected to content and face validations. The content validation of BPT was ensured by following strictly the test-blue print by experts while face validations were done by three biology teachers from the department of biology in three different senior secondary schools in Sokoto metropolis which are part of the population of the study but not involved in the study. The biology teachers were requested to validate the content of the instrument and vet the virtual learning environment package that was used for the treatment. These experts validated the items in terms of clarity of language, appropriateness and adequacy of the items in measuring what they are supposed to measure. The instrument items were also subjected to trail testing to ascertain the reliability of the instrument. One intact stream consisting of 30 SS II students was used for the BPT pilot-testing. The school used for the pilot testing was in the population but not part of the sample of the study. Test re-test method was used in pilot testing the test items for the reliability coefficient. The data obtained from the pilot testing was subjected to statistical analysis using Pearson Product Moment Correlation Coefficient. The reliability coefficient of 0.79 was obtained which showed that the instrument is valid and reliable.

Biology Performance Test (BPT) was administered to experimental and control groups before the commencement of the experiment. The items of BPT were reshuffled for the posttest after the treatment which lasted for a period of six weeks. The reshuffled BPT was administered to experimental and control. Both the pre-BPT and post-BPT were marked by the researcher according to the marking scheme. The research questions were answered using descriptive statistics of mean and standard deviation. The null hypotheses formulated were tested at  $p \leq 0.05$  level of significance using inferential statistics of independent t-test statistics.

## Results

**Research Question 1:** What is the difference in the academic performance of Sokoto state secondary schools students taught biology using virtual learning environment and those taught using conventional method?

**Table 1:** Mean and Standard Deviation of Academic Performance scores of students in Experimental and Control Groups

Groups	N	Mean	Standard Deviation	Mean Difference
Experimental Group	64	12.26	4.07	2.08
Control Group	68	10.34	4.64	

Source: Field work 2023

Table 1 showed that the students in experimental group taught biology using virtual learning environment had a mean performance scores of 12.26 with a standard deviation of 4.07, while those taught biology using conventional teaching method had a mean performance score of 10.34 with a standard deviation of 4.64. Therefore, the difference

between the mean performance scores of students taught biology with virtual learning environment and those taught using conventional teaching method is 2.08. This implies that there is difference in the posttest mean scores of students of the experimental and control groups, in favor of the students taught using virtual learning environment.

**Research Question 2:** What is the difference in the academic performance of male and female Sokoto state secondary schools students taught biology using virtual learning environment?

**Table 2:** Mean and Standard Deviation of Academic Performance of male and female Students in Experimental Group

Experimental Group	N	Mean	Standard Deviation	Mean Difference
Male	34	12.10	4.84	0.87
Female	30	10.11	3.97	

Source: Field work 2023

Table 2 showed that the male students taught biology using virtual learning environment had a mean performance scores of 12.10 with a standard deviation of 4.84 while the female students taught biology using virtual learning environment had a mean performance scores of 10.11 with a standard deviation of 3.97. Therefore, the difference between the mean academic performance scores of male and female students taught biology using virtual learning environment is 0.87. Hence, there was a difference in the posttest mean scores of male and female students. This indicates that the male students performed slightly higher than the female students.

**Ho1:** There is no significant difference in the academic performance of Sokoto state secondary schools students taught biology using virtual learning environment and those taught using conventional method.

**Table 3:** Analysis of independent t-test on Academic Performance scores of students in Experimental and Control Groups

Groups	N	Mean	SD	df	t-cal	p-value	Remark
Experimental Group	64	12.26	4.07	130	4.17	0.00	Sig.
Control Group	68	10.34	4.64				

Source: Field work 2023

Significant at  $p \leq 0.05$

Table 3 reveals that calculated t-value is 4.17 and the p-value 0.00. Therefore, p-value of 0.00 is less than significant level of  $p \leq 0.05$ . Based on this evidence, the null hypothesis was rejected. This shows that there is significant difference between the mean performance scores of students taught biology using virtual learning environment and those taught using conventional teaching method in favor of the students taught using virtual learning environment. This implies that virtual learning environment was more effective than conventional method in teaching and learning of biology.

**Ho2:** There is no significant difference in the academic performance of male and female Sokoto state secondary schools students taught biology using virtual learning environment.

**Table 4:** Analysis of independent t-test of Academic Performance of Male and Female Students of Experimental Group

<b>Experimental Group</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>df</b>	<b>t-cal</b>	<b>p-value</b>	<b>Remark</b>
Male	34	12.10	4.84	62	1.09	0.21	Not Sig.
Female	30	10.11	3.97				

Source: Field work 2023

Significant at  $p \leq 0.05$

Table 4 reveals that calculated t-value is 1.09 and the p-value 0.21. Therefore, p-value of 0.21 is greater than significant value of  $p \leq 0.05$ . Hence, the null hypothesis was retained. This shows that there was no significant difference between the mean academic performance scores of male and female students taught biology using virtual learning environment. This implies that virtual learning environment bridged the gap on academic performance between male and female students, therefore is gender friendly.

## **Discussion**

The finding of this study shows that there was a significant difference in the mean performance scores of students taught biology using virtual learning environment and those taught using conventional teaching method in favor of the students taught using virtual learning environment. The finding is in agreement with the work of Dhariyat (2023) who investigated adapting virtual learning on students' performance among colleges of education in north-central Nigeria. The result of the findings showed that virtual learning has a positive impact on the performance of students as compared to conventional learning. Also, the finding of this study agrees with the finding of Alves, Miranda, and Morais, (2017) who investigated the influence of virtual learning environments in students' performance and the results showed that there are relatively positive indicators regarding students' access to a virtual learning environment and the relation between such access and their performance. The result could be due to the fact that virtual learning environment employed for the experimental group was ICT based and user friendly.

Equally important, no significant difference between the mean academic performance scores of male and female students taught biology using virtual learning environment. This finding is in agreement with the finding of Oladejo, Nwaboku, Okebukola, and Ademola (2023) who investigated the gender difference in students' performance in chemistry. Owing to the current growth of the effects of the use of computer simulations on students' performance in science, this study investigated if the use of computer simulation as an intervention would enhance the performance of female students relative to males in senior school chemistry in Ado-Odo-Ota, Nigeria. The study found no statistically significant difference between the performance of the male and female students.

## Conclusion

The following conclusion were drawn from the findings of the study: it was revealed that virtual learning environment was found to be an effective method in improving academic performance of secondary school students in biology than conventional teaching method. Virtual learning environment proved to be an effective strategy in enhancing the performance of biology students irrespective of gender.

## Recommendations

Based on the findings of the study, the recommendations are made;

1. Biology teachers should utilize virtual learning environment in teaching and learning of biology at secondary schools in Sokoto State, Nigeria. Virtual learning environment should be used to teach both male and female secondary school students in Sokoto State irrespective of gender, as it is proven to be gender friendly.
2. Government and other stakeholders should make available enabling environment that will allow the application of virtual learning environment in secondary schools
3. The government should as well organize workshops and conferences to enable teachers get acquitted with proper management and application virtual reality and emerging technologies to enhance biological science Education.

## References

- Alwis, A. (2018). STEAMing STEM – Moving from horoscopes to telescopes. Retrieving from STEAMing STEM – Moving from horoscopes to telescopes! Daily foot note on March 30, 2020.
- Alves, P., Miranda, L., & Morais, C. (2017). The influence of virtual learning environments in students' performance. *Universal Journal of Educational Research*, 5(3), 517-527.
- Bybee, R. W. (2010). What Is STEM education? *Science*, 329(5995), 996. <https://doi.org/10.1126/science.1194998>
- Bybee,R.(2013).The Case for STEM Education Challenges and Opportunities; National STEM Teachers Association: Washington, DC, USA]
- Corlu, M. S., Capraro, R. M., & Capraro, M. M. (2014). Introducing STEM education: implications for educating our teachers for the age of innovation. *Education and Science*, 39 (171), 74-85.<http://hdl.handle.net/11693/13203>
- Dharriyat S., (2023). Adapting virtual learning: Its' impact on the performance among colleges of education mathematics students in north central Nigeria. *Journal of Science, Technology and Mathematics Pedagogy*, 1(1), 200-208.
- Ejeh, G.U., Adejoh, M.J., Ochu, A.N.O., & Egbe-Okpenge, E.G. (2021). Effects of field trip and discovery methods on senior secondary school students' retention in Biology in Benue State, Nigeria. *Village Math Educational Review*, 2(1), 54-77.

- Gibbs, G. (2000). Learning how to learn using a virtual learning environment for philosophy. Retrieved from <https://goo.gl/EII7B8> on October 10, 2016
- Huertas, A. (2007). Teaching and learning logic in a virtual learning environment. *Logic Journal of the IGPL*, 15(4), 321-331.
- Kwon, H. (2017). Effects of 3d printing and design software on students' overall performance. *Journal of STEM Education*, 18(4), 37-42
- Mahmud, A., Muhammad, I., & Ibrahim, S. (2022). Impact of field trip on the retention and academic performance in ecology, among secondary school students in Zaria Local Government Area, Kaduna State. *Communication in Physical Sciences*, 8(2), 196-204.
- Neji, H. A., & Ntibi, J. E. E. (2019). Effect of E-learning devices on chemistry students' academic performance in Calabar Municipality, Cross River State. *Interdisciplinary Journal of Science Education*, 1(1), 170-178.
- Oladejo, A. I., Nwaboku, N. C., Okebukola, P. A., & Ademola, I. A. (2023). Gender difference in students' performance in chemistry—can computer simulation bridge the gap? *Research in Science & Technological Education*, 41(3), 1031-1050.
- Şahin, A. (2015). A Practice-based model of STEM teaching: STEM students on the stage (SOS). Rotterdam: Sense Publishers.
- Samuel, I.R. & Ukpoh, A. (2021). Influence of teachers' attitude towards practical chemistry on senior secondary schools students' interest and achievement in Nasarawa State, Nigeria. *International Journal of Innovative Psychology & Social Development*, 9(3), 139-149.
- Selzer, M. N., Gazcon, N. F., and Larrea, M. L. (2019). Effects of Virtual Presence and Learning Outcome Using Low-End Virtual Reality Systems. *Displays* 59,9–15. doi:10.1016/j.displa.2019.04.002
- West African Examinations Council (2018). Chief Examiners' Report, May/June 2018 results. Lagos, Nigeria. Retrieved June 20, 2022 from <https://www.informationing.com/waec>
- West African Examinations Council (2019). Chief Examiners' Report, May/June 2018 results. Lagos, Nigeria. Retrieved June 20, 2022 from <https://www.informationing.com/waec>
- West African Examinations Council (2020). Chief Examiners' Report, May/June 2018 results. Lagos, Nigeria. Retrieved June 20, 2022 from <https://www.informationing.com/waec>
- West African Examinations Council (2021). Chief Examiners' Report, May/June 2018 results. Lagos, Nigeria. Retrieved June 20, 2022 from <https://www.informationing.com/waec>
- Weller, M. (2007). *Virtual learning environments: Using, choosing and developing your VLE*. Nigeria. *International Journal of Innovative Psychology & Social Development*, 2(1), 19-29.

## **NIGERIA'S CONTEMPORARY SECURITY CHALLENGES: ITS IMPACTS ON EDUCATION AND POSSIBLE SOLUTIONS**

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### **Abstract**

In Nigeria, the absence of permanent peace, security and stability have remained a major cause of concern to academicians and policy makers within and outside the country. To this extent, this paper explores some Nigeria's contemporary security challenges and its impacts on education. It reaffirms that Nigeria, today, faces a number of considerable peace and security challenges which are caused by corruption and poverty, ethno-religious conflicts, militants, kidnapping, terrorism, poor governance, and forced displacement. It further explores the impacts of these security challenges and instability on education in Nigeria in connection with the closure of schools and disruption of educational activities, a decline in enrollment and poor quality of education among others. Afterwards, it unravels possible solutions to Nigeria's contemporary security challenges, including employing a number of ICT tools to combat insecurity including mobile phones, CCTV, and biometric data mining, to combat the insurgency and other criminal acts. The paper recommends that non-government and international organisations can support Nigerian government to curb violent conflicts, and terrorist attacks on educational institutions and facilities.

**Key Words:** Nigeria, Security, Challenges, Education and Solutions

### **Introduction**

Education is designed purposely to assist individuals to develop their skills and abilities so as to fulfill their potentials (Joshua, et al., 2016). It is a process by which individuals are assisted formally through proper direction and guidance to develop their capacities for their own benefit and that of the society (Okeke, 2003). This lends credence to the proposition that "the goal of education is to emancipate, learn practical skills, and to accelerate political, cultural, social and economic development" (Fombele, 2013:174). In



this wise, Ene (2008:196) has argued that its major “goal is to help the learner develop his natural abilities by creating the necessary environment that will facilitate, challenge and involve him socially, physically, intellectually and emotionally in the art of learning and doing”. To this extent, the behaviour of a person can be changed in the right direction through it. In other words, with sound education people will start to understand and appreciate one another better and try to restore the dignity of man.

Security is when learners are free from any form of terror attack which is detrimental to their academic pursuits (Hiliya and Umar, 2021). In contrast, insecurity refers to uncertainty or anxiety about oneself; lack of confidence; the state of being vulnerable; open to danger or threat and lack of protection. In turn with this argument, Ubong (2016) opined that it is a feeling of self doubt or vulnerability and susceptibility to injury or harm. Achumba, et al. (2013), defined insecurity from two perspectives. Firstly, as the state of being open to danger, where, danger is the condition of being susceptible to harm. Secondly, as the state of being exposed to risk or anxiety; and, where, anxiety is an unpleasant emotion that is experienced in anticipation of misfortune. Within this context, insecurity refers to threats, dangers and deprivation meted against innocent people.

Without doubt, Nigeria society is getting more and more insecure, more people are getting into various violent crimes and they are getting more sophisticated especially with the advancement of digital technologies. Since independence, terrorist activities have surfaced, including the Movement for the Emancipation of the Niger Delta (MEND), Ododua People Congress (OPC), Movement for Actualisation of the Sovereign State of Biafra (MASSOB), Maitatsine group amongst others (Bakari, 2022). Nigeria's security challenges further include kidnapping for ransom, pipeline vandalism, Boko Haram, ritual killings, armed robbery and ethno-religious clashes (Bidemi et al., 2018). In point of fact, these security challenges have been causing instability in schools, affecting learners' abilities to study effectively. A reminder for such reading, in a way, resides in the continuation:

The high level of insecurity in Nigeria has become a social problem ... that cannot be over-emphasized because of its far-reaching implications and direct consequences on education, ... Most worrisome is the emerging new forms of insecurity challenges in contemporary Nigeria which have taking a disturbing dimension to the extent that it has almost crippled the various sectors, especially the education sector in Nigeria...recently, the country witnessed a total breakdown of law and order due to what the Nigeria youths described as “End SARS Protest, a movement that they considered to be an end to police brutality ... (Solomon and Solomon, 2021, 581).

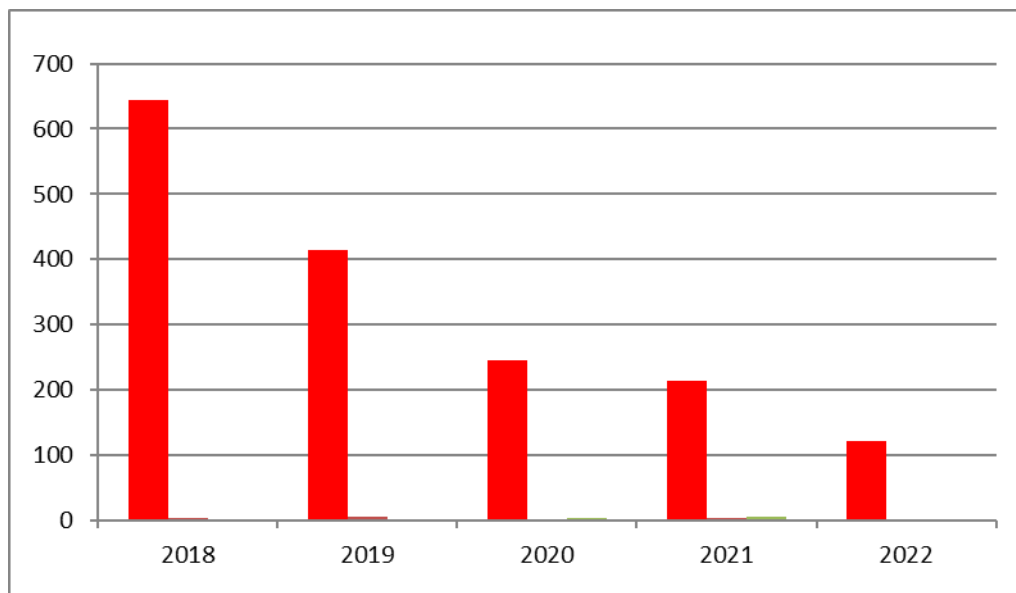
As a corollary to the aforementioned, one is led to believe that the Nigeria educational system is deep into crises on multiple fronts. Along this line, Albert (2004) affirmed that contemporary security challenges includes; communal violence, political assassination, electoral youth militancy in the Niger Delta, oil theft, bunkering, state corruption and poverty have all been identified as some of the challenges threatening security in Nigeria. This tendency further espoused the idea that insecurity has become perennial and an agonising challenge in Nigeria (Iyoha et al., 2010). In all likelihood, under the present situation of security challenges in Nigeria, effective teaching and learning might not be achievable or realisable. In this regards, this paper explores some Nigeria's contemporary

security challenges and its impacts on Nigeria’s education system; and afterwards, proffers some solutions.

### Nigeria’s Contemporary Security Challenges

Nigeria has in recent times experienced an exceptional level of insecurity. Almost all the regions (if not all) are faced with insecurity (Oghuvbu & Chidozie, 2018). It is currently besieged by a myriad of security challenges even though it has always been seen as the giant of Africa (Yusufu, 2022). The issue of insecurity in contemporary Nigeria has become a threat to both internal and international peace and security with ever-growing violence and attacks on security forces, civilians, churches, media houses as well international bodies such as the United Nations (Oluwasanmi, et. al, 2022). In this wise, Nigeria, the most populous country in Africa, is grappling with critical security challenges that pose significant threats to its sovereignty and territorial integrity. Some of these security challenges threatening Nigeria include terrorism, banditry, ethno-religious crisis, kidnapping, militants, and forced displacement among others issues which shall be the focus of this section.

Undoubtedly, terrorism has become a significant threat to Nigeria’s sovereignty as illustrated in the chart below based on the number of terrorist attacks in Nigeria between 2018 and 2022. It is considered to be violent reactions against an established social order. Terrorist attacks aim to create fear among the population and it is often driven by political, religious and ideological objectives. In other words, it is aimed often at disturbing individuals' perception of normalcy, induce terror, and force victims to reconsider the validity of their prior convictions and beliefs. The impact of terrorism in the country has been very severe, leading to human casualties, economic damage, and erosion of civil liberties and human rights. In the North, the internal security of the country has been significantly undercut by the violent activities of Boko Haram sect. Unlike the militants in the Niger Delta that are driven by purely economic goals, Boko Haram is driven by proclivity in religious conviction, political aspirations and social practice. Specifically, its ultimate goal is to make Nigeria an Islamic State as set out in the Holy Koran (Walker, 2012).



**Figure 1:** Terrorist attacks in Nigeria between 2018 and 2022

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**Source:** Ameh (2023)

Another form of contemporary security challenge facing Nigeria which has become unbearable in the last decade is armed banditry. It refers to organised criminal activities involving violence and coercion, such as robbery, kidnapping, and extortion (Richardson, 2019). It also involves the use of force, or threat to intimidate a person with the intent to rape, rob and kill. It manifests in four major dimensions, namely kidnapping, armed robbery, village raids and cattle rustling. Of these four dimensions, kidnapping and mass abduction of people, especially defenseless and innocent school pupils for ransom is gradually taking the lead. The implications of terrorism and banditry have been deeply felt across the country bringing about bombings, kidnappings, armed robbery, disruption of economic development and other violent acts. Overall, both terrorism and banditry are complex and multifaceted phenomenon that requires nuanced and multidisciplinary approaches to effectively prevent and respond to while safeguarding human rights and democratic values (Ameh, 2023).

Furthermore, Nigeria today has become increasingly ungovernable due to ethnic and religious cleavages (Lenshie, 2020). This form of conflict arises from distrust among the various ethnic groups and the major religion in the country. It has been identified as a major cause of insecurity in Nigeria. With over four hundred (400) ethnic groups, belonging to several religious sects, Nigeria since independence has remained a multi-ethnic nation state, which has been struggling and trying to cope with the problem of ethnicity on the one hand, and the problem of ethno-religious conflicts on the other (Bakari, 2023). In Nigeria, some people are so attached to their religion to the extent that they are ready to die for it, ignorantly. Over the years, ethnicity and religious intolerance have led to nonstop recurrence of ethno-religious conflicts. A glimpse of some of these ethno-religious crises include; the Maitatsine sectarian crisis in 1981, the Kaduna and Bulunkutu (Maiduguri) in 1982, the Ilorin Muslim-Christian riot in March 1986, Zaria and Funtua religious riots of March 1987. But the most worrisome account so far is the recent large scale of unimaginable bomb attacks by the Boko Haram movement which is escalating every day (Aleyomi, 2012).

The menace of terrorism and insurgency as well as armed or ethno-religious conflicts has turned out to be the prominent causes of conflict-induced internal displacement in Nigeria. According to Aloba and Obaji (2016) it is a situation in which individuals and groups are compelled or obliged to leave and remain away from their homes, but remain within the borders of their own countries. The latter element differentiates them from refugees, who are also compulsorily evacuated but across internationally recognized state borders. Since the beginning of 2014, the increase of violence caused by Boko Haram insurgency has triggered a massive wave of internal displacement in the north eastern part of Nigeria (Adebayo, 2014; Afolabi, 2015; Akume & Godswill, 2016; Imasuen, 2015). The country is also prone to community clashes which have generated and continued to cause forced displacement all across most parts of the northern region in the country (Alimba, 2014; Tayo, 2017). The frequent occurrences of conflicts and crises in Northern Nigeria call for pro active measures by the security sector and the government in the country.

Some scholars have also contended with the proposition that corruption and poverty are the major challenges confronting peace and security in Nigeria. The poverty in Nigeria is not as a result of war, natural disasters and lack of resources. Nigeria's poverty is as a result of social exclusion which consequently puts majority of the masses at the bottom of

the pyramid, while a few individuals who occupy the zenith created a comfort zone for themselves to the discomfort of the masses. This has degenerated into crises and almost leading to the collapse of the state. This tendency further espouses the idea that poverty (produced by corruption) is the mother of insecurity (Salaudeen, 2021).

All in all, in the Nigerian context, it seems security has been elusive for some time due to some of the indicators of insecurity elucidated above, which include; terrorist attacks, kidnapping, ethno-religious conflict, armed banditry, and violence. Still, it has taken different dimensions in the various regions across the country. While the militants and the local oil firms engage in combat in the Niger Delta, the militant Islamist groups, known as the Boko Haram insurgents have been linked to violence in Northern Nigeria. In other regions such as in the South-East and the South-West, kidnapping, ritual killing and trading of human organs for ritual money, and armed robbery have mostly been posing the greatest challenges to security. In all these, what is quite obvious is that insecurity is a threat to education and national development.

### **Contemporary Security Challenges and Its Impacts on Education in Nigeria**

Education is an important aspect of human society that has link with all sectors and facets of life. Many developed societies rode on it to achieve prosperity, stability and sustainability (Gulesh, et al., 2022). Security on the other hand, guarantees peaceful atmosphere for the conduct of all human activities, including impartation of knowledge which is the primary purpose of education. To be sure, Nigeria has been experiencing a bridge in security with direct bearings on its education system. Children are the most affected, forced to drop out of school. This further happens against the backdrop of school closure, bombing of schools, assassinator of schoolteachers, attack and abduction of students, low school enrollment, poor academic performance and widespread illiteracy in addition to the need to promote and develop the education sector.

To start with, insecurity, especially as it pertains to terrorism, brings about disruption of educational activities which means it often leads to the closure of schools, making it difficult for students to access education. It equally affects general school attendance, and enrolment as parents pull their children out of school while in some extreme cases, schools are shut down completely (Amech, 2015). This again is as a result of the persistent attack on educational institutions by the Boko Haram sect which most times is a premeditated attempt to disrupt learning (Nzewi, 2015). This is further evident in wanton destruction and burning of facilities in Adamawa State University and the Federal Polytechnic Mubi, among others (Ogege, 2011). Along this line, Nte et.al. (2023:46) argues:

Nigeria is confronted with the significant challenge of having the most perilous and insecure educational institutions globally, which consequently, contributes to the substandard academic performance of its students and the inadequate development of its educational system. The persistent issue observed in higher educational institutions in Jos, Nigeria, serves as a distinct indication that educational establishments in the country are not secure. This implies that primary schools, high schools, and universities in Nigeria are also vulnerable to terrorist attacks.

Also, Nigeria's security challenges affect the quality of education in the country. This is because teachers and students are often displaced by violent conflict and terrorist attack, leading to a shortage of qualified teachers and a lack of resources for learning. In

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addition, the trauma and stress caused by these challenges have been negatively affecting the cognitive development of students, thereby, causing poor academic performance. In line with this argument, Ogunode et al. (2021) revealed that insecurity in Nigeria is contributing to poor quality education because, school scheme of work and syllables are not covered especially in schools that are shut down. The inability of these schools to cover their scheme of work and syllables is reducing the quality of education.

In addition, parents are discouraged from sending their children to school due to the nation's security challenges. Attacks on educational institutions and their facilities are deterring parents and students from attending classes, particularly in the northeastern region of the country. In this sense, many parents have decided to keep their children at home instead of being killed and kidnapped at schools where safety is not guaranteed. Thus, in the face of security threats in Nigeria, parents consider pulling their children out of schools. In this regard, Oluyomi and Grace (2016) have argued that students might miss school for days as a result of security challenges. The girl-child, as well, is also negatively affected. She is kept at home for a long time or given out for early marriage.

In summary, the noble goals of education can never be achieved in an unsafe or in a violent environment. In other words, teaching and learning can only be achieved in a safe, secure, conducive and serene environment. Whenever there is a feeling of insecurity for any reason, within or outside the school environment, both the teachers and the students become vulnerable and this will automatically hinder students' academic performance.

### **Possible Solutions to Nigeria's Contemporary Security Challenges**

Security issues are very important for the development of any nation. This is so because sustainable development is a function of an enabling environment. In Nigeria, the need for heightened security measures is particularly crucial due to the presence of various security threats such as terrorism, militancy, insurgency, armed conflicts and organised crime. These challenges not only pose a threat to the stability and development of the country but also hinder foreign investments and economic growth. In view of this, the government must take some important and crucial steps to curtail insecurity and terrorism in order for development to thrive. These steps include:

Nigeria should employ a number of ICT tools to combat insecurity including mobile phones, CCTV and biometric data mining, to combat the insurgency. For example, CCTV can be used to monitor movement and visuals in relation to what is happening in some specific locations. The government or the agencies involved in the proper enhancement of security can use all these applications to have additional and verifiable information, especially with the use of the CCTV, where there is a lot of surveillance coverage to what are the activities that are being monitored (Nte et al. 2023). This has become necessary due the nature of security in the 21st century which according to Aduloju (2013) has gone beyond shooting and bombing, it is now more of arrest and gathering of intelligent reports. Aduloju further stated that developed nations do not wait for criminals to perpetuate crimes before they act. They have adopted the strategy of First Strike Capability to deter criminals. This is made possible through the application of modern technologies.

To curtail instability, insecurity and terrorism in Nigeria, there is need to strengthen the judicial system by ensuring that justice is dispensed no matter who is involved. Also, the judiciary in ensuring the security of the nation should promptly intervene in matters of

conflict which poses imminent threat to the survival of the nation. The judiciary should be responsive at all times to bail out the nation from serious crisis that could divide the nation into various factions and hostilities that are capable of leading the nation into another civil war (Akanle and Akanle, 2022).

Nigerian police and other security agencies must be well-equipped and trained and re-trained to tackle present day security challenges. Qualified and bright individuals should be encouraged with good incentives to enlist into the security agencies. The police must not be a dumping ground for dullards. The police should be reformed effectively. Their forensic laboratory must be well-equipped funded and staffed with qualified personnel. Nigerians must be continually sensitised to be security conscious. Security is a collective responsibility. So, government must not push its citizens so hard that they resort to criminality, violence and terrorism, so that there will be improvement in the socio-economic and political system of Nigeria.

Finally, there should be collaboration among security agencies like the State Security Service, the Police, the Armed Forces, the Civil Defence as well as the involvement of more groups beyond uniformed forces while government should train special anti-terrorist squad which could be created out of the Army, Air force, Navy and Police to complement the efforts of the National Intelligence Agency and State Security Service (SSS) in fighting terrorism. In addition, Nigeria's security agencies and national intelligent agencies need ideological overhauling in the intelligence and technical expertise. This according to Akalue (2022) will lead to a thorough review of the recruitment processes, and the overall welfare of security agencies which will also feature proper language formation since the country is a multicultural State.

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## **Conclusion**

This research has focused on Nigeria's contemporary security challenges. In the course of unraveling some of these security challenges with various forms of violence, including terrorist attacks, ethno-religious conflicts, banditry and violent extremism, the paper focused on its impacts on education and possible solutions. To this extent, the paper affirmed that insecurity has significant impacts on education in Nigeria. Some of the impacts of security challenges are felt in the closure of schools, leading to disruption of academic activities for students. It has affected the quality of education since scheme of works and syllables are not always covered when schools are shut down. It was revealed that security challenges are some of the factors responsible for the rapid decline in enrollment of students, especially in northern Nigeria. In addition, to curb insecurity the Nigeria police should be effectively reformed and well-equipped to fight contemporary security challenges. The country should also employ a number of ICT tools to combat insecurity including mobile phones, CCTV and biometric data mining to combat security challenges.

## **Recommendations**

Sequel to the revelations and implications of the discourse, the following recommendations become imperative:

1. Government should declare education in emergency in places affected by insecurity. This is because education in emergency is a critical intervention that provides education opportunities to children affected by conflict and violent extremism; and
2. Non-government organisation or donor agencies and international organization can support effort to curb violent conflicts, and terrorist attacks on educational institutions and facilities. They can also provide fund and learning materials to students and schools and technical support to the Nigerian government in curbing attacks on schools and in helping those affected.

## **References**

- Achumba, I. C., Ighomereho, O. S. & Akpan-Robaro, M. O. M. (2013). Security challenges in Nigeria and the implications for business activities and sustainable development. *Journal of Economics and Sustainable Development*. 4(2): 79.
- Adegbami, A. (2013). Insecurity : A Threat to Human Existence and Economic Development in Nigeria. *Public Policy and Administration Research*, 3(6), 8–13.
- Adebayo, A. A. (2014). Implications of Boko Haram terrorism on national development in Nigeria: A critical review. *Mediterranean Journal of Social Sciences*, 5(6), 480-489.
- Aduloju, A. A. (2013). Technology: A contemporary instrument to combat security challenges in Nigeria. *Advances in Arts, Social Sciences and Education Research*, Science and Education Development Institute, Vol. 3 (10), 603-613.

- Afolabi, A. (2015). The insurgence and socio political economy in Nigeria. *International Journal of Development and Economic Sustainability*, 3(5), 61-74.
- Akanle, A. O. & Akanle, K. B. (2022). Legal analysis of the role of the Judiciary in enhancing national security in Nigeria. *Journal of Law and Global Policy*, Vol. 7 (1), 1-20.
- Akalue, A. (2022). Philosophy, security agencies and security challenges in Nigeria. *Journal of African Studies and Sustainable Development*, Vol. 5 (2), 1-21.
- Akume, A. T. & Godswill, J. (2016). The challenge of managing insurgency in Nigeria (2009 – 2015). *Mediterranean Journal of Social Sciences*, 7(1), 145-154.
- Albert, I. O. (2004). *Explaining the security challenges in contemporary Nigeria*. <http://www.fellow%zo.investiture{1}pdf>.retrieved 12/7/2021
- Aleyomi, M. B. (2012). Ethno-religious crisis as a threat to the stability of Nigeria's federalism. *Journal of Sustainable Development in Africa*, Vol. 14 (3); 127-140.
- Alimba, N. C. (2014). Probing the dynamics of communal conflict in Northern Nigeria. *African Research Review*, 8(1), 177 – 204.
- Alobo, E. & Obaji, S. (2016). Internal displacement in Nigeria and the case for human rights protection of displaced persons. *Journal of Law, Policy and Globalisation*, Vol. 51, 26-33.
- Ameh, E. U. (2023). Terrorism and banditry: implications for Nigeria's sovereignty and territorial Integrity. *European Journal of Conflict Management*, Vol.3 (2), 21 – 37.
- Ameh, J. (2015). Borno: Reps seek re-opening of Schools. *Punch News Paper*. From: [www.punch.com.july](http://www.punch.com.july) 30.
- Bakari, A. S. (2022). The Effect of Internal Security on Educational Challenges and Development in Nigeria. *Journal of Innovative and Social Science and Human Resources*, Vol. 22 (6); 189-200.
- Bidemi, J., Azubuike, V., Olufemi, K., & Sampson, L. (2018). Security and Terrorism Challenges in Nigeria: Causes, Consequences and the Way Forward. *International Journal of Advanced Studies in Economics and Public Sector Management*, 6(2), 101–108.
- Ene, I. O. (2008). Education reforms and the implementation of the mother-tongue-medium policy in Lawal, A. R., Jimoh, S. A., Olorundare, S. O. and Ijaiya, N. Y. S. (Eds.) *Education Reforms in Nigeria: Past, Present and Future*. Ibadan, Nigeria. Stirling Horden Publishers Ltd.
- Fombele, E. F. (2013). The dilemma of educated heroines in Mukuchi's *Your Madness Not Mine* and Anne Tanyi Tang's *Ewa and Other Plays*, *A Multidisciplinary Journal of Arts, Letters and the Humanities of the University of Buea*, Vol. 1 (1); 174-189.

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- Gulesh, J. O., Yakmut, M. A. S. & Aledare, S. E. (2022). Education and Security: Exploring Areas of Collaboration between Schools and Security Agencies in Nigeria, *International Journal of Research and Innovation in Social Science (IJRISS)*, Vol. 6 (3); 461-465.
- Hiliya, A.A. & Umar, Y. J. (2021). Insecurity in Nigerian Schools, Causes, Forms and Effect Sub-Sahara African Academic Research Publication, *Journal of Contemporary Education Research (JCER)*, Vol. 19 (8); 177-194.
- Iyoha, A. E., Odion, H.A. & Dare, R.C. (2010). *Evil on campus exposed*. Benin City: Matilo World Print publication
- Joshua, S., Ibietan, J. & Azuh, D. (2016). Education and Nigeria's National Security. Proceedings from INTED2016 Conference 7<sup>th</sup>-9<sup>th</sup> March, 2016, Valencia, Spain.
- Lenshie, N. E. (2020). Ethno-religious identity and intergroup relations: the informal economic sector, Igbo economic relations and security in Northern Nigeria, *Central European Journal of International and Security Studies*, Vol. 14 (1), 75-105.
- Nte, N. D., Enoke, B. K. & Isa, M. A. (2023). School security and safety challenges in Nigeria: evaluating the existential threats of domestic terrorism in the North East Region. *Jurnal Ilmu-Ilmu Sejarah, Sosial, Budaya dan Kependidikan*, 11 (2), 42-67.
- Nte, N. D., Okinomo, O., Isa, M. A., Amadedon, D. & Oba, T. B. (2023). The challenges and prospects of ICT utilisation in counter terrorism efforts in transitional democracy: the case of Nigeria. *Indonesian Journal of Counter Terrorism and National Security*, Vol. 2 (1), 63-114.
- Nzewi, U. (2015). Terrorism and a threat to global peace and security: its educational imperatives. Brochure and Books and Abstract, University of Calabar.
- Ogunode, N. J., Ahaotu, G. N. & Obi-Ezenekwe, U. C. (2021). Effects of Insecurity on School Administration. *Middle European Scientific Bulletins*, Vol. 13; 93-102.
- Ogege, S. (2011). Education and the paradox of graduates' unemployment: the dilemma development in Nigeria, *African Research Revenue*, 253-265.
- Oghuvbu, E. A. & Chidozie, F. (2018) Security challenges and national development in Nigeria: A study of Boko Haram, *Abraka Humanities Review* Volume 8 (1), 292-307.
- Okeke, C.C. (2003). *Philosophy of Education*. Owerri: Design Prints Publishers.
- Oluwasanmi, B. V., Oluwasanmi, A. C. & Ojo, S. K. (2022). Issues of peace and security in contemporary Nigeria. *Nigerian journal of Peace, Development and Humanitarian Affairs (NJPDHA)*, Vol. 1 (1), 141-160.

- Oluyomi A. & Grace S.,M, (2016) *Environmental Insecurity and the Nigerian Child's Learning: Coping Strategies Asia Pacific Journal of Multidisciplinary Research*, Vol. 4, No. 1, P 13-17.
- Salaudeen, A. (2021). Poverty and corruption: the major challenges to peace building in Nigeria. *Africa and Emerging Trends in Global Politics*, 69-89.
- Solomon, A. E. & Solomon, M. (2021). Emerging Insecurity Challenges and its impact on quality tertiary education in Nigeria: A case study of Delta State University, Abraka and Ambrose Ali University, Ekpoma , Edo State *International Journal of Research and Innovation in Social Science* Vol. 5 (6); 581-587.
- Tayo, S. (2017). *Buhari's security challenges: The president's lasting war on insurgency*. Retrieved from [www.republic.com.ng/aprilmay-2017/buhari-security-challenges/](http://www.republic.com.ng/aprilmay-2017/buhari-security-challenges/)
- Ubong, B. (2016). Insecurity and Girl Child Education in Nigeria. *European Journal of Foundation Studies* Vol. 2(1);
- Ugwueze, M. I., & Onuoha, F. C. (2020). Hard versus soft measures to security: Explaining the failure of counter-terrorism strategy in Nigeria. *Journal of Applied Security Research*, 15(4), 547-567.
- Walker, A. (2012). What Is Boko Haram? *United States Institute of Peace Special, Report 308 June*. Retrieved from <http://www.usip.org/sites/default/files/SR308>.
- Yusufu, A. A. (2022). Contemporary security challenges and its effects on Nigeria's foreign relations, 2015-2022. *Covenant University Journal of Politics & International Affairs. Vol. 10 (1)*, 3800-3812.  
2(1), 19-29.

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## TEACHERS' EVALUATION OF AL-MA'DUBAH AL-'ADABIYYAH ARABIC LITERATURE TEXTBOOK IN KWARA STATE SENIOR SECONDARY SCHOOLS, NIGERIA

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### Abstract

*Textbooks constitute an integral part of instructional media that are adopted to facilitate teaching-learning process. Thus, this study attempted to carryout teachers' evaluation of Al-Ma'dubah 'Al-Adabiyyah, a recommended textbook for teaching Arabic Literature in Nigerian senior secondary schools. Descriptive research method was employed in the study. The population for the study was made up of all the teachers of Arabic language at the senior secondary school level in Kwara State. All the 64 teachers of Arabic language were purposively engaged in the study. However, only 60 teachers of Arabic language returned the questionnaires. A 25 – item researcher designed questionnaire was used as the instrument for data collection. Percentage was used to answer the research questions postulated for the study while the three hypotheses formulated were tested using t-test statistics at 0.05 level of significant. The data collected were analysed using the percentage indices and t-test statistics. The results revealed that the textbook received positive assessment in terms of its availability, clarity of objectives, consistency with the senior secondary school Arabic curriculum, suitability, durability and exercises while the book lags behind in term of adequacy of illustrations. The results also showed that no significant differences existed in the evaluation of the textbook based on teachers' gender, while there existed significance difference in the evaluation of the textbook based on teachers' qualification and years of teaching experience. In line with the findings in the study, it was recommended that the textbook should be retained as an Arabic literature teaching material for senior secondary schools. Qualified Arabic teachers should be encouraged to adopt the book while teaching Arabic Literature.*

**Key Words:** Nigeria, Security, Challenges, Education and Solutions

## **Introduction**

In the teaching and learning situation, the enormosity of instructional materials could not be undermined. The importance of instructional media has been accepted widely, that the students who have the advantage of being taught with well-selected wisely utilized instructional media learn more effectively than those who are only provided with verbal instruction. The main reason for this is that well-chosen instructional media tends to present concepts in such a manner as to create interest and motivation. Learners gain more from instruction when they become involved through their own interest and desire; it is a well-known fact that motivation and desire for learning are essential elements in meaningful instruction. Under normal circumstances, students are expected to physically see and hear, if they cannot do either, then there is a barrier to physical perception. The more a child has seen and heard, the more he wants to see and hear (Umar, 2010).

Umar (2010) also noted that varied instructional media could make the subject matter clearer to students who come from different backgrounds with varying abilities. Thus, they foster effective learning not only for the child who reads and writes, but also for the child who is not verbally gifted. They allow slow and average students to absorb lessons through as many senses as possible while freeing the rapid learners, the well-grounded students and the good reader to proceed as quickly and in as much depth as desired.

Instructional media which are also referred to as teaching aids are materials and equipment that serve as vehicles with which are channeled with ease to their destination. The instructional strategies usually employed by teachers – providing structured context asking and responding to questions, arousing curiosity and giving information have all been incorporated into programmes delivered by media ranging from books, charts and other visuals materials to electronic such as Television projectors and computers (Abdur-Rafiu, 2014).

Textbook as an instructional material plays significant role in teaching and learning process. Swanepoel (2010) noted that good textbooks could play a valuable role in solving the problem, since it is a well-established fact that the utilisation of high-quality textbooks can contribute to learner achievement. The quality of the available textbooks varies and teachers or education providers should choose the best textbooks available for teachers to use, or at least ensure that the textbooks chosen and used are adequate.

Arabic literature plays a vital role in Islamic education, fostering cultural understanding and historical knowledge. In Nigerian senior secondary schools, textbooks like *Al-Ma'dubah Al-'Adabiyyah* serve as essential resources for teaching Arabic literature. However, the effectiveness of any textbook hinges on its usability and alignment with learning objectives. Consequently, it is necessary to evaluate the quality of the textbooks during the process of textbook selection.

Evaluation is the process of ascertaining the worth of value of an object, event or individual it involves giving value judgment inappropriateness' goodness or badness, desirability or undesirability of event decisions, performances, processes, objectives, situations and so on (Abdur-Rafiu, 2014). Assessment is a means by which the teacher obtains information about knowledge gains, behavioural changes and other aspects of the development of learners. It involves deliberate effort of the teacher to measure the effect of the instructional process as well as the overall effect of school learning on the behaviour of learners. Assessment enforces all aspects of school experience both within

and outside the classroom. It provides feedback data to both the teachers, learners as well as other stakeholders in education (Owolabi, 2004).

Also, Azizifar and Baghelani (2014) submitted that since textbook evaluation includes production, assessment, and adaption of materials, it is essential for the practitioners to regularly conduct evaluation processes that guarantee their pedagogical contribution to the learning and teaching procedure and also get ensured of their appropriateness for the context and learners who use them.

The teacher in any given society is the pillar on which the total educational system rests. That is, the success or failure of any education depends largely upon the quality of its teacher (Opadokun, 2002). Abdulsalam and Issa (2002) noted that "The position of the teacher as one who imparts knowledge and skills cannot be overemphasized. The roles of teachers in achieving the objectives of any school or subject curriculum is enormous. Salami (1999) reiterated that a teacher is a curriculum interpreter or because, he analyzes the syllabus that is related to discipline. In other words, a teacher in Islamic studies needs to know his subject matter and then needs to know all aspects of educational technology so as to enable him/her to implement the curriculum properly. This might be why Omoniyi (2002) referred to teachers as the major implementers of planned curriculum.

It is a widely accepted fact by most educationists that the success of a curriculum depends largely on the teacher. As expressed in the national policy on education (FRN, 2004) "no education system can rise above the quality of the teacher in forms of qualification and experience considered to be of paramount importance. Rowand (1999) in a survey of public schools' teachers who have over ten years teaching experience revealed that they are not keen about using computers for any form of teaching. However, some of them who are interested have low level of competence especially in the area of creating instructional materials (IM), for administrative purpose, gathering of information and so on.

Also, teachers' gender, qualification and experience are among the factors that influence their attitude to teaching and evaluation. Adedeji (2006), states that teaching experience refers to those attitudes or skills acquired by the teacher through his or her perception and participation in instructional programmes. Experience of the teacher will help him to be able to cope and adapt to mild changes in the educational programmes.

### **Statement of the Problem**

As Arabic teachers use textbooks in their classrooms, they are considered as one of the most important features in evaluation processes to choose the best book for specific learner groups. Teachers' perspectives on the utility and the effectiveness of the textbooks are also fundamental canvassing and analyzing their textbooks in order to recognize the demerit and merit points with regard to the particular teaching context. It is believed that Perfect book does not exist for language learning in all situations (Grant, 1987).

More so, effective teaching of Arabic literature in Nigerian senior secondary schools hinges on the quality of available resources, particularly textbooks. Al-Ma'dubah Al-'Adabiyyah is a widely used Arabic literature textbook, but its effectiveness in facilitating learning has not been extensively evaluated from the perspective of teachers who use it daily. This lack of evaluation creates a gap in understanding the strengths and weaknesses of Al-Ma'dubah Al-'Adabiyyah as a teaching tool. Teachers, on the frontlines of

education, can offer valuable insights into the textbook's alignment with curriculum objectives, its content clarity, its chosen pedagogical approach, and its overall effectiveness in student learning. In addition, it is necessary to evaluate the instructional materials in order to respond to the users' needs and provide appropriateness in language classroom situations and contexts. It is against this backdrop that these researchers had attempted to investigate Arabic teachers' evaluation of Al-Ma'dubatul Al-'Adabiyyah Arabic literature textbook. To the best of researchers' knowledge, no previous studies has delved into this. Therefore, it constitutes the gap which the study aims at filling.

### **Objectives of the Study**

The general purpose of this study is to investigate teachers' evaluation of Al-Ma'dubatul Al-'Adabiyyah Arabic language (literature) textbook for senior secondary schools. Specifically, the study looked into the following aspects:

1. Teachers' general perception of the strengths and weaknesses of the "Al-Ma'dubatul Al-'Adabiyyah" textbook for teaching Arabic literature;
2. Clarity of the book's objectives;
3. Relevance of the content with the official senior secondary school Arabic curriculum;
4. Availability of the "Al-Ma'dubatul Al-'Adabiyyah" textbook;
5. Suitability of the "Al-Ma'dubatul Al-'Adabiyyah" textbook for the age and educational levels the target students;
6. Durability of the "Al-Ma'dubatul Al-'Adabiyyah" textbook;
7. Adequacy of the illustration in "Al-Ma'dubatul Al-'Adabiyyah"
8. Adequacy of the exercises provided at the end of each chapter of the textbook

### **Research Questions**

The following research questions were raised and answered in the process of this study:

1. How do teachers in Kwara State senior secondary schools perceive the strengths and weaknesses of the "Al-Ma'dubatul Al-'Adabiyyah" textbook for teaching Arabic literature?
2. Are the objectives of the textbook clearly stated?
3. Does the textbook content align with the prescribed curriculum for Arabic literature?
4. Is the textbook easily available to the students?
5. Is the contents of Al-Ma'dubatul Al-'Adabiyyah suitable for the age and educational level of the target students?
6. Is the textbook durable for long term use of the students?
7. Does the book contain adequate illustrations?
8. Are the exercises provided at the end of each chapter of the book adequate?

## **Research Hypotheses**

The following null hypotheses were formulated and tested in the study:

- i. H01: There is no significant difference between male and female Arabic teachers' evaluation of Al-ma'dubah Al-Adabiyyah text book.
- ii. H02: There is no significant difference between qualified and unqualified Arabic teachers' evaluation of Al-ma'dubah Al-Adabiyyah text book.
- iii. H03: There is no significant difference between experienced and less experienced Arabic teachers' Evaluation of Al-ma'dubah Al-Arabiyyah textbook

## **Literature Review**

Textbooks have a very important and positive role to play in teaching and learning. Textbooks are the main sources that can convey the knowledge and information to the learners in an easy and organized way (Papajani, 2015). It is the axis of learning upon which the universe of knowledge keeps moving. The visionary as well as the pragmatic aspects of a language text book is insurmountably immense that includes psychological along with ethnical factors of human life. The philosophy of language teaching universally depends on a constructive textbook. The phenomenal aspects of textbook are the sources of millions of versatile copies that are sold every year and commercially invested with numerous aid projects. Without a relevant textbook no teaching learning situation is capable of visualizing success (Bahar & Zaman, 2013). Textbook evaluation plays a crucial role in optimizing the learning process for all stakeholders involved. It ensures that the chosen textbook is an effective tool for teaching and learning, leading to better educational outcomes for students. There are various reasons for materials evaluation and activities involved are also many and varied. One of the major reasons is the need to adopt new course books. Another reason is to identify particular strengths and weaknesses in textbooks already in use (Papajani, 2015). According to Bahar and Zaman (2013), textbook evaluation is carried out for the following purposes:

- i. Curriculum Design: To ensure that the textbook aligns with established curriculum standards and learning goals.
- ii. The syllabus and programme content: To identify the relevance and congruity prevailing in different teaching contents of the textbook so that error identification can be easier as well as confusions regarding the whole teaching spectrum will be held back. Evaluation helps teachers identify areas where the textbook might be lacking or require adaptation to suit their specific classroom context. They can then supplement the material with additional resources or modify existing activities to cater to their students' diverse learning styles and needs.
- iii. Classroom process: To provide an insight will give an idea about the extent to which the program is being implemented appropriately. Both the teachers and the learners can gain introspective attitude towards the whole learning procedure.
- iv. The teachers: A thorough evaluation provides insights into the textbook's organization, activities, and assessment tools, enabling teachers to plan engaging lessons that effectively cover the intended learning objectives.

- v. The student: A well-evaluated textbook can provide students with a clear and engaging learning experience. By ensuring the content is accurate, relevant, and presented in an accessible manner, the evaluation process helps ensure students are actively learning and retaining the information.
- vi. Effective learning experience: A well-evaluated textbook ensures learners receive accurate and relevant information presented in a clear and engaging manner, promoting effective learning and knowledge acquisition.
- vii. Learner motivation: Supporting independent learning: A well-organized textbook with self-assessment tools can empower students to take ownership of their learning and progress independently, even outside the classroom setting.
- viii. The institution: By selecting appropriate textbooks, schools and educational institutions can improve the overall quality of their educational programmes.
- ix. Identification of learning gaps: Through textbook evaluation, learners can identify areas where they need additional support or clarification, allowing them to seek further help from teachers or other resources.
- x. Publishers: Feedback from evaluations helps publishers improve future editions of their textbooks, ensuring they better meet the needs of teachers and learners.

Bahar and Zaman (2013) studied the importance of pre-evaluation of textbooks and its possible limitations in order to construct an effective SLA classroom. It will discuss and describe the intricate and complex evaluation procedure that had been done on Headway in context of English as SLA, and the purpose of this evaluative research project is to determine and establish the overall pedagogical validity and appropriateness of the book in terms of its specific language teaching programme.

Mohammadi and Abdi (2014) evaluated the textbook "Top Notch" used in Iranian English language schools. They assessed how well the book met students' needs and its overall teaching value. Researchers surveyed 105 students and 32 teachers using questionnaires developed by Litz (2001). The teacher questionnaire had 40 items, while the student version had 25. The study also included a student needs analysis alongside the textbook evaluation. While the analysis revealed some shortcomings, such as a lack of exposure to other cultures, the overall findings suggested that "Top Notch" could be an effective tool in the hands of a skilled teacher, despite its limitations.

Lewicka and Waszau (2017) analyzed three various textbooks for Teaching Arabic as a Foreign Language in terms of the Cultural Curriculum. The books were published by three publishing markets (Poland, France, United States of America). This analysis allowed answering the question regarding the method of reflecting the aspects forming the socio-cultural. It was concluded that the discussed publications realize the assumptions of the culture and realities studies designed to be introduced in correlation with the practical teaching of AFL in a different way and to various extents.

Al-Jarf and Mingazova (2020) analyzed the textbooks titled "Arabic for Non-native Speaking Children", Level I by Zakirov, Mingazova, and Mukhametzyanov (2011), and "Arabic for Non-Native Speaking Children", Level II by Mingazova, Zakirov, and Mukhametzyanov (2013) which are used to teach Arabic as a foreign language (AFL) to elementary school children in Tatarstan. The textbooks were then evaluated in the light of the Common European Framework of Reference (CEFR) criteria. Results showed that the



textbooks do not meet the CEFR language teaching and learning criteria, as they focus on the reading and writing skills, not oral skills and communication. They focus on the Arabic alphabet letters and basic Arabic grammatical structures and categories. The words taught are selected based on whether they contain the alphabet letter under study, not on the basis of belonging to a certain semantic category. In addition, the textbooks have adopted a grammar-translation approach, not a communicative, functional approach. The study recommends restructuring the textbook aims, skills and subskills taught, language elements selected, syllabus design adopted, and language teaching approach followed so that focus is on learning Arabic for communication.

Aburub (2023) evaluated the Palestinian Arabic Language Textbook, "Our Beautiful Language," for first grade from the viewpoint of the teachers. The study also identified the significance of evaluating textbooks. Both quantitative (survey) and qualitative data (interview) data were employed for the study. It was found that the textbook has a specific weakness and deficiency in the psycho-cognitive dimension despite the Palestinian Ministry of Education's efforts to develop the curriculum. Suggestions were made on how to improve the book.

The issue of teachers' academic gender, qualifications and experiences as determinant factors in instructional process is inconclusive. Results of several studies have shown how teachers' gender, qualification and experience have influenced their productivity. There have been divergent opinions on whether or not there is a relationship between job satisfaction and effectiveness based on teacher variables like qualification, sex, experiences and instructional effectiveness. For instance, the study of Gerald, Augustine & Lucy (2013) established the influence of gender in educational process; the studies of Olaoye (2012) and Owolabi and Adebayo (2012) found that teachers' qualification influenced their productivity. While that of Ishaq (2009) established that a long time practicing professional teacher is more efficient and skilful than a less-experienced teacher.

## **Methodology**

The descriptive method was adopted for the study. It was concentrated on teachers' evaluation of Al-ma'dubah Al-Adabiyyah Arabic literature textbook for senior secondary schools in Kwara state. The population for this study was made up of all the teachers of Arabic language at the senior secondary school level in Kwara State. There are 64 Arabic teachers in senior secondary schools across the 16 Local Government Areas of the state. All the 64 teachers of Arabic language were purposively engaged in the study. However, 60 teachers of Arabic language returned their questionnaires. A 25 – item researcher-designed questionnaire was used as the instrument for data collection. Percentage was used to answer the research questions postulated for the study while the three hypotheses formulated were tested using t-test statistics at 0.05 level of significant.

## **Results**

### **Answering Research Questions**

**Research Question One:** How do teachers in Kwara State senior secondary schools perceive the strengths and weaknesses of the "Al-Ma'dubatul Al-'Adabiyyah" textbook for teaching Arabic literature?

**Table 1:** Teachers’ perception of the strengths and weaknesses of the "Al-Ma'dubatul Al-'Adabiyyah" textbook for teaching Arabic literature

ITEM	N0. of Respondents	SA	%	A	%	D	%	SD	%
"Al-Ma'dubatul Al-'Adabiyyah" is highly impactful textbook to the users	60	23	36	37	64	-	-	--	--

Table 1 reveals that all the respondents were of the opinion that *Al-Ma'dubatul Al-'Adabiyyah* Arabic literature book for senior secondary schools was highly impactful.

**Research Question Two:** Are the Objectives of the textbook clearly stated?

**Table 2:** Clarity of the objectives of Clarity of the objectives of *Al-ma'dubah Al-Adabiyyah* textbook

N0. of Respondents	SA	%	A	%	D	%	SD	%
60	22	36.67	37	61.67	1	1.67	—	—

Table 2 reveals that 22 (36.67%) of the respondents strongly agreed that the objectives of *Al-ma'dubah Al-Adabiyyah* Arabic literature textbook for senior secondary schools were clearly stated. 37 (61.67%) Agreed, 1 (1.67) disagreed, while no respondent strongly disagreed. This implies that the book '*Al-ma'dubah Al-Adabiyyah*' Arabic literature textbook for senior secondary schools contained clearly stated objectives.

**Research Question Three:** Is the textbook relevant with the content of the senior secondary school Arabic language curriculum?

**Table 3:** Relevant of the textbook with the content of the senior secondary school Arabic language curriculum

N0. of Respondents	SA	%	A	%	D	%	SD	%
60	25	41.67	32	53.3	2	3.33	1	1.67

Table 3 shows that 25 (41.67) of the respondents strongly agreed that *Al-ma'dubah Al-Adabiyyah* Arabic literature text book is relevant with content of senior secondary school Arabic language curriculum. 32 (53.3%) disagreed, while 1 (1.67%) strongly disagreed. This implies that the content of the book is congruent with the content of senior secondary school Arabic language curriculum.

**Research Question Four:** Is the text book readily available to the students?

**Table 4:** Teachers' Response on the Availability of *Al-ma'dubah Al-Adabiyyah* Arabic literature textbook to students

N0. of Respondents	SA	%	A	%	D	%	SD	%
<b>60</b>	26	43.33	18	30	10	16.67	06	10

Table 4 indicates that 26 (43.33%) of the respondents strongly agreed that *Al-ma'dubah Al-Adabiyyah* Arabic literature book is easily available to the students. 18 (30%) agreed, 10 (16.67%) disagreed, of while 06 (10%) strongly disagreed. This simply means that *Al-ma'dubah Al-Adabiyyah* Arabic literature book is readily made available.

**Research Question Five:** Is *Al-ma'dubah Al-Adabiyyah* suitable for the target students?

**Table 5:** Suitability of *Al-ma'dubah Al-Adabiyyah* Arabic literature book for the targeted students

N0. Of Respondents	SA	%	A	%	D	%	SD	%
<b>60</b>	30	50	30	50	—	—	—	—

Table 5 shows that *Al-ma'dubah Al-Adabiyyah* Arabic literature book is suitable for the targeted students. 30 respondents of (50%) strongly agreed, 30 (50%) also agree, no respondents disagreed or strongly disagreed. Hence, *Al-ma'dubah Al-Adabiyyah* Arabic literature book is suitable for the age and educational level of the targeted students.

**Research Question Six:** Is the textbook durable for long time use of the students?

**Table 6:** durability of *Al-ma'dubah Al-Adabiyyah* Arabic literature book for long time use of the students

N0. Of Respondents	SA	%	A	%	D	%	SD	%
<b>60</b>	9	15	16	26.67	13	21.67	22	36.67

Table 6 reveals that 9(15%) of the respondents strongly agreed that *Al-Madubah Al-Adabiyyah* Arabic literature book is durable for long time use of the students. Another 16 respondents of (26.67%) agreed, 13 (21.67%) disagreed, while 22 (36.67%) strongly disagreed. Therefore, *Al-Madubah Al-Adabiyyah* Arabic literature book is durable as it has both extrinsic and intrinsic values.

**Research Question 7:** Does the book adequate contain adequate illustration?

**Table Seven:** Adequacy of the illustrations made in *Al-ma'dubah Al-Adabiyyah* Arabic literature book

N0. of Respondents	SA	%	A	%	D	%	SD	%
60	1	1.67	8	13.33	23	38.33	28	46.67

Table 7 shows that 1 (1.67%) agreed, 8 (13.33%) strongly agreed, 23(38.33%) of the respondents disagreed and 28 respondents of (46.67%) strongly disagreed that *Al-ma'dubah Al-Adabiyyah* contains adequate illustrations. This implies that the textbook does not contain adequate illustration.

**Research Question Eight:** Are the exercise provided at the end of each chapter of the book adequate?

**Table 8:** Adequacy on the exercises provided at the end of each chapter of the *Al-ma'dubah Al-Adabiyyah*

N0. Of Respondents	SA	%	A	%	D	%	SD	%
60	21	35	35	58.33	4	6.67	—	—

Table 8 indicates that the exercises provided at the end of each chapter of *Al-ma'dubah Al-Adabiyyah* are adequate. 21 respondents (35%) strongly agreed, 35 (58.33%) agreed, 4 (6.67%) disagreed, while none of the respondents strongly disagreed. In other words, there are adequate exercises at the end of each chapter of *Al-ma'dubah Al-Adabiyyah*.

### Hypotheses Testing

The results of the hypotheses tested in this study are presented in subsequent tables. All hypotheses were tested at the significant level of 0.05.

**H<sub>01</sub>:** There is no significant difference between male and female Arabic teachers' evaluation of *Al-ma'dubah Al-Adabiyyah* text book.

In order to test this hypothesis, the responses of the teacher to the 25 statements of the questionnaire were coded on the statistical coding sheets on the basis of gender. The set of data were subjected to independent t-test and the output reveals thus:

**Table Nine:** the t-test Analysis showing the difference between male and female Arabic Teachers' Evaluation of *Al-ma'dubah Al-Adabiyyah* textbook

Variable	N	Mean	SD	df	t <sub>value</sub>	Sig. 2 tailed	Decision
Male	46	54.2826	5.84496	58	0.292	0.771	Accept
Female	14	54.7857	4.9017				

Table Nine shows that the t-value is 0.292, which is not significant at 0.05 alpha level. Therefore, the null hypothesis one (1) which states that there is no significant difference between male and female Arabic teachers' evaluation of *Al-ma'dubah Al-Adabiyyah* text book is accepted.

**H<sub>02</sub>:** There is no significant difference between qualified and unqualified Arabic teachers' evaluation of *Al-ma'dubah Al-Adabiyyah* text book.

In order to test the hypothesis two, the response of the Arabic teachers to the 25 statements that addressed assessment of *Al-ma'dubah Al-Adabiyyah* were coded on the statistical coding sheets on the basis of Arabic teachers' qualification. The set of data were then subjected to independent t-test, at alpha level of 0.05. The outcome shows thus:

**Table Ten:** the t-test Analysis of difference between qualified and unqualified Arabic Teachers' Evaluation of *Al-Madubbah Al-Adabiyyah* text book

Variable	N	Mean	SD	Df	t <sub>value</sub>	Sig. 2 tailed	Decision
<b>Qualified</b>	43	56.7907	6.06142	58	2.267	0.021	Rejected
<b>Unqualified</b>	17	53.1765	3.97233				

Table Ten indicates that the t-value is 2.267, which is significant at alpha level 0.05. Therefore, the null hypothesis two is rejected. That is, there is a significant difference between qualified and unqualified Arabic teachers' evaluation of *Al-Madubbah Al-Arabiyyah* text book. This is in favour of Arabic qualified teachers with a mean of 56.7907 and the standard deviation of 6.06142, which are respectively, greater than the mean score of 53.1765 and the standard deviation of 3.97233 of the Arabic unqualified teachers.

**H<sub>03</sub>:** There is no significant difference between experienced and less experienced Arabic teachers' evaluation of *Al-ma'dubah Al-Arabiyyah* textbook.

In order to test hypothesis three, the response of the teachers of Arabic to the 25 statement that addressed evaluation of *Al-Madubbah Al-Adabiyyah* textbook were coded on the statistical coding sheets on the basis of Arabic teacher experience. The set of data were then subjected to independent t-test, at alpha level of 0.05. The result reveals thus:

**Table Eleven:** the t-test Analysis showing the difference between experienced and less experienced Arabic teachers' evaluation of *Al-ma'dubah Al-Adabiyyah* Textbook

Variable	N	Mean	SD	Df	t <sub>value</sub>	Sig. 2 tailed	Decision
<b>Experienced</b>	35	58.6571	6.43951	58	2.275	0.27	Rejected
<b>Less Experienced</b>	17	53.1765	3.97233				

Table Eleven shows that, the calculated t-value is 2.275 which is significant at the alpha level of 0.05. Therefore, significant difference exists between experienced and less experienced Arabic teachers' evaluation of *Al-ma'dubah Al-Arabiyyah* text book. This also in favour of experienced Arabic teachers, with a mean score of 58.6571 and standard deviation of 6.43951 which are respectively greater than the mean score of 55.3200 and the standard deviation of 4.13038 of the less experienced Arabic teachers

## Summary of the Major Findings

The findings in the study could be summarized as follows:

1. the objectives of *Al-ma'dubah Al-Adabiyyah* Arabic literature textbook for senior secondary schools were clearly stated
2. the content of the book is congruent with the content of senior secondary school Arabic language curriculum
3. *Al-ma'dubah Al-Adabiyyah* Arabic literature book is readily made available.
4. *Al-ma'dubah Al-Adabiyyah* Arabic literature book is suitable for the age and educational level of the targeted students.
5. *Al-Madubah Al-Adabiyyah* Arabic literature book is durable as it has both extrinsic and intrinsic values.
6. This implies that the textbook does not contain adequate illustration.
7. There are adequate exercises at the end of each chapter of *Al-ma'dubah Al-Adabiyyah*.
8. There is no significant difference between male and female Arabic teachers' evaluation of *Al-ma'dubah Al-Adabiyyah* text book
9. There is a significant difference between qualified and unqualified Arabic teachers' evaluation of *Al-Madubbah Al-Arabiyyah* text book.
10. Significant difference exists between experienced and less experienced Arabic teachers' evaluation of *Al-ma'dubah Al-Arabiyyah* text book.

## Discussion

It has been established from the findings of the study that the textbook '*Al-Madubbah Al-Arabiyyah*' received positive evaluation from the teachers particularly, in terms of its availability, clarity of objectives, consistency with the senior secondary school Arabic curriculum, suitability, durability and exercises while the book lags behind in term of adequacy of illustrations. The approach and the findings are in congruence with the findings of the previous relevant studies like those of Mohammadi and Abdi (2014), Lewicka and Waszau (2017), Al-Jarf and Mingazova (2020) and Aburub (2023) which have all evaluated different textbooks and have recorded strengths and weaknesses of the respective evaluated textbooks.

In addition, the findings of this study revealed that there is no significant difference between male and female Arabic teachers' evaluation of '*Al-ma'dubah Al-Adabiyyah*' text book. This however, contradicts the findings of Gerald, Augustine & Lucy (2013) which established the influence of gender in educational process. It was also found in this study that there is a significant difference between qualified and unqualified Arabic teachers' evaluation of *Al-Madubbah Al-Arabiyyah* text book. Likewise, significant difference exists between experienced and less experienced Arabic teachers' evaluation of *Al-ma'dubah Al-Arabiyyah* text book. These findings are tandem with the findings of Ishaq (2009), Olaoye (2012) and Owolabi and Adebayo (2012) which have respectively

established that teachers' qualification and years of teaching experience influenced their productivity.

## **Conclusion and Recommendations**

Based on the findings of the study, it was concluded that *Al-ma'dubah 'Al-Adabiyyah* Arabic literature book is positively evaluated by most teachers of Arabic in Kwara State. The areas of strengths of the book include the clarity of the objectives of the book, its consistence with the senior secondary school Arabic language curriculum, its availability, suitability, durability and the adequacy of the exercises therein. While the area of weakness of the textbook is that it does not contain adequate illustration. In addition, no significant difference exists in the teachers' evaluation of the Arabic literature textbook based on gender. While they differed significantly in their evaluation of the book on the bases of academic qualification and year of teaching experience.

The following recommendations are put forward in the light of the findings and conclusions of the study:

1. *Al-ma'dubah Al-Adabiyyah* should be retained as a recommended Arabic textbook at SSS level. The book may be translated into English language for the benefit of students of Arabic who study the language through English.
2. Teachers of Arabic should make the best use of the book by taking the students through all exercises in it.
3. Government should assist in making the book more available by purchasing it in large number and get it stucked in the libraries across the secondary schools.
4. *Al-ma'dubah Al-Adabiyyah* should be revised and the new edition should contain adequate illustrations.

## **References**

- AbdusSalam, I. R. (2010). Teachers' assessment of Lemu's Islamic Studies textbook for Senior Schools in Oyo State, Nigeria. Unpublished Master's Dissertation. Department of Arts and Social Sciences Education, University of Ilorin, Ilorin. Nigeria
- Aburub, I. (2023). An Evaluation of the Arabic Language Textbook for First Grade from the Teachers' Point of View. *Journal of Higher Education Theory and Practice* 23(9) 131-142.
- Ajiboye, O. (1980). *Andid French Language textbook*, London: Longmans Green and Co. Ltd.
- Akintola, O.A. (2001). An evaluation of three Junior Secondary School Mathematics textbook at Muslim Local Government Area of Lagos State, Unpublished B.Ed Project, University of Ilorin, Ilorin Nigeria.
- Alfa Banni, T.A. (2021). Educational Translatology – Dissemination on the maiden Training/workshop, November, 2021 at Institute of Translation Arts, University of Ilorin, Ilorin Nigeria.

- Al-Jarf, R. & Mingazova, N. G. (2020). Evaluation of Arabic Language Teaching Textbooks Used in Russia in the Light of the CEFR Criteria. Proceedings IFTE-2020, Available at SSRN: <https://ssrn.com/abstract=3838065>
- As-Sha'lan, R. M. (2009). Al-madatu Akilimiyatu Fanu Al-Qiraiatu Al-Hadithatu – Dawaratun Tadrbiyat Riyad Saudi Arabia.
- Curriculum Development Council, (2002). English Language Education: Key learning Area Curriculum guide (Primary 1 – Secondary 3). Hong Kong: Education Department.
- Ishaq, I. (2009). Implementation of the Nigeria senior school Arabic curriculum: An assessment of teachers' classroom activities in Kwara State (Unpublished Master's dissertation) University of Ilorin, Ilorin, Nigeria.
- Kareem, B.S. (2001). Comparative influence of selected textbook on secondary schools students' performance in English Language, unpublished M.Ed Project University of Ilorin, Ilorin.
- Kimani, G. N., Kara, A. M., & Njagi, L. W. (2013). Teacher factors Influencing students' academic achievement in secondary schools in Nyandarua County, Kenya. In International Journal of Education and Research. 1 (3). 1-14 [www.ijern.com](http://www.ijern.com).
- Lewicka, M. & Waszau, A. (2017). Analysis of Textbooks for Teaching Arabic as a Foreign Language in terms of the Cultural Curriculum. Universal Journal of Educational Research 5(1): 36-44
- Mohammadi, M. & Abdi, H. (2014). Textbook Evaluation: A Case Study. International Conference on Current Trends in ELT. Procedia - Social and Behavioral Sciences 98. 1148 – 1155
- Olajide, B. (2003). An evaluation of new Longman's practical English Nigeria. Nigeria Journal of Education Foundations 6(1), 92 – 100.
- Olaoye, A. A. (2012), Mathematics teachers' workloads: A correlation of quality assurance in upper basic education. Retrieved on 6th May, 2013 from African Journal of Teacher Education 2(1). 1-13. <https://doi.org/10.21083/ajote.v2i1.1917>
- Owolabi, O. I. T. and Adedayo, J. O. (2012). Effect of teacher's qualification on the performance of senior secondary school physics students: implication on technology in Nigeria. English Language Teaching 5(6) [www.ccsenet.org/elt](http://www.ccsenet.org/elt).
- Papajani, J. (2015). The Evaluation of the EFL Textbooks Used in the High Schools of Elbasan, Albania. European Journal of Language and Literature Studies. 1 (1). 7-15
- Resilient Education.com/teacher leader, Archived from the original on 24 December, 2023, Retrieved January 2, 2013
- Teacher Wikipediien. M. Wikipedia.org (PDE). Archived from the Original on 24 December, 2023, Retrieved 23 December, 2023.
- Zakariyau, I. O. (2000). 'Al-ma'dubah 'Al-Adabiyyah. (A literary Banquet for Arabic Students in West Africa) Alabi Printing Press. Ilorin, Nigeria.



## EFFECT OF PEER INSTRUCTION STRAWBERRY ON STUDENTS ACADEMIC PERFORMANCE AND RETENTION IN BASIC SCIENCE

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### Abstract

*The study investigated the effect of peer instruction (PI) strategy on students' academic performance and retention of Basic Science concepts in Tarauni Local Government Area, Kano. Four research questions and four null hypotheses guided the study which employed quasi experimental pre-test, post-test control group design. The population comprised the entire JSS2 students in Tarauni Education Zone. 82 JSS 2 students selected randomly constituted the sample and were randomly assigned into experimental and control groups. The instrument used for data collection was the Basic Science Performance Test (BSPT). The reliability coefficient of the instrument is 0.78. It was established through test re-test method. Students in the experimental group were taught using PI strategy while those in the control group were taught using the lecture method. The data obtained from the study were analyzed using t-test statistics to test the hypotheses at 0.05 level of significance. Finding reveals that PI strategy was effective in enhancing students' academic performance and retention of basic science concepts. It also revealed that the strategy was gender friendly as no significant difference was observed in the mean retention scores of the male and female students in the experimental group. The study recommends that peer instruction (PI) strategy should be used to teach other subjects in both primary and secondary schools in Nigeria. This is necessary because most of the studies carried out in other countries on PI strategy were at higher education level.*

**Keywords:** Peer instruction, Basic science, Retention, Gender, Performance

### Introduction

Science education has been recognized, all over the world, as a pre-requisite for scientific and technological development. It provides opportunities for students to acquire relevant and functional knowledge and skills that are associated with scientific processes needed for advancement in science and technology driven world (David, 2018). In science education, students are encouraged to acquire and practice scientific skills. This will help in developing their conceptual understanding of analytical abilities. To achieve this, prospective scientist, most learn by doing to encourage them explore their personal abilities and compare them with those of their colleagues. To achieve this, teachers need to be innovative in their teaching routine. This they can be done through the use of innovative teaching techniques.

There are different teaching methods employed in science education in Nigerian schools. For any method to be able to bring good result in the present age, it should be a method that promotes maximum social interaction. Social interaction between students and teacher and students plays a crucial role in learning (Nguyen, Williams & Nguyen, 2021). However, the teaching method commonly used in basic science classes is lecture method. Lecture method is often used to deliver a large amount of information to the students in a short period (Berry, 2008). This method is known to be effective in dealing with a large class. However, it has been associated with large poor performance among learners (Wudil, 2013).

Research shows that student's retention in a lecture- based science course is weak. According to Bok (2006), an average student only retains 42% of what he or she learned after the end of the lecture and 20% one week later. Berry (2008) argued that lecture method lacks the effectiveness of an active learning approach. In the opinion of Fegen and Mazur (2003) lecture method causes the bad reading habit among students. Franklin, Sayre and Clark (2014) pointed out that students taught in lecture-based classes learn less than those taught with activity-based reformed methods.

To improve the status quo, teachers are often advised to employ strategies that promote social interaction among learners. Several teaching approaches that are based upon social constructivists' theory have been proposed. Among which is the peer instructional (PI) strategy. Several studies have been conducted on the impact of this innovative strategy. However, the studies are mostly in areas other than Basic science. This study therefore assesses its effect on basic science students' performance in, and retention of learnt concepts in Kano state. To attain this, the following research questions are put forward.

### **Peers Instruction Strategies: Its Process and Implementation**

Peer Instruction (PI) is an instruction strategy that engages students during class through a structured questioning process (Crouch, Watkins, Fagen & Mazur, 2007). PI provides a structured environment for students to voice their idea and resolve misunderstanding by talking with their peer (Gok, 2012). It requires each student to apply the core concepts beings presented, and then to explain them to their fellow students. Unlike the common practice of asking informal questions during a traditional lecture, this typically engages only a few highly motivated students. PI incorporates a more structured questioning process that involves every student in the class.

Turpen and Finkelstem (2010), describes the process of PI to involve:

1. The question posed;
2. Students are given time to think;
3. Students record or report individual answers;
4. Neighboring students discussed their answers;
5. Students record or report revised answers;
6. Feedback to teacher: Tally of answers;
7. Explanation of the corrected answerer.

### **Implementation of PI**

Using PI, the instructor starts with a brief presentation or summary of the materials to be covered. After this, the instructor poses a Concept Test and asks students to think about the question and related concepts. The instructor then allows 1-2 minutes for students to

think and come up with an individual answer. This may be through clickers, flashcards, a simple raising of hands, or writing down the answer on a piece of paper. The instructor may revisit the concepts using other strategy or try a different Concepts Test if too few students' responses to the answer are not correct. If a majority of students' responses is correct, the instructor will then give a brief explanation and moves on to the next topic or concept test. In a situation where 30-70% of the students answer the concepts correctly, the instructor asks students to turn to their neighbors and discuss their answers. Students talk in pairs or small group are encouraged to find someone with a different answer. The teacher moves around the room to encourage productive discussions and guide students thinking. After several minutes, students re-examine the same concepts and the instructor then explains the correct answer. The instructor can pose other related concepts or proceed to a different topic or Concept Test depending on the students' answers.

### **Research Questions**

The study seeks to answer the following research questions:

- I. What is the difference between the academic performance of students in the experimental group taught 'changes in living things' using PI method and those in control group taught using lecture method?
- II. What is the difference between the academic performance of male and female students in the experimental group.
- III. What is the difference between retention scores of students in the experimental group taught 'changes in the living things' using PI method and those in control group taught using lecture method?
- IV. What is the difference between the retention scores of male and female students in the experimental group?

### **Null Hypotheses**

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

- I. H01: There is no significant difference between the academic performance of students in the experimental group and those in the control group.
- II. H02: There is no significant difference between the academic performance of male and female students in the experimental group.
- III. H03: There is no significant difference between retention scores of students in the experimental group and those in the control group.
- IV. H04: There is no significant difference between the retention scores of the male and female students in the experimental group.

### **Methodology**

The design for the study was a pre-test, post-test control group quasi experimental design. Two groups of students participated in the study and were randomly assigned to the experimental (EG) and the control (CG) group. A pre-test was administered to the two groups in order to determine the equivalence in the ability of the groups. The

experimental group was taught using the PI strategy while the control group was taught using the conventional lecture method. The population of the study comprised the entire JSS 2 students from two single sex schools in experimental group had 42 (24 male, 18 female) students and control group had 40 (20 male and 20 female) students totaling 82. The Basic Science Performance Test (BSPT) developed by the researchers was used for data collection. The instrument was on the themes ‘changes in living things’ (growth and development); it was made up of 30 multiple choice items and each has four options (A – D) with only one correct option. The items were validated by Chief and Principal Lecturers in the Integrated Science Department, FCE Bichi. The coefficient of reliability of the instrument was found to be 0.78, using a test re-test method at two weeks’ interval. The two groups were taught the same topics for a period of four weeks of 90 minutes per week after which the students in the two groups were post-tested using the BSPT instrument.

## Results

The data obtained were analyzed based on the research hypotheses as follows:

**Hypothesis 1:** There is no significant difference between the academic performance of students in the experimental group and those in the control group.

**Table 1:** t-test analysis of difference between the academic performance of students in the experimental group and those in the control group

Groups	N	Mean	S.D	SE	df	t	p-value
Experimental Groups (PI)	42	59.55	11.94	1.8	80	4.158	0.001
Control Groups (LM)	40	44.90	19.28	3.05			

t = 4.158, df = 80, (p = 0.001 < 0.05)

From Table 1, the mean value of 59.55 of the experimental groups is greater than the mean value of 44.90 of the control group, indicating that the experimental group (PI) enhances students’ academic performance better. Also, the calculated  $t_{cal} = 4.158 > t_{tab} = 1.984$ ; (p < 0.05); revealed that there is significant differences in the academic performance of students in the experimental group and those in the control groups. Thus, the null hypothesis is rejected in favor of the experimental group that were exposed to the PI strategy. This shows that PI enhances students’ academic performance.

**Hypothesis 2:** There is no significant difference between the academic performance of male and female students in the experimental group.

**Table 2:** t-test analysis of difference between the academic performance of male and female students in the experimental group

Gender	N	Mean	S.D	SE	df	t	p-value	Decision
Male	24	60.29	7.63	1.56	40	0.462	0.647	Accepted
Female	18	58.56	16.22	3.82				

t = 0.462, df = 40, (p = 0.647 > 0.05)

Having found significant differences in the performance of experimental and control group, the study went further to examine if any differences exist between the male and female students in the experimental group. From Table 2, the mean value of 60.29 of the

male groups is greater than the mean value of 58.56 of the female indicating that the male slightly perform better academically than the female. Besides, the calculated,  $t_{cal} = 0.462 < t_{tab} = 2.021$ ; ( $p > 0.05$ ) revealed that there is no significant difference in the academic performance of male and female of students in the experimental. Hence, the null hypothesis is retained. This confirms that PI is gender friendly.

**Hypothesis 3:** There is no significant difference between retention scores of students in the experimental group and those in the control group.

**Table 3:** t-test analysis of difference between retention scores of students in the experimental group and those in the control group

Groups	N	Mean	S.D	SE	df	t	p-value	Decision
Experimental Group (PI)	42	56.19	11.28	1.74	80	4.582	0.001	Rejected
Control Group (LM)	40	39.73	20.22	3.20				

$t = 4.158$ ,  $df = 80$ , ( $p = 0.001 < 0.05$ )

This study assessed the ability of the students to remember what they were taught after some time. Hence, Table 3 compared the result of the post-post-test. The mean value of 56.19 of the experimental groups is greater than the mean value of 39.73 of the control group, indicating that the experimental group (PI) enhances students' retention better. Again, the calculated,  $t_{cal} = 4.582 > t_{tab} = 1.984$ ; ( $p < 0.05$ ) revealed that there is significant differences in the retention of concepts by students in the experimental and control groups. Thus, the null hypothesis is rejected in favor of the experimental group that was exposed to the PI strategy. This shows that PI enhances retentions of learnt concepts.

**Hypothesis 4:** There is no significant difference between the retention scores of the male and female students in the experimental group.

**Table 4:** t-test analysis of difference between the retention scores of the male and female students in the experimental group

Gender	N	Mean	S.D	SE	df	t	p-value	Decision
Male	24	57.25	8.12	1.66	40	0.699	0.484	Rejected
Female	18	57.78	14.63	3.45				

$t = 0.462$ ,  $df = 40$ , ( $p = 0.647 > 0.05$ )

Table 4 compared gender related differences in the retention of the learnt concepts. The mean value of 57.25 of the male groups is lesser than the mean value of 57.78 of the female indicating that the retention in female is slightly higher than that of their male counterparts. In addition, the calculated,  $t_{cal} = 0.699 > t_{tab} = 2.021$ ; ( $p > 0.05$ ) revealed that there is significant difference in the retention of male and female students in the experimental group. Thus, the null hypothesis is rejected. Hence, there is slight difference in retention of the concept.

## Discussion

The result in table 1 provide answer to research question one. It reveals that there is significant difference in the academic performance of students in the experimental and

those in the control groups. This shows that PI enhances students' performance. The result obtained is in line with the findings of Aina, Jacob and Keith (2015), whose findings reveals that students taught science education using PI instruction performed significantly better than those taught with lecture method. Peer instruction is an interactive approach that was designed to improve the learning process (Rosenberg, Lorenzo & Mazur, 2006). It has the advantage of engaging the student and making the lecture more interesting to the student. It also has the tremendous importance of giving the lecturers significant feedback about where the class is and what it knows. With this potential of inclusiveness, it provides the female the chance to “catch up” with their male counterparts and sometimes even outperform them. This premised the finding of the no significant difference in the academic performance of male and female students in the experimental group. This confirms that PI is gender friendly. This finding is in agreement with findings of Adegbija and Folade (2014), who reported no significant difference between the academic achievement score of male and female students' taught physics using animation based cam studio physics instructional package.

Another important variable of interest to this study is the ability of the students to remember what they were taught after some time. This is referred to as retention. The results of the post-posttest of the two groups revealed that there is significant difference in the retention of concepts of students in the experimental and control groups. This shows that PI enhanced students' performance retention of learnt concepts. This findings is supported by Aina, Jacob, and Keith (2015), who opted that PI has positive impact on students has it helps them to understand the concepts more easily and memorable. It also supports the view of Ogbonna (2007) who stated that the use of new practical approaches enhances students' retention.

The assessment of gender related difference in the retention of the leant concept revealed that there is significant difference in the retention of male comparable to female. The difference mean was however small. The difference could be due to the limited period to which the learners were exposed to the teaching approach (PI) and the fact that female appeal to more verbal instructions. However, PI is more effective at developing students' conceptual understanding than traditional lecture-based instruction (Lasry, Mazur & Watkins, 2008; Crouch, Watkins Fagens & Mazur, 2007). PI is not a rejection of the lecture format, but a supplement that can help engage students who have a range of learning styles (Rosenberg, Lorenzo & Mazur, 2006).

## **Conclusion**

Based on the findings of this study, it was concluded that the use of PI instructional strategy enhances students' academic performance in Basic Science in the study area and that PI is gender friendly. Also, PI strategy also proved superior in promoting students' retention in science subjects especially Basic Science.

## **Recommendations**

The following recommendations were drawn that:

1. Science teachers should utilize innovative practices such as peer instruction (PI) in their lesson delivery so as to enhance students' active participation in the lesson for enhanced academic performance

2. Intensive in-service programs should be organized to get the science teachers acquainted with and trained on how to effectively utilize innovative practices in science education.
3. Science teachers should visit schools that are utilizing innovative practices to observe new methods and materials in action.
4. It is also important to carry out studies using peer instruction to teach other subject in both primary and secondary schools in Nigeria. This is necessary because almost all the studies carried out in other countries on PI was in higher education level.

## **References**

- Adegbija, M. V. & Falode, C. O. (2014). Effective of animation-based cam studio physics instruction on students' performance in Minna, Nigeria.
- Aina, J. & Keith, A. (2015). Teaching Method in Science Education: The need for a paradigm shift to peer Instruction (PI) in Nigerian Schools. *International Journal of Academic Research and Reflection*. 3 (6).
- Beery, W. (2008). *Surviving lecture: A pedagogical alternative*. College teaching 149-153.
- Bok, D. (2006). *Our underachieving colleges: A Candid Look at How Much Students Learn and why they should be learning more*. Princeton University Press: Princeton, NJ.
- David, A. U. (2018). "Innovative practices in Science Education: A Panacea for improving secondary School Students' Academic Achievement in Science Subject in Nigeria *Global Journal of education research* (17), 23 – 30
- Fagen, A.P. & Mazur, E. (2003). Assessing and enhancing the introductory science courses in physics and biology: Peer instruction, classroom demonstration, and genetic vocabulary, (Doctoral thesis, Harvard University) Cambridge, Massachusetts
- Franklin, S. V., Sayre, E. C. & Clark, J. W. (2014). Traditional taught learn; actively engaged students number. *American Journal of Physics*. 82 (8); 798-801. oi:10.1119/1.4890508.
- Gok, T. (2012). The impact of peer instruction on college students' belief about physic and conceptual understanding of electricity and magnetism. *International journal of science and mathematics education*, 10 (2011); 417 – 437
- Lasry, N., Mazur, E. & Watkins, J. (2000). peer instruction: from Harvard to the two year college. *American journal of physics*. [Http://doi.org/10.1119/1.2978182](http://doi.org/10.1119/1.2978182).
- Ogbonna, C. C. (2007). Effect of two constructivist instructional models on students' achievement and retention in number and Numeration: An Unpublished Ph. D Thesis University of Nigeria Nsukka.

Rosesberg, J, L., Lorenzo, M. & Mazxur, E. (2006). Peer instruction: making science engaging.

In handbook of college science teaching (pp. 77-85). [http://scholar.google/scholar?hl=en&btn=GSearch=initiate;peer\\_intrusction\\_:\\_maKing\\_ science +Engaging](http://scholar.google/scholar?hl=en&btn=GSearch=initiate;peer_intrusction_:_maKing_ science +Engaging)

Turpen, B. & Finkelstain, N. D (2010). The construction of different classroom norms during peer instructions: students perceives difference. *Physics Education Research*, 6. (020123), 122

Wudil, A. A. (2013). Relationship between students prior knowledge and performance in selected Biology concepts in Senior Secondary in Kano South Educational Zone. Unpublished M. Ed thesis, University of Jos.



## INVESTIGATING THE IMPACT OF TVET CURRICULUM ON THE WELL-BEING OF HIGHER EDUCATION INSTITUTION STUDENTS: A FOCUS ON AGRICULTURAL EDUCATION STUDENTS

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### Abstract

*The transition from youth to adulthood in higher education institutions presents a delicate phase where students grapple with mental discomfort due to various pressures. This study delves into the impact of the TVET curriculum on the well-being of agricultural education students. Employing a phenomenological approach, ten students from Modibbo Adama University Yola, Nigeria, were interviewed to explore their experiences within the TVET curriculum. Thematic analysis revealed three main themes: integrating wellness material into the curriculum, evaluating, stimulating, and providing academic assistance, and fostering social connectivity and engagement. While students appreciated practical aspects of the curriculum, concerns arose regarding workload balance, theoretical emphasis, and assessment diversity. Collaborative learning environments, academic support services, and social connectivity emerged as crucial factors influencing students' well-being. The findings emphasize the need for a balanced curriculum, diverse instructional methodologies, and comprehensive support services to enhance the overall educational experience and well-being of agricultural education students within the TVET system.*

**Keywords:** TVET curriculum, Higher education students, Agricultural education, Well-being, Phenomenological research

### Introduction

Globally, there is a significant occurrence of mental discomfort among students in higher education institutions (Auerbach et al., 2018; Tabor et al., 2021). Upon entering Higher Education (HE), several individuals undergo the transition from youth to adulthood. This phase is particularly delicate, since the majority of mental health problems manifest before the age of 24 (Kessler, et al., 2007). The demands arise from the desire to achieve more financial and social autonomy, to exercise parental independence, to acquire new learning methods, and to adjust to a different social setting while formulating professional objectives in Technical and Vocational Education and Training (TVET) (Macaskill, 2013; Choo & Gee, 2024). The pressure to fulfil these expectations is burdensome and may have adverse effects on mental health and hinder the ability to acquire knowledge and skills in TVET (Wang, et al., 2023; Kilpatrick, et al., 2020). Impaired mental well-being negatively impacts attendance, involvement in examinations, focus, and belief in one's abilities, motivation, and self-assurance (Marks, et al., 2021). Mental health treatments may assist in reducing the increasing occurrence of this phenomenon (Eichenberg et al,

2022). Nevertheless, when academics in the area of TVET recommend students for counselling, they may be wrongly pathologizing their pain, suggesting that the source of and remedy for distress only rest with the individual student (Jayakumar & Duvvuru, 2022; Ugochukwu, et al, 2020). Given the significant occurrence of mental anguish at modern institutions of higher learning, it is pertinent to inquire if the academic setting plays a role in causing this misery. The environment refers to the viewpoint adopted by models that are based on specific settings, such as the University Mental Health Charter (Tudor, 1996; Priestley, et al., 2021). The University Mental Health Charter promotes a comprehensive strategy that addresses wellness by implementing changes in the organization, structure, and environment. This approach is supported by Hughes and Spanner (2019) and Dooris and Doherty (2010). The method used by the whole institution is both preventive and applicable to everyone (Thorley, 2017).

"Learning", including both instruction and evaluation, is one of the four focal points delineated in the University Mental Health Charter (Hughes & Spanner, 2019). The classroom, whether it is conducted online or in person, serves as a definite point of interaction between the teaching staff and students (Willis, 2022). Hence, the pedagogical methods used by scholars have an influence on every student in the institution. When inquired about how universities might enhance well-being, several suggestions from TVET students pertain to the curriculum, such as modifications to course structure, teaching methodologies, or evaluation methods (Baik et al, 2015; Haynes, et al., 2016). Some TVET students see the methods of instruction and evaluation as a possible cause of suffering (Mukhtar & Ahmad, 2015). Within this particular setting, scholars are including activities that promote wellbeing into their educational programmes and examining teaching methods from the standpoint of wellbeing.

The Higher Education Academy (HEA) has proposed a number of initiatives to include well-being into the curriculum. These strategies including linking course material to well-being and encouraging teaching methods that promote peer connection, active learning, and autonomy (Houghton & Anderson, 2017). Additional suggestions including modifying the curriculum to minimize excessive pressure, improving the availability of advice and assistance, creating inclusive evaluation techniques (Careemdeen, 2023), and cultivating study skills (Milburn, 2010).

Nevertheless, there is a scarcity of data supporting interventions in modifying curriculum, pedagogy, and assessment design in TVET programmes in Nigeria (Udoudo & Ikeji, 2023; Allais, 2022). Two studies investigating the effectiveness of setting-based, curriculum-embedded methods in promoting the wellbeing of university students yielded equivocal findings. This was mostly owing to limitations in internal validity, such as the absence of control groups, as well as inadequate and inconsistent reporting of results (Jakovljevic, Çaliskan et al., 2022; Upsher et al., 2022). Hence, the sector requires more evidence to design interventions and assess their efficacy.

Prior to conducting more research and testing of interventions, it is essential for the sector to get a more comprehensive knowledge of the current curriculum-embedded techniques and the viewpoints of TVET students on these approaches. In order to fill this void, the researchers conducted interviews with undergraduate TVET students to investigate their perspectives on how curriculum, pedagogy, and assessment design influence their wellbeing.

This study presents the qualitative research methods used to investigate the influence of the Technical and Vocational Education and Training (TVET) curriculum on the well-being of students in higher education institutions, specifically focusing on those studying agricultural education. Qualitative approaches play a crucial role in getting a deeper understanding of students' views, experiences, and subjective interpretations pertaining to the Technical and Vocational Education and Training (TVET) curriculum and its impact on their overall well-being.

### **Problem Statement**

The transition from adolescence to adulthood is a crucial phase characterised by a multitude of difficulties and demands, particularly for students enrolled in higher education institutions (HEIs). Within this group of students, individuals who are currently enrolled in Technical and Vocational Education and Training (TVET) programmes, particularly in the field of agricultural education, experience distinct sources of stress that have an effect on their overall well-being. These problems include the need of harmonising hands-on training with theoretical understanding, efficiently handling academic workloads, and successfully navigating the demands of professional preparation within the TVET framework.

Although TVET plays a crucial role in imparting practical skills and industry knowledge to students, there is a significant lack of research about how the TVET curriculum impacts the overall well-being of these students. Previous research suggests that the happiness and satisfaction of higher education institution (HEI) students are impacted by several aspects, such as the organisation of the curriculum, teaching methods, evaluation methods, and the accessibility of support services. Nevertheless, there is a scarcity of research that particularly examines the TVET curriculum's influence on the mental health and overall well-being of agricultural education students in Nigeria.

This research seeks to address this deficiency by examining the experiences and perspectives of agricultural education students about the influence of the TVET curriculum on their overall well-being. The study aims to comprehend the impact of including wellness content, maintaining a balance between practical and theoretical components, having diverse assessments, and fostering social connectedness within the TVET curriculum on students' well-being, using a phenomenological method. The results of this research will provide valuable information on the required modifications in curriculum design, teaching approaches, and support services to improve the educational experience and well-being of agricultural education students in the TVET system.

### **Objectives of the Study**

This study is underpinned by a single research objective, which serves as the foundation and driving force behind the investigation. This objective provides a clear and specific direction for the study, guiding the research design, data collection, and analysis.

The single research objective is:

"To investigate the impact of the Technical and Vocational Education and Training (TVET) curriculum on the well-being of agricultural education students at higher education institutions."

## **Methodology**

The study used a phenomenological methodology to conduct a qualitative investigation, with the objective of revealing the subjective experiences and interpretations of agricultural education students on their educational progression within the Technical and Vocational Education and Training (TVET) curriculum at Modibbo Adama University Yola, Nigeria. Phenomenology enables a thorough investigation of people's subjective experiences and the distinct ways in which they interpret their educational encounters.

### ***Participant Selection***

The research specifically targeted agricultural education students who are now enrolled in TVET programmes at Modibbo Adama University in Yola, Nigeria. By using purposive sampling, the selection process was designed to ensure a comprehensive representation of the student population. The selection criteria included academic year, comprising from first to fifth year, as well as demographic variety. This research comprised a total of 150 students studying agricultural education, with two persons chosen from each academic level. Participants were asked to voluntarily participate in semi-structured interviews in order to collect their opinions on the topic being studied.

### ***Data Collection***

The primary method used for data collection in this qualitative study was semi-structured interviews. The interviews were conducted face-to-face. An extensive interview guide was developed to examine several aspects of the TVET curriculum's impact on students' well-being, including academic experiences, career aspirations, personal growth, and encountered challenges. As an example, one of the questions asked during the interview was: "What are your thoughts on the addition of wellness issues in the TVET curriculum, and how does it affect your general well-being as an agricultural education student?"

The interview guide underwent a thorough evaluation by a team of specialists specialising in educational research and curriculum development to assure its accuracy and reliability. This procedure included many phases, which included conducting a pilot examination with a limited cohort of students to evaluate the lucidity and pertinence. The feedback provided by these experts and pilot participants was used to enhance the clarity, impartiality, and thoroughness of the questions, ensuring that they properly addressed the desired issues. The validation method ensured that the interview guide will effectively elicit relevant and accurate data from participants. Each interview was recorded using audio technology with the participants' consent and then transcribed verbatim to precisely represent the profoundness and intricacy of their narratives. Field notes were collected alongside interviews to capture non-verbal cues and contextual observations that might possibly enrich the interview data.

### ***Data Analysis***

The qualitative data acquired from the interviews was subjected to thematic analysis. The transcripts were methodically coded and categorized in order to find recurrent themes, patterns, and sub-themes pertaining to the influence of the Technical and Vocational Education and Training (TVET) curriculum on the well-being of students. The process of iteration included the continuous comparison and improvement of codes in order to guarantee the creation of complete and relevant themes. The researcher used NVivo 12, a programme designed for qualitative data analysis, to efficiently manage, categorise, and

retrieve data. The investigation was done with transparency and careful consideration to ensure the credibility and dependability of the findings. These outcomes were accomplished via the use of techniques such as member checking, peer debriefing, and reflexive journaling.

### ***Ethical Considerations***

The study method was conducted with a strong emphasis on ethical issues in order to safeguard the rights and maintain the anonymity of the participants. All participants provided informed permission, and their identity was maintained by using pseudonyms while publishing the results. The research took measures to mitigate any possible hazards or inconveniences, and participants were given the freedom to resign from the study at any point without facing any negative consequences.

### **Results**

The following responses are a direct outcome of the primary objective of this study, which aimed to explore practical strategies for integrating well-being into the Technical and Vocational Education and Training (TVET) curriculum tailored for agricultural education students in higher education institutions. The aim was to address a significant gap in the current agricultural education curriculum, which primarily focuses on the development of technical skills while neglecting the crucial matter of students' holistic well-being.

#### ***Participant A***

Question: What are your thoughts on the addition of wellness issues in the TVET curriculum, and how does it affect your general well-being as an agricultural education student?

Answer: “From what I know, the focus on actual parts in the TVET programme has sparked my interest and prepared me for future work. I may find it hard to control the amount of work that goes into these practical parts, though, and it may affect my overall health”.

#### ***Participant B***

Question: How can practical learning opportunities in the TVET curriculum help you develop as an agriculture education student and improve your overall well-being?

Answer: “I can see that the real learning chances in the TVET programme have helped me grow, but I think there should be a better mix of intellectual information to make everyone healthier”.

#### ***Participant C***

Question: Could you please share your thoughts on how networking opportunities and industry exposure given by the TVET programme affected your well-being as an agriculture education student?

Answer: “I believe that the networking and business contact chances in the TVET course have made me feel better. Using a variety of evaluation methods, on the other hand, may improve well-being by taking into account different ways of learning”.

***Participant D***

Question: What impact does the TVET curriculum's emphasis on community have on their overall well-being as agricultural education students?

Answer: “I think the TVET course improved my wellbeing and helped me feel more connected to the community. Still, I think professional guidance to enhance student wellbeing may be improved”.

***Participant E***

Question: How does the TVET curriculum's focus on practical skills impact your overall well-being as an agricultural education student, and how may critical thinking and problem-solving skills improve it?

Answer: “Though the TVET curriculum has done an excellent job of emphasising practical skills, I believe that in order to increase overall wellbeing, critical thinking and problem solving should take precedence”.

***Participant F***

Question: How do you rate the TVET curriculum's impact on your well-being as an agricultural education student, taking into account vital skills and infrastructure?

Answer: “In my opinion, the TVET programme taught me essential skills; nonetheless, more infrastructure is required to improve the overall educational experience and student well-being”.

***Participant G***

Question: How do practical learning experiences in the TVET curriculum affect their overall well-being as agriculture education students?

Answer: “Although my practical learning experiences in the TVET curriculum have been fantastic, combining them with theoretical studies may be difficult at times and have an impact on my well-being”.

***Participant H***

Question: In your opinion, how have the flexibility and interdisciplinary cooperation possibilities in the TVET programme improved your well-being as an agricultural education student?

Answer: “In my perspective, the flexibility of the TVET curriculum and the opportunities for interdisciplinary collaboration have improved my well-being by enabling me to modify my learning experience and participate in a variety of learning activities”.

***Participant I***

Question: How would you describe the TVET curriculum's impact on your well-being as an agricultural education student, taking into account the development of practical knowledge and the need for support services?

Answer: “My view would be that the TVET curriculum has helped students gain practical skills; yet, there is still a need for support services to assist students deal with stress and challenges while also improving their general well-being”.

### ***Participant J***

Question: How has the TVET curriculum benefited your well-being as an agriculture education student, including experiential learning and instructional variety?

Answer: “According to my understanding, although the TVET curriculum's experiential learning component has been good, more instructional variety is required to increase general well-being and enrich the educational experience”.

### **Discussion**

This study investigated the impact of the Technical and Vocational Education and Training (TVET) curriculum on the overall wellbeing of students at higher education institutions, specifically those pursuing agricultural education. The study's findings highlight three primary priority areas: fostering social connection and engagement; evaluating, promoting, and offering academic support; and integrating wellness materials into the educational curriculum. In addition to examining how instructional techniques affect students' general well-being, this study looks at how students perceive the incorporation of well-being components within their educational experience.

The first theme section examined how students felt about the inclusion of wellness material in the curriculum and how it influenced their overall health. The replies of the participants indicated a broad comprehension of the practical parts of the Technical and Vocational Education and Training (TVET) curriculum, according to the findings of Lee, (2017). This environment consists of fieldwork, lab work, industry exposure, and networking possibilities. Experts considered these elements essential for enhancing engagement and preparing students for future careers in agriculture. However, students raised concerns about task distribution, the emphasis on theoretical understanding, and the necessity for a broader range of evaluation techniques to accommodate diverse learning preferences (Agbaria, & Bdier, 2020). As per the previously stated poll, students hold practical experiences in high regard and acknowledge the need for an all-encompassing teaching strategy that incorporates both theoretical and applied elements. The influence of the pedagogical practices used in the Technical and Vocational Education and Training (TVET) curriculum on students' well-being of students was the main focus of the second issue. According to Williams (2020), collaborative learning spaces are important for encouraging students to feel inclusive and supportive of one another. However, the study revealed issues with managing workload, academic stress, and the need for expert advice and assistance (Adams et al., 2020). The results emphasise how important it is to provide enough resources and academic support services to students in order to address their varied requirements and enhance their general wellbeing.

The third subject of the Technical and Vocational Education and Training (TVET) curriculum examines the significance of social engagement and connectedness in enhancing students' overall well-being. The participants highlighted the advantages of engaging in experiential learning activities that apply knowledge in practical settings and promote cooperation within academic disciplines. Azer (2023), however, expressed concern about the narrow variety of teaching tactics and emphasised the need to use novel

pedagogical approaches to enhance the learning process. The aforementioned results emphasise the need for developing inclusive and engaging learning settings that foster students' critical thinking skills, creativity, and active participation.

This research highlights a variety of ways in which technical and vocational education and training (TVET) curricula influence agricultural students' general well-being. The curriculum, according to Willis (2022), gives practical experiences and exposure to the industry top priority while also recognising the need for a stronger focus on theoretical knowledge, a variety of assessment methods, academic support services, and innovative teaching strategies. It is essential to address these specific areas of concern if we are to enhance the overall welfare and educational experience of students in the Technical and Vocational Education and Training (TVET) system.

## **Conclusion**

This research highlights the crucial significance of customizing educational curricula particularly for students in agricultural education to cater to their distinct requirements and enhance both academic achievements and overall welfare. In spite of the unique circumstances surrounding agricultural education, the findings revealed in this study exhibit a significant parallel with those seen in other fields, highlighting a collective desire among students for pedagogical approaches that promote favourable psychological well-being. While students studying agricultural education often exhibit enthusiasm towards academic difficulties, it is crucial to provide sufficient scaffolding to mitigate excessive stress and promote effective learning experiences.

Furthermore, fostering significant connections between instructors and students in agricultural education, along with facilitating peer-to-peer interactions within the agricultural education community, are crucial elements in enhancing student well-being. This highlights the need of not alone offering academic assistance, but also fostering social and emotional support within the contextual framework of agricultural education. The results of this research support the idea of using a comprehensive strategy to promote the well-being of students studying agricultural education in institutions of higher learning. By integrating support mechanisms directly into the agricultural education curriculum, higher institutions may enhance their ability to effectively cater to the diverse requirements of students pursuing agricultural education. In addition, this study establishes the foundation for the creation of future interventions that are especially designed to improve the welfare of agricultural education students in higher education settings.

Ultimately, this study illuminates the complex correlation between the TVET curriculum and the well-being of students studying agricultural education in higher institution. Although agricultural education places great importance on practical experiences and industry exposure, it is crucial to acknowledge the presence of problems such as academic stress and the need for varied teaching styles. It is crucial to tackle these difficulties in order to enhance the overall well-being and academic achievement of agriculture education students in the TVET system. Educational institutions must regularly assess the Technical and Vocational Education and Training (TVET) curriculum to determine its alignment with students' needs and well-being. Incorporating input from students, educators, and industry stakeholders is essential in the assessment process.



Professional development is crucial for educators as it enables them to get the necessary skills and support to effectively execute a wide range of instructional approaches that foster student engagement and well-being. When designing professional development programmes, it is important to prioritize the cultivation of collaborative learning environments and the provision of academic support services. The provision of comprehensive student support services, including counselling, mentoring programmes, and academic aid, is vital for universities to effectively cater to the varied requirements of students within the Technical and Vocational Education and Training (TVET) curriculum.

## **Recommendations**

The findings of this research lead to the following recommendations:

1. Integrate a harmonious combination of practical skill development and academic knowledge to enhance the overall well-being of agricultural education students.
2. Implement explicit protocols to effectively regulate the level of exertion demanded by practical components in order to prevent any adverse effects on the well-being of agricultural education students.
3. Employ diverse evaluation techniques to cater to distinct learning preferences and enhance the overall welfare of agricultural education students.
4. Increase industry exposure and networking opportunities to benefit agricultural education students' well-being.
5. Maintain and cultivate a sense of friendship among agricultural education students, as well as explore supplementary measures to improve their overall mental and emotional health.
6. Prioritise the development of critical thinking and problem-solving skills to improve the overall well-being of agricultural education students.
7. Strengthen the infrastructure to facilitate the educational experience and enhance agricultural education students' well-being.
8. Promote the amalgamation of theoretical and practical learning experiences to mitigate stress and enhance the well-being of agricultural education students.
9. Offer assistance services to help students cope with stress and difficulties, enhancing their overall well-being in agricultural education.
10. Maintain hands-on learning opportunities and provide a wider range of teaching methods to enrich the educational experience and promote the well-being of agricultural education students.

By incorporating these recommendations, the TVET curriculum may more effectively cater to the welfare of agricultural education students at higher education institutions, equipping them for prosperous and satisfying careers in the agricultural industry.

## References

- Agbaria, Q., & Bdier, D. (2020, May 11). The Role of Social Support and Subjective Well-Being as Predictors of Internet Addiction among Israeli-Palestinian College Students in Israel. *International Journal of Mental Health and Addiction*, 19(5), 1889–1902. <https://doi.org/10.1007/s11469-020-00282-4>
- Auerbach, R. P., Mortier, P., Bruffaerts, R., Alonso, J., Benjet, C., Cuijpers, P., Demyttenaere, K., Ebert, D. D., Green, J. G., Hasking, P., Murray, E., Nock, M. K., Pinder-Amaker, S., Sampson, N. A., Stein, D. J., Vilagut, G., Zaslavsky, A. M., Kessler, R. C., & WHO WMH-ICS Collaborators. (2018). WHO World Mental Health Surveys International College Student Project: Prevalence and distribution of mental disorders. *Journal of Abnormal Psychology*, 127(7), 623–638. <https://doi.org/10.1037/abn0000362>
- Azer, S. A. (2023, March 24). Practical Strategies to Foster a Well-Being Curriculum for Medical Students. *Academic Medicine*, 98(4), 429–429. <https://doi.org/10.1097/acm.0000000000005145>
- Baik, C., Naylor, R., & Arkoudis, S. (2015). The First Year Experience in Australian Universities: Findings from two decades, 1994–2014 (9780992297480). <http://hdl.handle.net/11343/52528>.
- Careemdeen, J. D. (2023, August 16). Impact of Socio-Economic Factors on Peer Pedagogical Support for Learning among Senior Secondary School Children in Sri Lanka. *International Journal of Academic Research in Progressive Education and Development*, 12(3). <https://doi.org/10.6007/ijarped/v12-i3/17679>
- Choo, E., & Gee, C. (2024, February). Age and education effects in Singapore’s demographic dividend 1970–2020. *The Journal of the Economics of Ageing*, 27, 100482. <https://doi.org/10.1016/j.jeoa.2023.100482>
- Dooris, M., & Doherty, S. (2010, February 18). Healthy universities--time for action: a qualitative research study exploring the potential for a national programme. *Health Promotion International*, 25(1), 94–106. <https://doi.org/10.1093/heapro/daq015>
- Eichenberg, C., Aranyi, G., Rach, P., & Winter, L. (2022, September). Therapeutic alliance in psychotherapy across online and face-to-face settings: A quantitative analysis. *Internet Interventions*, 29, 100556. <https://doi.org/10.1016/j.invent.2022.100556>
- Gilbert, C., Easterly III, R. G., Bunch, J. C., Galindo, S., & Dossett, J. (2023). Characteristics of effective instruction and student engagement: A case study of two exemplary Florida agriculture teachers. *Advancements in Agricultural Development*, 4(1), 5–16. <https://doi.org/10.37433/aad.v4i1.273>
- Haynes, A., Lisic, E., Goltz, M., Stein, B., & Harris, K. (2016, August 30). Moving Beyond Assessment to Improving Students’ Critical Thinking Skills: A Model for Implementing Change. *Journal of the Scholarship of Teaching and Learning*, 16(4), 44–61. <https://doi.org/10.14434/josotl.v16i4.19407>

[http://books.google.ie/books?id=hGsyEAAAQBAJ&printsec=frontcover&dq=Clinical+exercise+science.+Routledge.&hl=&cd=2&source=gbs\\_api](http://books.google.ie/books?id=hGsyEAAAQBAJ&printsec=frontcover&dq=Clinical+exercise+science.+Routledge.&hl=&cd=2&source=gbs_api)

<https://doi.org/10.1016/j.sbspro.2015.08.124>

Jakovljevic, M., Çaliskan, Z., Fernandes, P. O., Mouselli, S., & Otim, M. E. (2022, February 9). Health Financing and Spending in Low- and Middle-Income Countries. *Frontiers in Media SA*.  
[http://books.google.ie/books?id=ToRdEAAAQBAJ&printsec=frontcover&dq=The+Impact+of+Health+Insurance+in+Low-+and+Middle+Income+Countries&hl=&cd=3&source=gbs\\_api](http://books.google.ie/books?id=ToRdEAAAQBAJ&printsec=frontcover&dq=The+Impact+of+Health+Insurance+in+Low-+and+Middle+Income+Countries&hl=&cd=3&source=gbs_api)

Jayakumar, D. R., & Duvvuru, D. R. R. (Eds.). (2022, January 1). *Research Trends in Multidisciplinary Research*. <https://doi.org/10.22271/ed.book.1714>

Kessler, R. C., Amminger, G. P., Aguilar-Gaxiola, S., Alonso, J., Lee, S., & ?st??n, T. B. (2007, July). Age of onset of mental disorders: a review of recent literature. *Current Opinion in Psychiatry*, 20(4), 359–364.  
<https://doi.org/10.1097/yco.0b013e32816ebc8c>

Kilpatrick, S., Emery, S., Farmer, J., & DeCotta, T. (2020, May 15). Social enterprises developing capability and well-being through work-based learning. *Journal of Vocational Education & Training*, 74(3), 394–414.  
<https://doi.org/10.1080/13636820.2020.1765843>

Lee, J. C.-K. (2017). Curriculum reform and supporting structures at schools: Challenges for life skills planning for secondary school students in China (with particular reference to Hong Kong). *Educational Research for Policy and Practice*, 16(1), 61–75. <https://doi.org/10.1007/s10671-016-9202-y>

Macaskill, A. (2013, August). The mental health of university students in the United Kingdom. *British Journal of Guidance & Counselling*, 41(4), 426–441.  
<https://doi.org/10.1080/03069885.2012.743110>

Marks, D. R., Wolanin, A. T., & Shortway, K. M. (2021, July 29). *The Routledge Handbook of Clinical Sport Psychology*. Routledge.

Milburn, M. C. (2010, September 14). Cognitive-Behavior Therapy and Change: Unconditional Self-Acceptance and Hypnosis in CBT. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 29(3), 177–191.  
<https://doi.org/10.1007/s10942-010-0121-1>

Mukhtar, M. I., & Ahmad, J. (2015, August). Assessment for Learning: Practice in TVET. *Procedia - Social and Behavioral Sciences*, 204, 119–126.

Priestley, M., Broglia, E., Hughes, G., & Spanner, L. (2021, February 8). Student Perspectives on improving mental health support Services at university. *Counselling and Psychotherapy Research*, 22(1).  
<https://doi.org/10.1002/capr.12391>

Ricciardelli, R., & Carleton, R. N. (2021, March 4). A qualitative application of the Job Demand-Control-Support (JDCS) to contextualize the occupational stress

correctional workers experience. *Journal of Crime and Justice*, 45(2), 135–151.  
<https://doi.org/10.1080/0735648x.2021.1893790>

Tudor, K. (1996). *Mental Health Promotion: Paradigms and Practice* (1st ed.). Routledge.  
<https://doi.org/10.4324/9781315812670>

UDOUDO, N. J., & IKEJI, F. I. (2023, April 30). Policy reforms in Technical Vocational Education and Training (TVET) for sustainable development in Abia State, Nigeria. *Integrity Journal of Education and Training*, 7(2), 26–35.

<https://doi.org/10.31248/ijet2023.176>

Wang, Y., Wang, X., Wang, X., Guo, X., Yuan, L., Gao, Y., & Pan, B. (2023, August 1). Stressors in university life and anxiety symptoms among international students: a sequential

Williams, P. J. (2020). Pedagogical Approaches to Vocational Education. *Contemporary Issues in Technology Education*, 267–282. [https://doi.org/10.1007/978-3-030-41548-8\\_14](https://doi.org/10.1007/978-3-030-41548-8_14)

Willis, A. (2022, March 18). Teachers prioritize relationships over curriculum for student well-being. *Pedagogy, Culture & Society*, 32(2), 473–489.  
<https://doi.org/10.1080/14681366.2022.2055116>

## EFFECT OF PEER INSTRUCTION STRATEGY ON STUDENTS ACADEMIC PERFORMANCE AND RETENTION IN BASIC SCIENCE

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### Abstract

*The study investigated the effect of peer instruction (PI) strategy on students' academic performance and retention of Basic Science concepts in Tarauni Local Government Area, Kano. Four research questions and four null hypotheses guided the study which employed quasi experimental pre-test, post-test control group design. The population comprised the entire JSS2 students in Tarauni Education Zone. 82 JSS 2 students selected randomly constituted the sample and were randomly assigned into experimental and control groups. The instrument used for data collection was the Basic Science Performance Test (BSPT). The reliability coefficient of the instrument is 0.78. It was established through test re-test method. Students in the experimental group were taught using PI strategy while those in the control group were taught using the lecture method. The data obtained from the study were analyzed using t-test statistics to test the hypotheses at 0.05 level of significance. Finding reveals that PI strategy was effective in enhancing students' academic performance and retention of basic science concepts. It also revealed that the strategy was gender friendly as no significant difference was observed in the mean retention scores of the male and female students in the experimental group. The study recommends that peer instruction (PI) strategy should be used to teach other subjects in both primary and secondary schools in Nigeria. This is necessary because most of the studies carried out in other countries on PI strategy were at higher education level.*

**Keywords:** Peer instruction, Basic science, Retention, Gender, Performance

### Introduction

Science education has been recognized, all over the world, as a pre-requisite for scientific and technological development. It provides opportunities for students to acquire relevant and functional knowledge and skills that are associated with scientific processes needed for advancement in science and technology driven world (David, 2018). In science education, students are encouraged to acquire and practice scientific skills. This will help in developing their conceptual understanding of analytical abilities. To achieve this, prospective scientist, most learn by doing to encourage them explore their personal abilities and compare them with those of their colleagues. To achieve this, teachers need to be innovative in their teaching routine. This they can be done through the use of innovative teaching techniques.

There are different teaching methods employed in science education in Nigerian schools. For any method to be able to bring good result in the present age, it should be a method that promotes maximum social interaction. Social interaction between students and teacher and students plays a crucial role in learning (Nguyen, Williams & Nguyen, 2021). However, the teaching method commonly used in basic science classes is lecture method. Lecture method is often used to deliver a large amount of information to the students in a short period (Berry, 2008). This method is known to be effective in dealing with a large class. However, it has been associated with large poor performance among learners (Wudil, 2013).

Research shows that student's retention in a lecture- based science course is weak. According to Bok (2006), an average student only retains 42% of what he or she learned after the end of the lecture and 20% one week later. Berry (2008) argued that lecture method lacks the effectiveness of an active learning approach. In the opinion of Fegen and Mazur (2003) lecture method causes the bad reading habit among students. Franklin, Sayre and Clark (2014) pointed out that students taught in lecture-based classes learn less than those taught with activity-based reformed methods.

To improve the status quo, teachers are often advised to employ strategies that promote social interaction among learners. Several teaching approaches that are based upon social constructivists' theory have been proposed. Among which is the peer instructional (PI) strategy. Several studies have been conducted on the impact of this innovative strategy. However, the studies are mostly in areas other than Basic science. This study therefore assesses its effect on basic science students' performance in, and retention of learnt concepts in Kano state. To attain this, the following research questions are put forward.

### **Peers Instruction Strategies: Its Process and Implementation**

Peer Instruction (PI) is an instruction strategy that engages students during class through a structured questioning process (Crouch, Watkins, Fagen & Mazur, 2007). PI provides a structured environment for students to voice their idea and resolve misunderstanding by talking with their peer (Gok, 2012). It requires each student to apply the core concepts beings presented, and then to explain them to their fellow students. Unlike the common practice of asking informal questions during a traditional lecture, this typically engages only a few highly motivated students. PI incorporates a more structured questioning process that involves every student in the class.

Turpen and Finkelstem (2010), describes the process of PI to involve:

1. The question posed;
2. Students are given time to think;
3. Students record or report individual answers;
4. Neighboring students discussed their answers;
5. Students record or report revised answers;
6. Feedback to teacher: Tally of answers;
7. Explanation of the corrected answerer.

### **Implementation of PI**

Using PI, the instructor starts with a brief presentation or summary of the materials to be covered. After this, the instructor poses a Concept Test and asks students to think about the question and related concepts. The instructor then allows 1-2 minutes for students to

think and come up with an individual answer. This may be through clickers, flashcards, a simple raising of hands, or writing down the answer on a piece of paper. The instructor may revisit the concepts using other strategy or try a different Concepts Test if too few students' responses to the answer are not correct. If a majority of students' responses is correct, the instructor will then give a brief explanation and moves on to the next topic or concept test. In a situation where 30-70% of the students answer the concepts correctly, the instructor asks students to turn to their neighbors and discuss their answers. Students talk in pairs or small group are encouraged to find someone with a different answer. The teacher moves around the room to encourage productive discussions and guide students thinking. After several minutes, students re-examine the same concepts and the instructor then explains the correct answer. The instructor can pose other related concepts or proceed to a different topic or Concept Test depending on the students' answers.

### **Research Questions**

The study seeks to answer the following research questions:

- I. What is the difference between the academic performance of students in the experimental group taught 'changes in living things' using PI method and those in control group taught using lecture method?
- II. What is the difference between the academic performance of male and female students in the experimental group.
- III. What is the difference between retention scores of students in the experimental group taught 'changes in the living things' using PI method and those in control group taught using lecture method?
- IV. What is the difference between the retention scores of male and female students in the experimental group?

### **Null Hypotheses**

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

- I. H01: There is no significant difference between the academic performance of students in the experimental group and those in the control group.
- II. H02: There is no significant difference between the academic performance of male and female students in the experimental group.
- III. H03: There is no significant difference between retention scores of students in the experimental group and those in the control group.
- IV. H04: There is no significant difference between the retention scores of the male and female students in the experimental group.

### **Methodology**

The design for the study was a pre-test, post-test control group quasi experimental design. Two groups of students participated in the study and were randomly assigned to the experimental (EG) and the control (CG) group. A pre-test was administered to the two groups in order to determine the equivalence in the ability of the groups. The

experimental group was taught using the PI strategy while the control group was taught using the conventional lecture method. The population of the study comprised the entire JSS 2 students from two single sex schools in experimental group had 42 (24 male, 18 female) students and control group had 40 (20 male and 20 female) students totaling 82. The Basic Science Performance Test (BSPT) developed by the researchers was used for data collection. The instrument was on the themes ‘changes in living things’ (growth and development); it was made up of 30 multiple choice items and each has four options (A – D) with only one correct option. The items were validated by Chief and Principal Lecturers in the Integrated Science Department, FCE Bichi. The coefficient of reliability of the instrument was found to be 0.78, using a test re-test method at two weeks’ interval. The two groups were taught the same topics for a period of four weeks of 90 minutes per week after which the students in the two groups were post-tested using the BSPT instrument.

## Results

The data obtained were analyzed based on the research hypotheses as follows:

**Hypothesis 1:** There is no significant difference between the academic performance of students in the experimental group and those in the control group.

**Table 1:** t-test analysis of difference between the academic performance of students in the experimental group and those in the control group

Groups	N	Mean	S.D	SE	df	t	p-value
Experimental Groups (PI)	42	59.55	11.94	1.8	80	4.158	0.001
Control Groups (LM)	40	44.90	19.28	3.05			

t = 4.158, df = 80, (p = 0.001 < 0.05)

From Table 1, the mean value of 59.55 of the experimental groups is greater than the mean value of 44.90 of the control group, indicating that the experimental group (PI) enhances students’ academic performance better. Also, the calculated  $t_{cal} = 4.158 > t_{tab} = 1.984$ ; (p < 0.05); revealed that there is significant differences in the academic performance of students in the experimental group and those in the control groups. Thus, the null hypothesis is rejected in favor of the experimental group that were exposed to the PI strategy. This shows that PI enhances students’ academic performance.

**Hypothesis 2:** There is no significant difference between the academic performance of male and female students in the experimental group.

**Table 2:** t-test analysis of difference between the academic performance of male and female students in the experimental group

Gender	N	Mean	S.D	SE	df	t	p-value	Decision
Male	24	60.29	7.63	1.56	40	0.462	0.647	Accepted
Female	18	58.56	16.22	3.82				

t = 0.462, df = 40, (p = 0.647 > 0.05)

Having found significant differences in the performance of experimental and control group, the study went further to examine if any differences exist between the male and female students in the experimental group. From Table 2, the mean value of 60.29 of the



male groups is greater than the mean value of 58.56 of the female indicating that the male slightly perform better academically than the female. Besides, the calculated,  $t_{cal} = 0.462 < t_{tab} = 2.021$ ; ( $p > 0.05$ ) revealed that there is no significant difference in the academic performance of male and female of students in the experimental. Hence, the null hypothesis is retained. This confirms that PI is gender friendly.

**Hypothesis 3:** There is no significant difference between retention scores of students in the experimental group and those in the control group.

**Table 3:** t-test analysis of difference between retention scores of students in the experimental group and those in the control group

Groups	N	Mean	S.D	SE	df	t	p-value	Decision
Experimental Group (PI)	42	56.19	11.28	1.74	80	4.582	0.001	Rejected
Control Group (LM)	40	39.73	20.22	3.20				

$t = 4.158$ ,  $df = 80$ , ( $p = 0.001 < 0.05$ )

This study assessed the ability of the students to remember what they were taught after some time. Hence, Table 3 compared the result of the post-post-test. The mean value of 56.19 of the experimental groups is greater than the mean value of 39.73 of the control group, indicating that the experimental group (PI) enhances students' retention better. Again, the calculated,  $t_{cal} = 4.582 > t_{tab} = 1.984$ ; ( $p < 0.05$ ) revealed that there is significant differences in the retention of concepts by students in the experimental and control groups. Thus, the null hypothesis is rejected in favor of the experimental group that was exposed to the PI strategy. This shows that PI enhances retentions of learnt concepts.

**Hypothesis 4:** There is no significant difference between the retention scores of the male and female students in the experimental group.

**Table 4:** t-test analysis of difference between the retention scores of the male and female students in the experimental group

Gender	N	Mean	S.D	SE	df	t	p-value	Decision
Male	24	57.25	8.12	1.66	40	0.699	0.484	Rejected
Female	18	57.78	14.63	3.45				

$t = 0.462$ ,  $df = 40$ , ( $p = 0.647 > 0.05$ )

Table 4 compared gender related differences in the retention of the learnt concepts. The mean value of 57.25 of the male groups is lesser than the mean value of 57.78 of the female indicating that the retention in female is slightly higher than that of their male counterparts. In addition, the calculated,  $t_{cal} = 0.699 > t_{tab} = 2.021$ ; ( $p > 0.05$ ) revealed that there is significant difference in the retention of male and female students in the experimental group. Thus, the null hypothesis is rejected. Hence, there is slight difference in retention of the concept.

## Discussion

The result in table 1 provide answer to research question one. It reveals that there is significant difference in the academic performance of students in the experimental and

those in the control groups. This shows that PI enhances students' performance. The result obtained is in line with the findings of Aina, Jacob and Keith (2015), whose findings reveals that students taught science education using PI instruction performed significantly better than those taught with lecture method. Peer instruction is an interactive approach that was designed to improve the learning process (Rosenberg, Lorenzo & Mazur, 2006). It has the advantage of engaging the student and making the lecture more interesting to the student. It also has the tremendous importance of giving the lecturers significant feedback about where the class is and what it knows. With this potential of inclusiveness, it provides the female the chance to “catch up” with their male counterparts and sometimes even outperform them. This premised the finding of the no significant difference in the academic performance of male and female students in the experimental group. This confirms that PI is gender friendly. This finding is in agreement with findings of Adegbija and Folade (2014), who reported no significant difference between the academic achievement score of male and female students' taught physics using animation based cam studio physics instructional package.

Another important variable of interest to this study is the ability of the students to remember what they were taught after some time. This is referred to as retention. The results of the post-posttest of the two groups revealed that there is significant difference in the retention of concepts of students in the experimental and control groups. This shows that PI enhanced students' performance retention of learnt concepts. This findings is supported by Aina, Jacob, and Keith (2015), who opted that PI has positive impact on students has it helps them to understand the concepts more easily and memorable. It also supports the view of Ogbonna (2007) who stated that the use of new practical approaches enhances students' retention.

The assessment of gender related difference in the retention of the leant concept revealed that there is significant difference in the retention of male comparable to female. The difference mean was however small. The difference could be due to the limited period to which the learners were exposed to the teaching approach (PI) and the fact that female appeal to more verbal instructions. However, PI is more effective at developing students' conceptual understanding than traditional lecture-based instruction (Lasry, Mazur & Watkins, 2008; Crouch, Watkins Fagens & Mazur, 2007). PI is not a rejection of the lecture format, but a supplement that can help engage students who have a range of learning styles (Rosenberg, Lorenzo & Mazur, 2006).

## **Conclusion**

Based on the findings of this study, it was concluded that the use of PI instructional strategy enhances students' academic performance in Basic Science in the study area and that PI is gender friendly. Also, PI strategy also proved superior in promoting students' retention in science subjects especially Basic Science.

## **Recommendations**

The following recommendations were drawn that:

1. Science teachers should utilize innovative practices such as peer instruction (PI) in their lesson delivery so as to enhance students' active participation in the lesson for enhanced academic performance

2. Intensive in-service programs should be organized to get the science teachers acquainted with and trained on how to effectively utilize innovative practices in science education.
3. Science teachers should visit schools that are utilizing innovative practices to observe new methods and materials in action.
4. It is also important to carry out studies using peer instruction to teach other subject in both primary and secondary schools in Nigeria. This is necessary because almost all the studies carried out in other countries on PI was in higher education level.

## **References**

- Adegbija, M. V. & Falode, C. O. (2014). Effective of animation-based cam studio physics instruction on students' performance in Minna, Nigeria.
- Aina, J. & Keith, A. (2015). Teaching Method in Science Education: The need for a paradigm shift to peer Instruction (PI) in Nigerian Schools. *International Journal of Academic Research and Reflection*. 3 (6).
- Beery, W. (2008). *Surviving lecture: A pedagogical alternative*. College teaching 149-153.
- Bok, D. (2006). *Our underachieving colleges: A Candid Look at How Much Students Learn and why they should be learning more*. Princeton University Press: Princeton, NJ.
- David, A. U. (2018). "Innovative practices in Science Education: A Panacea for improving secondary School Students' Academic Achievement in Science Subject in Nigeria *Global Journal of education research* (17), 23 – 30
- Fagen, A.P. & Mazur, E. (2003). Assessing and enhancing the introductory science courses in physics and biology: Peer instruction, classroom demonstration, and genetic vocabulary, (Doctoral thesis, Harvard University) Cambridge, Massachusetts
- Franklin, S. V., Sayre, E. C. & Clark, J. W. (2014). Traditional taught learn; actively engaged students number. *American Journal of Physics*. 82 (8); 798-801. oi:10.1119/1.4890508.
- Gok, T. (2012). The impact of peer instruction on college students' belief about physic and conceptual understanding of electricity and magnetism. *International journal of science and mathematics education*, 10 (2011); 417 – 437
- Lasry, N., Mazur, E. & Watkins, J. (2000). peer instruction: from Harvard to the two year college. *American journal of physics*. [Http://doi.org/10.1119/1.2978182](http://doi.org/10.1119/1.2978182).
- Ogbonna, C. C. (2007). Effect of two constructivist instructional models on students' achievement and retention in number and Numeration: An Unpublished Ph. D Thesis University of Nigeria Nsukka.

Rosesberg, J, L., Lorenzo, M. & Mazxur, E. (2006). Peer instruction: making science engaging.

In handbook of college science teaching (pp. 77-85). [http://scholar.google/scholar?hl=en&btn=GSearch=initiate;peer\\_intrusction\\_:\\_maKing\\_ science +Engaging](http://scholar.google/scholar?hl=en&btn=GSearch=initiate;peer_intrusction_:_maKing_ science +Engaging)

Turpen, B. & Finkelstain, N. D (2010). The construction of different classroom norms during peer instructions: students perceives difference. *Physics Education Research*, 6. (020123), 122

Wudil, A. A. (2013). Relationship between students prior knowledge and performance in selected Biology concepts in Senior Secondary in Kano South Educational Zone. Unpublished M. Ed thesis, University of Jos.

## **EFFECTS OF PRACTICAL ACTIVITIES ON ACADEMIC PERFORMANCE OF SECONDARY SCHOOL BIOLOGY STUDENTS IN ZARIA EDUCATION ZONE, KADUNA STATE NIGERIA**

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### **Abstract**

*The study investigated 'Effects of Practical Activities on Academic Performance of Secondary School Biology Students in Zaria Education Zone, Kaduna State Nigeria'. The population consists of 18 public schools in Zaria Education Zone with a total number of 4,763 students. A random sample of 115 students was selected from the population in the study area. The study design was Quasi-experimental which adopted the pre-test, post-test experimental and control group design. The experimental group was exposed to practical activities while the control group was taught with lecture method. A validated instrument, Biology Performance Test (BPT) with a reliability coefficient of 0.82 was used to gather data which were analyzed using t-test and paired sample t-test. Two research questions and hypotheses guided the study. The hypotheses were tested at  $p \leq 0.05$  level of significance. Findings revealed that: there was a significant difference in the academic performance of students exposed to practical activities compared to their counterparts; there was no significant difference in performance between male and female Biology students exposed to practical activities. The recommendation given was that practical activities should be encouraged in the teaching and learning of Biology for better understanding. The Federal and State Ministry of Education should sponsor Biology teachers for training and retraining of teachers to improve the academic performance of students in the subject..*

**Keywords:** Biology, Practical, Activity, Performance

### **Introduction**

Hornbly (2010) defined science as an intellectual and practical activity encompassing the systematic study of the structure and behavior of the physical and natural world through observation and experiment. Ifeakor (2019) sees science as the systematic study of the empirical world in order to understand and control it. Nwagbo (2020) defined science as intellectual activities carried out by scientists designed to discover information about the natural world in which we live and to discover ways in which this information can be organized to benefit human race. In this respect, the primary focus of science is to collect data and the ultimate purpose is to discern order that exist in natural phenomena and happenings around us. Therefore, Science can be view as a systematic and organized body of knowledge that inculcates into the learner the scientific theories, laws, facts, principles and skills that will enable him better the environment. Science as we know is divided into many different disciplines such as Chemistry, Physics, Biochemistry, Biology among others.

Biology is derived from two Greek Words: bios-meaning life and logos-meaning study. Biology can simply be defined as the study of life, a branch of science and the prerequisite subject for many field of learning which includes Medicine, Forestry, Agriculture, Biotechnology, Nursing amongst others. The study of Biology in Senior Secondary School can equip students with useful concepts, principles and theories that will enable them face the challenges before and after graduation. There are two aspects in the study of biology, the theorem and Practical aspect. The theorem aspect includes facts, principles, concepts, theories and laws. Modern Biology is a rapidly changing and interesting discipline which aim at presenting biology not as a body of scientific facts related to living things, but as a continuing activity in which man tries to find solution to his never-ending problems. The importance of Biology to modern society cannot be over emphasize, few among its benefit includes: preparing individual to challenge superstition, enlightening on body parts and their function, maintenance of good health and hygiene, exposing students on varieties of careers. Biology occupies a unique position as core subject in the senior secondary curriculum in Nigeria serving as pre-requisite for the study of many science-related courses such as Medicine, Pharmacy, Nursing, Microbiology and a host of others. It is therefore pertinent to study Biology to derive these benefits. Abubakar (2022), observed that Biology as a discipline has contributed tremendously to financial, physical and aesthetic benefits of mankind and to the nation building. Biology education is designed to help the students achieve the following: Ability to demonstrate sufficient knowledge of the concept of the interdependence of life, appreciate continuity of life through reorganization, inheritance and evolution.

According to FRN (2013), the broad objectives of senior secondary education are: preparation for useful living in the society and preparation for higher education. Biology as a science subject is very necessary for the realization of this objective, as it prepared professionals in scientific endeavours. From the objectives teaching should be practical in nature whereby the learner should be able to acquire knowledge, retain it and apply it in his day-to-day endeavors. Biology equips individuals with necessary knowledge, skills and attitudes to enable, him/her interact meaningfully with the environment, and solve life unending problems.

Practical activity is a teaching method with a high level of interaction between teacher and student, with the teacher as facilitator or a guide. The expression “hands-on, minds-on” summarizes the philosophy that incorporated activities- mainly, students will learn best if actively engaged and if these activities are closely linked to understanding important Biological concepts. According to Nwagbo (2019) the importance of practical activities in science is widely accepted and it is acknowledged that good practical activities promote the engagement and interest of students as well as developing a range of skills, science knowledge and conceptual understanding. Finch (2012) practical activities can be put into three broad groups: core activities, directly related activities and complementary activities. Nzewi (2017) practical activities in science include the core activities and the directly related activities. The complementary activities (science-related visits, surveys, presentations and role play, simulations including the use of models and modeling, group discussion and group text-based activities) are important in supporting the development of conceptual understanding in science through practical activities. Millar (2022) the core activities in practical include investigation, laboratory procedures and techniques, and fieldwork while the directly related activities include: designing and planning investigations, data analysis using ICT, analyzing results, teachers’ demonstrations and experiencing phenomena. When students are exposed to these activities they acquire skills of measuring, identifying, observing, interpreting data,

analyzing, using numbers, inferring, formulating models, questioning, controlling variables, hypothesizing and designing experiments.

Performance means accomplishment or proficiency of achievement in a given skill or body of knowledge. Ricarda (2015) academic performance is the outcome of educational output, the extent to which a person has accomplished specific goals that were the focus of activities in instructional environments, specifically in school, college and university. Birgit (2015) defined academic performance as an expression used to present students scholastic standing and which is a function of a various factors such as method of teaching, teacher qualification, children background, school environment, attitude, interest among others. Stoker (2024) defined academic performance as the display of knowledge attained or skills developed in school subjects designated by test and examination scores or marks assigned by the subject teachers. Therefore, the study investigates the effects of practical activities on academic performance of Biology students in Zaria Education Zone.

### **Statement of the Problem**

Various researches (Damide, 2019, Obiekwe, 2020, Ahmed & Abimbola, 2021, Boniface, 2022, Abdullahi, 2024), showed that poor performance in biology among Nigerian students in West Africa Senior Secondary Certificate Examination (WASSCE) could be indicative of inadequate and perhaps declining quality of education at the secondary school level. Teachers lay extreme emphasis on content and the use of lecture method neglecting practical activities which could enhance effective teaching and learning (Abdullahi, 2024). This attitude of one-way flow of information from the teacher to the students (lecture method) makes the students passive listeners and less active leading to abstraction and rote learning (Okebukola 2009). WAEC Chief Examiner Report (2017-2023), shows that the total numbers of students that pass biology at credit level fall below expectation for seven consecutive years (Table 1).

**Table 1:** Academic Performance of Practical Biology Students in May/June SSCE, 2017-2023 in Nigeria

<b>Year</b>	<b>Total No. Registered</b>	<b>% Passed</b>	<b>No. Passed (A<sub>1</sub>-C<sub>6</sub>)</b>	<b>% Failed</b>	<b>No. Failed (D<sub>7</sub> – F<sub>9</sub>)</b>
2017	1,351,557	23.6	315,723,72	76.64	1,035,883,28
2018	1,540,250	30.9	475,937,25	69.1	1,064,312,75
2019	1,672,224	38.81	648,990,13	61.19	1,023,233,87
2020	1,689,188	64.26	1,085,472,21	35.74	603,715,79
2021	1,417,432	31.28	443,372,73	68.72	974,059,27
2022	1,393,907	38.6	538,078,10	61.4	855,858,89
2023	1,552,758	53.5	830,725,53	46.5	722,032,47

**Source:** Chief Examiners Report 2024 (WAEC Office Kaduna)

The fluctuations in the performance ability of the students from year 2017-2023 as observed in Table 1.1 could be attributed to: Negative attitude of both teachers and students towards the learning of practical Biology (Lawal, 2019). Lack of availability of learning materials (Zayun, 2019) and Damide, (2020) revealed that lack of adequate laboratory equipment as one of the factors that attributed to poor academic performance in practical Biology. Oloyede, (2020), also stated that some teaching methods adopted by Biology teachers contributed to secondary school students' low performance in practical Biology.

Usman (2020) posits that most problem attributed to students' poor academic performance could be due to improper exposure to laboratory activities, poor science background at the junior secondary school level and lack of problem-solving ability. To curb this dilemma of students' poor academic performance in practical Biology final examination, there is need to investigate Effects of Practical Activities on Academic Performance of Biology Students in Zaria Education Zone, Kaduna State Nigeria.

### **Objectives of the Study**

The objectives of this study are to:

- I. Determine the effects of practical activities on academic performance in Biology among secondary schools in Zaria Education Zone.
- II. Compare science skills acquired and performance in Biology among male and female students in the experimental group.

### **Research Questions**

The following research questions are formulated to guide the study.

- I. What is the effect of practical activities on students' academic performance when taught Biology using practical?
- II. What is the difference in performance among male and female Biology students in the experimental group?

### **Null Hypotheses**

The following hypotheses were formulated to guide the study and was tested at  $P \leq 0.05$  level of significance.

- I. H01: There is no significant difference in the academic performance of Biology students exposed to practical activities and those thought with lecture method.
- II. H02: There is no significant difference in performance between male and female Biology students of experimental groups.

### **Scope of the Study**

The study was limited to all Government Senior Secondary Schools in Zaria Education Zone of Kaduna State, Nigeria. There are twenty-nine (29) senior government secondary schools of which eighteen (18) are co-educational schools and eleven (11) single-sex schools (six male schools and five female schools). The sample size for the study was 115 SS2 Biology students because they are relatively stable with adequate exposure to the learning of biology. SSI & SSII are avoided because the former has not yet stabilized in the school system while the latter are busy preparing for their final examination. SS II biology curriculum was used which focused on the following topics: Digestive system. Subtopics: Parts of the alimentary canal of a typical mammal. (rat), Pollution (water pollution), Cell and its Environment (diffusion and osmosis) and Food test.



## **Methodology**

### ***Research Design***

The study was quasi-experimental and adopted the pre-test, post-test experimental and control group design.

### ***Population of the Study***

The population of the study was made up of all the Public Senior Secondary two (SSII) Biology Students in Zaria Education Zone. It consists of eighteen (18) co-educational schools and eleven (11) single-sex schools (six male schools and five female schools). The size of the population is four thousand seven hundred and sixty-three (4,763) students.

A simple random sampling technique involving the balloting method was used to select two senior secondary schools for the study. A minimum of 30 sample size from each school was used for the study which conforms with the central limit theorem (Tuckman 1975 and Sambo 2008). This number is considered viable given the design of the study as conceded to by Roscoe and Damide (2020) who stated that 10% of the study population up to 500 is a viable sample size for experimental research.

An instrument used for data collection was: Biology Performance Test (BPT) consisting of twenty five (25) multiple choice questions with four options A,B,C and D distributed among general Biology knowledge based on the topics taught. It was developed by the researcher using WAEC past standardized questions and was used for pre-test and post-test to measure the level of students' academic performance in Biology. The instrument was submitted to two experts who are PhD holders with minimum rank of Senior Lecturer in the Department of Science Education Ahmadu Bello University, Zaria and a biology teacher for validation.

Biology Performance Test (BPT) was pilot tested using SS II Biology Students. The test item of BPT was administered to thirty (30) students with the assistance of the school Biology teacher. After two weeks interval the second test was administered to the same subjects in conformity with Tuckman (1975), who suggested the use of two weeks interval for test-retest procedure. Pearson Product-Moment Correlation Coefficient (PPMC) statistic was used to analyze the reliability of the instruments. Reliability coefficient was found to be  $r=0.82$  for BPT. This shows that the instrument is reliable and could be used for the study.

### ***Administration of Treatment***

In treatment administration, the experimental group and control group was taught by the researcher. The experimental group was taught using practical activities. The teaching was done for six weeks of twelve periods. A period is allocated for Biology per week and each period is forty minutes. BPT were used for pre-test and post-test. Lesson plan for the experimental group was developed by the researcher and the teaching was done for six weeks. At the end of the six (6) weeks of twelve periods, the researcher solicited assistance from colleagues to help administer the post-test to the subjects at the same day.

Control group was taught by the researcher using lecture method only. The lesson plan is the same with the experimental in terms of content, objectives, duration of lesson and evaluation except for the activities in the experimental group. After six weeks of twelve

periods the researcher solicited assistance from colleagues to help administer the post-test to the subjects at the same day and time.

### **Procedures for Data Analysis**

Mean standard deviation of BPT was used to answer research questions 1-2 so as to determine the subjects' performance. t-test statistical tool was used to test null hypotheses 1-2. The level of significance is  $P \leq 0.05$  for retaining or rejecting the null hypotheses.

### **Results**

The presentation of results revolved round the research questions and null hypotheses of the study. Data collected with BPT instrument were analyzed. Two groups of students were involved in the study. One group was taught with lecture method (Control) while the other group was taught with practical activities which designated the experimental group. The BPT was used for assessing general Biology knowledge based on the topics taught. BPT data were collected before and after the experiment.

#### **Research Question 1: What is the effect of practical activities on students' academic performance when exposed to practical activities and those taught with lecture method?**

**Table 2:** Mean Scores Difference on Academic Performance for Experimental and Control Group

Groups	N	Mean	SD	Std.Err	Mean Difference	Remarks
Experimental	51	40.98	5.034	.705	16.82	Experimental students have higher performance than control students
Control	64	24.16	3.272	.49919		

Table 2. shows that students who were exposed to practical activities performed better in the selected Biology concepts compared with their counterparts taught with lecture method. The computed mean score of the control group and experimental group are 24.16 and 40.98 respectively. The mean difference of 16.82 is in favor of the experimental group. The higher score in the Table is a clear indication that practical activities have greater impacts on students' academic performance than the lecture method of teaching. The statistical validity of this statement is left for the test of the related hypothesis of the study.

#### **Research Question 2: What is the difference when performance is compared between Biology students exposed to practical activities?**

**Table 3:** Mean Scores Difference on Comparison of Academic Performance between Male and Female Biology Students for Experimental Group

Gender	N	Mean	SD	Std.Err	Mean Difference	Remarks
Male	28	44.20	20.084	1.804	0.522	Practical activity has positive effect

on boys and girls

Female	23	43.68	20.259	1.968
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Result in Table 3 reveal that there is no significant difference in the performance between boys' and girls' Biology students exposed to practical activities. The computed mean score for males and females are 44.20 and 43.68 respectively. Mean difference is 0.521. This implies that there is no difference in the performance between boys' and girls' Biology students exposed to practical activities.

**Hypothesis 1: There is no significant difference on the academic performance between biology students exposed to practical activities and those thought with lecture method**

**Table 4:** Summary of t-test Analysis on Academic Performance between Biology Students for Experimental and Control Group

Groups	N	Mean	SD	Std.Err	Mean Diff.	df	t-value	P
Experimental	51	40.98	5.0343	.705				
Control	64	24.16	3.272	.4991	16.82	113	21.62	0.001

$P \leq 0.05$

Table 4 reveals that students exposed to practical activities have a higher mean score of 40.98 compared with 24.16 of those taught with lecture method with a mean difference of 16.82 in favor of those exposed to practical activities. It could be concluded that students exposed to practical activities achieved significantly higher than their counterparts taught with the lecture method. The null hypothesis which states that there is no significant difference in the academic performance between biology students exposed to practical activities and those taught with lecture method is hereby rejected.

**Hypothesis 2: There is no significant difference on performance between boys' and girls' Biology students exposed to practical activities**

**Table 5:** Summary of t-test Analysis on Difference on Academic performance between Boys and Girls Biology Students for Experimental Group

Gender	N	Mean	SD	Std.Err	Mean diff.	df	t-value	P
Male	28	42.82	20.142	1.816				
					0.72	49	0.186	0.781
Female	23	43.54	20.221	1.822				

$P \leq 0.05$

Table 5 revealed that male and female in the experimental group have a mean score of 42.82 and 43.54 respectively with a mean performance difference of 0.72. The t value of 0.186 is lower than the 1.96 t critical value at df 49 while the calculated p value of 0.781 is higher than the 0.05 alpha level of significance. This implies that there is no significant difference in the skills acquisition of boys and girls biology students exposed to science process skills. Therefore, the null hypothesis which states that there is no significant

difference in skills acquisition between male and female biology students exposed to practical activities is hereby retained.

## **Discussion**

This study investigated the Effects of Practical Activities on Performance among Biology Students in Zaria Education Zone, Kaduna State Nigeria. Four hypotheses were stated and tested based on the scores of the subjects obtained in the Biology Performance Test (BPT).

### **Hypothesis 1: There is no significant difference on academic performance between Biology students exposed to practical activities and those taught with lecture methods**

From the test of hypothesis one, and the data relating to research question one, the result of the findings showed that there was a significant difference in the academic performance between biology students exposed to practical activities and those taught with the lecture method. The difference was in favor of the experimental group. This shows that practical activities produce a significant effect on students' mean performance in Biology. The null hypothesis was therefore rejected. This conforms with the findings of Chukwuemeka (2023), who investigated the Academic Achievement of Biology Students with Pre-practical knowledge of Biology Concepts in Delta State Capital Territory Nigeria. It was revealed that the experimental group had a higher mean academic score than the control group. Also, Nzewi (2017), investigated the Effects of Biology Practicals on Secondary Students' Academic Performance in Biology in Enugu State, Nigeria. It was revealed that there was high academic performance in the group exposed to practical activities than those exposed to lecture method. The result disagrees with Sani (2017), who discovered a significant difference in the performance of the control group taught using lecture method over the experimental group.

### **Hypothesis 2: There is no significant difference when performance is compared between male and female Biology students**

From the test of hypothesis two, and the data relating to research question two, the result of the Paired sample t test revealed that there was no significant difference between the mean scores of students' performance when exposed to practical activities. This is not in conformity with the findings of Danjuma (2017), who investigates the effects of Inquiry-based instruction on performance in ecology among secondary school Biology students. The results of the study revealed that differences existed on academic performance when students are exposed to inquiry-based instruction in favor of male Biology students.

## **Conclusion**

The following general conclusion can be deduced as the outcome of the study:

- I. The Practical activities method is very effective in increasing the academic performance of Biology students, when compared with those taught with lecture method.

## **Recommendations**

On the basis of the findings from this study the following recommendations are put forward:

- I. Teachers should be encouraged to participate in workshops, seminars and other in-house trainings to continually improve on how to use activity methods.
- II. Teachers should continually record and measure the performance and skills acquisition when using this method so as to ascertain the effects on biology students.
- III. This method should be used in conjunction with other similar modern methods for maximum outcome on the biology students mean performance and skills acquisition.

## **References**

- Abdullahi, M. (2024). Influence OF Advanced Organizers on Students Performance and Retention of Ecology Concepts in Senior Secondary Schools in Giwa Education Zone. *Thesis Submitted to the Department of Science Education ABU Zaria.*
- Abubakar, A.A. (2012). Effects of a Mastery Learning Strategy on Achievement, *Journal of Research in Science Teaching*, 16(6) 33-37.
- Adamu, G.J. (2023). *Effect of Problems-Solving Instructional Strategy on Self Efficacy, Creativity and Academic Performance in Genetic Among NCE Students. Unpublished PhD. Thesis Ahmadu Bello University, Zaria.*
- Ahmed, M.A. & Abimbola, I.O. (2021). Influence of Personality Factors on Biology Teachers Assessment on Genetics Concepts in Nigerian Secondary Schools. *Unpublished Ph.D thesis. University of Ilorin, Ilorin, Nigeria*
- Birgit, P.S (2015). Academic Performance in Encyclopedia of Human Behavior. 2<sup>nd</sup> (ed). Vilanayur S. Ramachandran, 1-8. San Diego, CA: Academic Press.
- Boniface, S. (2022). Effects of Guided Enquiry on Performance and Interest among Senior Secondary Biology students. *Unpublished M.Ed Thesis ABU Zaria.*
- Chuckwuemeka, P.I. (2023). Students' Pre-practical Experiences and Academic Achievement in Senior School Biology Theory Lesson. *Journal of Resourcefulness and Distinction*; 5(1):1-8
- Damide, C.O (2009). Enhancing the Transition from Concrete to Formal Cognitive Achievement in Chemistry. *An unpublished M.D thesis at ATBU University, Bauchi pp51.*
- Danjuma, S. (2017). Effects of inquiry-based instruction on acquisition of process skills, interest and performance in ecology among secondary school students in Lere Education zone, kaduna Nigeria. *Unpublished M.Ed thesis Ahmadu Bello University, Zaria.*

- Federal Republic of Nigeria (FME, 2013). National Policy on Education. Federal Government Press Lagos, Nigeria.
- Hornbly, E. (2010). Understanding the Nature of Science: A comparison of Scientist and Science Teachers. *Journal of Research in Science Teaching*, 4, 110-120
- Ifeakor, E.A. (2019). Level of Acquisition of Science Process Skills among Secondary School Students. *Journal of Science Teachers Association of Nigeria. (STAN) 31 (1&2)39-46*
- Kerlinger, F.N. (1973.). Foundations of Behavioral Research. New York. Holt Rinechart and Winston Inc. Paper I. Abuja, Federal Government Press.
- Lawal, C.O. (2019). Improvisation of Teaching Aids for fine and Applied Arts in Secondary Schools. A paper Presented at the National Conference of the FCET, Omoku, River State.
- Millar, W. (2022). *The Training of Secondary Science Educators. A Workshop Approach: Science and Technology Document Series. Paris: UNESCO*
- Nwagbo, C.R. (2019). Practical's Approach to Effective Teaching of Local and Major Biotic Communities (Biomes) to Secondary School Students for Sustainable Development. *Science Teachers' Association of Nigeria (STAN) Biology Panel Series 2008. 41-55.*
- Nwagbo, C.R. (2020). Effects of two Teaching methods on the Achievement and attitude of biology students of different levels of scientific literacy. *International Journal of Educational Research. 45 (206) 216-229.*
- Nzewi, U.M. (2017). Practical Approach to Effective Teaching of Ecological Concepts for Sustainable Development. Science Teachers' Association of Nigeria (STAN) Biology Panel Series. 2008, 1-6.
- Obiekwe, CL. (2020). Effects of Constructivist Instructional Approach on Students' Achievement and Interest in Basic Ecological Concepts in Biology. *Unpublished M.Ed Dissertation, Department of Science Education, Bayero University Kano, Nigeria.*
- Okebukola, P.A.O (2019). Repositioning Nigeria's Educational System for the Achievement of National 20-20-20 Vision; Educational Reform Imperatives for Achieving Vision 20-20-20. One of the lead papers presented at the National Education Summit Organized by the Senate Committee on Education held between 10<sup>th</sup> and 11<sup>th</sup> Dec 2009, Abuja.
- Oloyede, O.I (2020). Problem of Teaching and Learning Science in Primary and Junior Secondary Schools. A Workshop Paper Presentation at SUBEB Teaching Training Workshop Bauchi State, 28<sup>th</sup>-31<sup>th</sup> Jan, a Lokatosian Interpretation Science Education 72, 19-36.
- Ricarda, S. (2015). The Relatively Efficiency of Laboratory Teaching Method for Enhancing Performance in Sciences, *Journal of Studies in Science and Mathematics Education. 1 (4) 26.*

- Sambo, A.A. (2008). *Research Method in Education Study*. Horenden Publishers Nigeria Limited. Ibadan Oyo State, Nigeria.
- Sani, A.G. (2020). *Effectiveness of Science Process Approach on Remedial Science Students' Performance in Jigawa State*. A Thesis Submitted to Ahmadu Bello University Zaria.
- Stoker, C.I. (2024) *Science Process Skills in Kenya Certificate of Secondary Education Biology Practical Examinations*. (<http://www.scirp.org/journal/ce>)
- Tuckman, B.W. (1975). *Measurement Educational: Fundamental of Testing*. New-York: Harcourt Brace Jovanovich, Inc.
- Usman, A.I (2010). *Effects of Class Size on Students Academic Performance in Integrated Science at Junior Secondary School Level*, 1(1) 144-149.
- West African Examination Council Annual Report. (2017-2023)
- Zayun, S.D (2019). *Performance Enhancement Skills for Teachers of Junior Secondary Schools*. A Paper Presented at Bauchi; SUBEB Workshop 23th-31th Jan.

## **PARENTAL ATTITUDES AND PEER INFLUENCE AS CORRELATES OF CYBERCRIME AMONG IN-SCHOOL ADOLESCENTS IN SECONDARY SCHOOLS IN DUTSIN-MA, KATSINA STATE**

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### **Abstract**

*This study examined parental attitudes and peer influence as correlates of cybercrime among in-school adolescents in secondary schools in Dutsin-Ma, Katsina State. The study adopted a correlational survey research design. The population of the study comprises of 2,776 SS II in all the 9 public senior secondary schools in Dutsin-Ma Local Government, Katsina State. Simple random sampling technique was used to select 5 public senior secondary schools. Purposive random sampling technique was used to select 200 respondents who were mainly SS II for this study. Three instruments were used for the data collection namely Parental Attitude Scale (PAS); Peer Influence Scale (PIS) and Adolescents Attitude towards Cyber fraud Scale (ATCS). The findings revealed that there was no significant relationship between parental attitudes and cybercrime among in-school adolescents; no significant relationship between Peer Influence and Cybercrime among In-school adolescents; there was no significant gender difference in the cybercrime among in-school adolescents. This implies that male and female adolescents do not engage in cybercrime. The finding recommends that society should not place much emphasis on materialism rather it should encourage and foster positive and socially acceptable behaviour, hard work etc. rather than glorifying in-school adolescents who are making money through dubious mean, among others.*

**Keywords:** Parental Attitudes, Peer Influence, Cybercrime, in-school Adolescents

### **Introduction**

Cyber-crimes are international in nature and do not respect political or geographical boundaries. Cybercrime is a crime perpetrated using computer tools on the internet. Cybercrime is also referred to as a crime committed using computer and network. The first cybercrime recorded can be dated back to 1820 during the days of abacus computer. Cybercrime according to Das and Nayak (2013) is a crime committed mostly by the individuals or organised groups; in which computers or computer networks are a tool of attacks. Cybercrimes also entails offences that are committed against individuals or groups of individuals with a criminal motive to intentionally harm the reputation of the victim or cause physical or mental harm to the victim directly or indirectly, using modern telecommunication networks such as internet (Chat rooms, emails, etc) and mobile



phones (Muraina & Muraina, 2015). Examples of cyber-crime as contained in the work of Kshetri (2010) include: denial of service attacks, cyber-theft, cyber trespass, cyber obscenity, critical infrastructure attacks, online fraud, online money laundering, ID fraud, cyber terrorism, and cyber extortions.

Nigeria on the other hand, has been at the spotlights from the international community for its citizen involvement in cyber-crime. It is ranked as the third in the world behind the United States and Britain, and the first within the Africa continent in the rate of cyber-crime prevalence (Malhotra and Malhotra, 2017). This conspicuous position has been a catalyst in the way the nation has handled issue concerning cyber-crime. Therefore, it has become imperative to find out the factors that cause or responsible for the adolescents' involvement of cybercrime.

Diana and Sheri (2018) examined the effect of parental attitude on Cybercrime involvement among secondary school students. They found that there was low level of parental support towards cybercrime. Filipa and Marlene (2016) examined parental attitude on Cybercrime involvement among secondary school students. The finding found that there was high level of parental attitude, involvement and support towards cybercrime among senior secondary school students.

Ruth (2013) examined the relationship between peer influence and cybercrime among high school students in Germany. They conducted the study to ascertain the extent of peer influence that promotes cybercrime among high school students. The study found that peer group do not influence cybercrime among high school students at all. Berry and Bainbridge (2017) examined the relationship between peer influence and cybercrime among high school students. Hundred people who use internet frequently were surveyed to ascertain their cybercrime experience and determine if there is any relationship that exists between their demographics and peer group. The result revealed that there is relationship between peer influence and cybercrime among high school students.

Catherine (2014) examined level of difference in the cybercrime among female and male students in the United States. The study found that male students commit higher cybercrime than their female counterpart. Also, it further revealed that cybercrime was relatively low in the country. Markus (2015) investigated difference in the attitude and level of involvement of cybercrime among female and male students and cybercrime risk contribution to online service avoidance. At the end of the study, it found that both male and female students have a positive attitude towards involvement in cybercrime. They furthered revealed that only confident users perceive less cybercrime risk when using the internet to the extent of shopping online. However, it is as a result of the above assertion that study intends to investigate parental attitudes and peer Influence as correlates of cybercrime among In-school adolescent in Dutsin-Ma, Katsina State

### **Statement of the Problem**

Cybercrime is the new face of crime that can also be called digital crime. The problem of cybercrime has become a serious concern to governments, organizations and individuals over the years. The problem of cybercrime has been increasing and it remains difficult to put a definite end to it. This is because the crime can be conducted from any part of the world anonymously. For some decades now, the issue of cyber fraud among adolescents especially in Nigeria has become so worrisome to government, parents and security

agents. Internet fraud also known as Cybercrime has become a global threat from Europe to America, Africa to Asia.

In Nigeria, perpetrators of this crime who are usually referred to as “yahoo yahoo boys” are taking advantage of e-commerce system available on the Internet to defraud victims who are mostly foreigners in thousands and sometimes millions of dollars. They fraudulently represent themselves as having particular goods to sell or that they are involved in a loan scheme project. They may pose to have financial institution where money can be loaned out to prospective investors. In this regard, so many persons have been duped or fallen victims. But this could not only be the techniques used by these cyber criminals.

Okeshola and Adeta (2013) found that majority of those involves in cybercrime are students who are adolescents and early youths. The youths in every society is of great importance and concern to that society because they are looked upon as the leaders of tomorrow. Olaide and Adewole (2019), found that a sizeable number of criminals in Nigeria fall within the adolescents and early youths. The adolescents and early youths at present have discovered different ways of using the internet in doing different types of criminal activities and these age brackets are usually found in tertiary institutions in Nigeria. Therefore, this study seeks to examine the parental attitudes and peer influence as correlates of cybercrime among in-school adolescents in secondary schools in Dutsin-Ma, Katsina State.

### **Objectives of the Study**

The main objective of this study is to determine the parental attitudes and peer influence as correlates of cybercrime among in-school adolescents in secondary schools in Dutsin-Ma, Katsina State. Specifically, this study seeks to:

- I. examine the level of parental attitudes towards cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State
- II. investigate the level of peer influence towards cybercrime among in-school Adolescents in secondary schools in Dutsin-Ma LGA, Katsina State
- III. examine the level of cybercrime among in-school Adolescents in secondary schools in Dutsin-Ma LGA, Katsina State
- IV. find out the relationship between parental attitudes and cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State.
- V. investigate out the relationship between peer influence and cybercrime among in-school adolescents in Dutsin-Ma secondary schools in LGA, Katsina State
- VI. examine if there is gender difference in the cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State

### **Research Questions**

The following research questions were raised to guide the conduct of this study:

- I. What is level of parental attitudes towards cybercrime among in-school Adolescents in secondary schools in Dutsin-Ma LGA, Katsina State?

- II. What is the level of peer influence towards cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State?
- III. What is level of cybercrime among in-school Adolescents in secondary schools in Dutsin-Ma LGA, Katsina State?
- IV. Is there any significant relationship between parental attitudes and cybercrime among in-school adolescent in secondary schools in Dutsin-Ma LGA, Katsina State?
- V. Is there any significant relationship between peer influence and cybercrime among In-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State?
- VI. Is there any significant gender difference in the cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State?

### **Research Hypotheses**

The following null hypotheses were formulated and tested in the study.

- I. H01: There is no significant relationship between parental attitudes and cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State
- II. H02: There is no significant relationship between peer influence and cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State
- III. H03: There is no significant gender difference in the cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State

### **Methodology**

This study adopted descriptive survey research design. According to Nworgu (2006), this type of study seeks to establish what relationship exists between two or more variables. Usually such studies indicate the direction and magnitude of the relationship between the variables. The population of the study comprised of 2,776 Senior Secondary Class II in all the 9 public senior secondary schools in Dutsin-Ma Local Government, Katsina State. The simple random sampling technique was used to select 5 public senior secondary schools. Purposive random sampling technique was used to select 40 SS II students in each of the 5 public senior secondary schools making 200 respondents.

The researcher used three research instruments for data collection. These are, Parental Attitude Scale (PAS) adapted from Narahari (2016) with the reliability coefficient of 0.82. Peer Influence Scale (PIS) adapted from Kamini (2011) with the reliability coefficient of 0.70 Adolescents Attitude Towards Cyber fraud Scale (ATCS) adapted from Ryan (2010) with the reliability of 0.68. Each of the three instruments has 10 items with 4 points scale ranging from Strongly Disagree (1), Disagree (2), Agree (3) and Strongly Agree (4). The questionnaire was validated by 2 experts in Educational Psychology and Test and Measurement. The instruments was adjudged to be valid for the study. Research questions 1,2 and 3 were answered using range score, frequency and percentage. Also, research hypotheses 1 and 2 were tested using Pearson Product Moment

Correlation (PPMC) Statistic while research hypothesis 3 was tested using t-test Statistic all at 0.05 level of significance.

## Results

### Answering of Research Questions

**Research Question One:** What is the level of Parental Attitudes towards Cybercrime among In-school Adolescent in secondary schools in Dutsin-Ma LGA, Katsina State?

**Table1:** Showing range score, frequency and percentage of level of Parental Attitudes towards Cybercrime among In-school Adolescent in secondary schools in Dutsin-Ma LGA, Katsina State

S/No	Range of Scores	Frequency	Percentage	Decision
1	1-49	49	24.5%	Low level
2	50-200	151	75.5%	High level

Table 1 revealed that 49 (24.5%) out of 200 (100%) indicates the level of parental attitudes towards cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State. This implies that level of parental attitudes towards cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State was low.

**Research Question Two:** What is the level of peer influence towards cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State?

**Table 2:** Showing range score, frequency and percentage of level of Peer Influence towards Cybercrime among In-school Adolescent in secondary schools in Dutsin-Ma LGA, Katsina State

S/No	Range of Scores	Frequency	Percentage	Decision
1	1-52	52	26%	Low level
2	53-200	148	74%	High level

Table 2 revealed that 52 (26%) out of 200 (100%) indicates the level of peer influence towards cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State. This implies that level of peer influence towards cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State was low.

**Research Question Three:** What is level of cybercrime among in-school Adolescents in secondary schools in Dutsin-Ma LGA, Katsina State?

**Table 3:** Showing range score, frequency and percentage of level of cybercrime among in-school Adolescents in secondary schools in Dutsin-Ma L.G.A, Katsina State

S/No	Range of Scores	Frequency	Percentage	Decision
1	1-49	49	24.5%	Low level
2	50-200	151	75.5%	High level

Table 3 revealed that 49 (24.5%) out of 200 (100%) indicates the level of cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State. This implies that level of cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State was low.

### Testing of Hypotheses

**H0<sub>1</sub>: There is no significant relationship between Parental Attitudes and Cybercrime among In-school Adolescents in secondary schools in Dutsin-Ma LGA, Katsina State**

**Table 4:** Showing Correlation between Parental Attitudes and Cybercrime among In-School Adolescents in secondary schools in Dutsin-Ma LGA, Katsina State

Variables	N	Mean	SD	Df	Cal .r-Value	Critical r-value	Decision
Parental Attitude	200	21.96	11.77	198	0.89	0.13	Rejected
Cybercrime	200	43.86	12.33				

P<0.05

Table 4 revealed that the calculated r-value (0.89) is greater than the Critical r-value (0.13) at 0.05 level of significance and 198 degree of freedom. Hence, the null hypothesis is rejected. This implies that there is no significant relationship between parental attitudes and cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State

**H0<sub>2</sub>: There is no significant relationship between Peer Influence and Cybercrime among In-school Adolescents in secondary schools in Dutsin-Ma LGA, Katsina State**

**Table 5:** Showing Correlation between Peer Influence and Cybercrime among In-school Adolescents in secondary schools in Dutsin-Ma LGA, Katsina State

Variables	N	Mean	SD	Df	Cal .r-Value	Critical r-value	Decision
Peer Influence	200	24.76	4.10	198	0.74	0.32	Rejected
Cybercrime	200	53.48	2.51				

P<0.05

Table 5 showed that the calculated r-value (0.74) is greater than the Critical r-value (0.32) at 0.05 level of significance and 198 degree of freedom. Hence, the null hypothesis is rejected. This implies that there exist no significant relationship between Peer Influence and Cybercrime among In-school Adolescents in secondary schools in Dutsin-Ma LGA, Katsina State

**H0<sub>3</sub>: There is no significant gender difference in the Cybercrime among In-school Adolescents in secondary schools in Dutsin-Ma LGA, Katsina State**

**Table 6:** the result of the independent t- test on difference in the Cybercrime among In-school Adolescent in secondary schools in Dutsin-Ma LGA, Katsina State on the basis of gender

Gender	N	Mean	SD	Df	T-cal Value	T-crit. value	Decision
Male	87	2.57	0.42	198	2.65	1.98	Rejected
Female	113	2.29	0.32				

P<0.05

Table 6 revealed that the t-calculated value 2.65 is greater than the t-critical value of 1.98 at 0.05 level of significance and 198 degree of freedom.. Hence, the null hypothesis that states there is no significant difference in the in the cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State on the basis of gender

is therefore rejected. This implies that male and female adolescents do not engage in cybercrime.

## **Discussion**

Research question one revealed that 49 (24.5%) out of 200 (100%) indicates the level of parental attitudes towards cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State. This implies that level of parental attitudes towards cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State was low. The finding of this study corroborates with Diana and Sheri (2018) who found that there was low level of parental support towards cybercrime. Meanwhile, Filipa and Marlene (2016) found that there was high level of parental attitude and support towards cybercrime among senior secondary school students.

Research question two revealed that 52 (26%) out of 200 (100%) indicates the level of peer influence towards cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State. This implies that level of peer influence towards cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State was low. The finding of this study agrees with Berry and Bainbridge (2017) who found that peer group do influence adolescents into cybercrime. While Ruth (2013) disagrees with it and found that peer group do not influence cybercrime among high school students at all.

Research question three revealed that 49 (24.5%) out of 200 (100%) indicates the level of cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State. This implies that level of cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA, Katsina State was low. The finding of this study corroborates with Olaide and Adewole (2019) who found that a sizeable number of criminals in Nigeria fall within the adolescents and early youths.

The result of hypothesis one showed that there was no significant relationship between parental attitudes and cybercrime among in-school adolescents in secondary schools in Dutsin-Ma L.G.A, Katsina State. The finding of this study corroborate with the finding of Diana and Sheri (2018) who found that there was no significant relationship between level of parental attitude and cybercrime involvement by the in-school adolescents. Contrarily, Filipa and Marlene (2016) found that since there was high level of parental attitude and support towards cybercrime among senior secondary school students. Also, there was significant relationship between level of parental attitude and cybercrime involvement by the in-school adolescents.

The result of hypothesis two revealed that there is no significant relationship between peer influence and cybercrime among In-school Adolescents in secondary schools in Dutsin-Ma LGA, Katsina State. The finding of this study agrees with Berry and Bainbridge (2017) who found that there was no any significant relationship that exist between their demographics and peer group. The result revealed that there is relationship between peer influence and cybercrime among high school students. Contrarily, Ruth (2013) conducted her study to ascertain the relationship between peer influence and cybercrime among. The study found that peer group do not influence cybercrime among high school students at all.

The result of hypothesis three revealed that there is no significant difference in the in the cybercrime among in-school adolescents in secondary schools in Dutsin-Ma LGA,

Katsina State on the basis of gender is therefore rejected. This implies that male and female adolescents do not engage in cybercrime. The finding is not supported by Catherine (2014) who found that male higher students commit cybercrime than their female counterpart. Also, it further revealed that cybercrime was relatively low in the country. While Markus (2015) who found that both male and female students have a positive attitude towards and involve in cybercrime. They furthered revealed that only confident users perceive less cybercrime risk when using the internet to extent of shopping online.

### **Conclusions**

Based on the findings of this study, the study concluded that there is no significant relationship between parental attitudes and cybercrime among in-school adolescents. There is no significant relationship between peer influence and cybercrime among In-school Adolescents. The research also indicated that there is no significant difference in the in the cybercrime among in-school adolescents on the basis of gender. This implies that male and female adolescents do not engage in cybercrime

### **Recommendations**

Based on the findings of the study, the following recommendations were made.

- I. Society should not place much emphasis on materialism rather it should encourage and foster positive and socially acceptable behaviour; hard work etc. rather that glorifying in-school adolescents who are making money through dubious mean.
- II. Rules and regulations that deal with cybercrimes should be implemented strictly across the nation.
- III. The proper enlightenment and sensitization exercise against the cybercrime should be encouraged and supported by parents, educational psychologists, school counsellors, and school management.
- IV. A better economic system, creation of job opportunities, empowerment for the in-school adolescents and youth should be prioritised by the three tiers of government in Nigerian country.

### **References**

- Berry, M. & Bainbridge, S. (2017). Manchester's Cyberstalked 18-30s: Factors affecting cybercrime. *Advances in Social Sciences Research Journal*, 4(18), 4-15.
- Catherine, T. (2019). Examination of cybercrime and its effects on corporate stock value. *Journal of Information, Communication and Ethics in Society*, 17(1), 42-60.
- Das, S. & Nayak, T. (2013). Impact of cybercrime: Issues and challenges. *International Journal of Engineering Sciences & Emerging Technologies*, 6(2), 142-153.
- Enrica, C. (2014). Emotion-related personality traits and peer social standing: Unique and interactive effects in cyber fraud behaviors. *Cyberpsychology, Behavior, and Social Networking*, 17 (9), 584-590.

- FGN (2015). *Cybercrimes* (prohibition, prevention, etc) act, 2015 Retrieved from [https://cert.gov.ng/ngcert/resources/CyberCrime\\_\\_Prohibition\\_Prevention\\_etc\\_\\_Act\\_\\_2015.pdf](https://cert.gov.ng/ngcert/resources/CyberCrime__Prohibition_Prevention_etc__Act__2015.pdf)
- Filipa, P. & Marlene, M. (2016). Cyber-crime victimization: What predicts fear among Portuguese adolescents? *European Journal on Criminal Policy and Research*, 22(2), 253-270.
- Internet Crime Complaint Center - IC3 (2010). Internet Crime Report. January 1, 2009 – December 31, 2009. National White Collar Crime Centre and the Federal Bureau of Investigation. Retrieved from on 5th August 2018 from [http://www.ic3.gov/media/annual\\_reports.aspx](http://www.ic3.gov/media/annual_reports.aspx)
- Kshetri, N. (2019). Cybercrime and cyber security in Africa. *Journal of Global Information Technology Management*, 22(2), 77-81
- Kamini, D. (2011). Cybercrime in the society: problems and preventions *Journal of Alternative Perspectives in the Social Sciences*, 3(1), 240-259.
- Markus, R., (2015). Measuring the influence of perceived cybercrime risk on online service avoidance. *IEEE Transactions on Dependable and Secure Computing*, 6, 13-21.
- Narahari, A. C. (2016). Cyber-crime and security – a study of awareness among young Netizens of Anand (Gujarat state, India). *IJARIE*. 2(6), 2395-4396
- Muraina, M. B., & Muraina, K. O. (2015). Peer pressure, parental socioeconomic status, and cybercrime habit among university undergraduates in South-western Nigeria. *International Journal of Technology in Teaching and Learning*, 11(1), 50-59.
- Okeshola F. B., & Adeta A. K, (2013). The nature, causes and consequences of cyber crime in tertiary institutions in Zaria-Kaduna State, Nigeria. *American International Journal of Contemporary Research*, 3(9), 98-114.
- Olaide, S. & Adewole O. (2019). *Cyber Crime Embarrassing for Victims in Nigeria*. Unpublished research project. Retrieved from: <https://projectchampionz.com.ng/2019/02/11/cyber-crime-embarrassing-victims-nigeria/>
- Ruth, F., (2013). Peer influence, internet use and cyberbullying: a comparison of different context effects among German adolescents. *Journal of Children and Media*, 7, 446-462.
- Ryan, A.M. (2010). Peer groups as a context for the social nature of adolescent's motivation, engagement, and achievement in school. *Educational Psychologist*, 35,101-112.



## PREDICTING INTEREST OF SECONDARY SCHOOL STUDENTS IN BIOLOGY BY TEACHERS' PEDAGOGICAL SKILLS: A STUDY OF NASSARAWA ZONE, KANO STATE, NIGERIA

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### Abstract

*The study assessed Predicting Interest of Secondary School Students in Biology by Teachers' Pedagogical Skills: A Study of Nassarawa Zone, Kano State, Nigeria. The study used descriptive survey and observational design. The population of the study was 12,996 Biology students and 60 Biology teachers from 38 public schools in Nassarawa Zone. A sample of 375 Biology students and 38 Biology teachers were selected from 19 public schools using simple random sampling technique. Data were collected using two validated instruments; Biology Students' Interest Inventory (BSII) with  $r=0.76$  and Biology Teachers' Pedagogical Skills Observation Schedule (BTPSOS) with  $r=0.75$ . One objective with corresponding research question and null hypothesis guided the study. Data collected were analyzed using descriptive statistic of mean and standard deviation to answer the research question and inferential statistics for the hypothesis using Spearman ranking coefficient at probability levels of  $P \leq 0.05$  level of significance. The major finding showed that significant relationship exists between teachers' pedagogical skills and students' interest and it was concluded that Pedagogical Skills enhanced interest of senior secondary school Biology students. It was therefore recommended among others that, only Biology teachers with adequate pedagogical skills be employed to teach the subject in order to enhance interest of students in the subject.*

**Keywords:** Teachers' Pedagogical Skills, Interest, Biology students, Kano, Nigeria

### Introduction

Science education plays outstanding roles in determining scientific and technological advancement of every individual and the nation at large and significantly contributes to the development of scientifically literate persons who will further use the achievement and experience in science and technology for the benefit of mankind. Hence steps toward development of science education are inevitable. Shaibu (2014) defines science as a complex human activity that lead to the production of a body of universal statement called laws, theories or hypotheses, which serve to explain the observable behavior of the universe or part of it, which, in themselves, have predictive characteristics. Biology is one

of the science subjects that occupy a significant position in the senior secondary school curricula and forms part of the literacy needed for national growth and development.

Biology is one of the science subjects offered in senior secondary schools in Nigeria that attracts the greatest patronage of both science-oriented and art-based students (Akinwumi & Falemu, 2020). It is one of the major science subjects in the senior secondary school curriculum apart from chemistry and physics and is a requirement for higher learning in quite a number of science-related professional courses like medicine, pharmacy, nursing and agriculture.

In spite of the fact that biology curriculum has very good objectives and the importance attached to the teaching and learning of the subject, it appears that students still encounter problems in the subject as performance at Senior Secondary level had remained poor especially in external examinations. This has led to low interest which affects performance in West African Senior Secondary School Certificate Examination (WASSCE) and the National Examinations Council (NECO). The yearly and continuous decline in interest rate of Nigerian senior school students in science which affects their performance in external examinations such as the West African Senior School Certificate Examinations (WASSCE) and National Examinations Council (NECO) and has been an issue of concern to all and sundry in science education in the country (WAEC Chief Examiner's Report, 2023). Nworgu (2015) has blamed poor pedagogical method used by the teachers in teaching biology as one of the causes of lack of interest among students. It therefore implies that the teacher plays a vital role in facilitating students' interest in Biology.

According to Utami (2016) pedagogical skill is a set of teaching strategies and methods of instruction employed in the classroom. It involves the interaction between the teacher and his students in order to expand their cognitive and skillful perceptions through the appropriate classroom management, determination to teach and continuous evaluation to achieve the desired teaching objectives. Bhowmik, Banerjee, and Banerjee (2017) pointed out that effective teachers use an array of teaching strategies that are tailored to the needs of their individual students learning needs. Guerero (2016) opined that pedagogical skills can generally be divided into classroom management skills and content-related skills. That is, a good teacher is expected to know how to effectively control his students by first and foremost carrying out the task of managing the behaviour of his or her classroom by establishing clear rules and expectation so as to avoid cases of misbehavior and also when issues of misbehavior comes up he should be able to handle the situation without disruption of the learning environment. Pedagogical approaches are often placed on a spectrum from teacher-centred to learner-centred pedagogy; though these two approaches may seem contradictory, they can often complement each other in the realisation of educational goals—for example, a teacher-centred approach may be useful to introduce a new theme, while a learner-centred approach may be necessary to allow students to explore these ideas and develop a deeper understanding (Cook, 2020).

Firstly, teacher-centred pedagogy positions the teacher at the centre of the learning process and typically relies on methods such as whole-class lecture, rote memorization, and chorus answers (call-and-response). This approach is often criticized, especially when students complete only lower-order tasks and are afraid of the teacher (Li, 2023). However, whole-class teaching can be effective when teachers frequently ask students to explain and elaborate key ideas, rather than merely lecture.

Secondly, learner-Centred Pedagogy: This pedagogical approach has many associated terms such as constructivist, student-centred, participatory, active, but generally draws on learning theories suggesting learners should play an active role in the learning process. Students therefore use prior knowledge and new experiences to create knowledge. The teacher facilitates this process, but also creates and structures the conditions for learning. Considerable research and advocacy has promoted learner-centred pedagogy in recent years for economic, cognitive, and political reasons. Some research suggests this approach can be very effective but it is also difficult to measure consistently (Green, 2015). He added that it is often challenging for teachers to shift from teacher-centred pedagogy to learner-centred pedagogy, and so considerable support may be needed if this is an important goal for a given education system. Learning-centred pedagogy is a relatively new term that acknowledges both learner-centred and teacher-centred pedagogy, it can be effective, but teachers must consider the local context, including the number of students in the class, the physical environment, the availability of teaching and learning materials

Studies have shown that effective pedagogical approaches are the ones promoting learning by providing students opportunities to actively participate in their own learning (Centre for the Use of Research and Evidence in Education (CUREE) 2014). This student-centred approach (constructivist teaching) contrasts sharply with the traditional teacher-directed approach (sometimes referred to as transmission teaching) where the teacher is viewed as the front of all knowledge and where that knowledge is passed from teacher to student. According to CUREE (2014), using the teacher directed approach; teachers do most of the talking and students work, mostly individually, on tasks provided by the teacher, such as worksheets and text book exercises. However, with a student-focused approach students take a much more active role, engaging in discussion with their teacher and peers. This strategy usually arouses students' interest.

Okoye, Okongwu and Nweke (2015) opined that Interest is an individual's behavioural tendency to be attracted towards a certain class or classes of activities. Also, Salisu (2015) describe interest as a feeling of curiosity or concerned of subject or topic that direct attention towards it. Interest is a source of motivation which drives people to do what they want to do when they are free to choose (Amaefuna and Ezeliora, 2023). Interest promotes intrinsic motivation which is believed to drive and sustain students in a particular task.

The teachers' pedagogical approach has great influence on how students learn and how their interests are being sustained during instruction. When the teacher employs an array of pedagogical skills during instruction, students' interest is usually aroused as the need of the learners are being met. According to Sauer (2014) the type of pedagogy adopted by teachers shape their actions, judgments and other teaching strategies by taking into cognizance theories of learning, understandings of students and their needs, and the background and interests of individual students. The teacher upholds the learning and growth of all students through instructional practices that create high expectations, safe and effective classroom environment, engage all students and accommodate diverse learning styles, needs, interests, and levels of readiness of the student.

According to Gess-Newsome (2017) Pedagogical knowledge include a rationale linking teaching strategies to student learning strategies for eliciting student prior understandings; and strategies to promote student examination of their own thinking. Pedagogical skills are expressed through successful teaching and development of the teaching, and through

evaluations and student learning. He therefore added that pedagogical skills, thus, include the capacity to plan, initiate, lead and develop education and teaching with the departure point in both general and subject-specific knowledge of student learning. In addition, Pedagogical skills also include the capacity to connect the teaching to research in the subject of interest. The development of the pedagogical skills requires continuous interaction around matters of subject didactics and teaching and learning. In this way, the pedagogical skills of the individual can contribute to the development of the pedagogical practice of others.

Pedagogical strategies involve the teacher being able to convey knowledge and skills in ways that students can understand, remember and apply. Guerero (2016) opined that Pedagogical skills can generally be divided into classroom management skills and content-related skills. That is a good teacher is expected to know how to have firm control of his students by first and foremost carrying out the task of managing the behavior of his or her classroom by establishing clear rules and expectation so as to avoid cases of misbehavior. The other aspect is that of content-related skills. He further opined that pedagogical skills of a good teacher should also be tailored towards content for individual needs and challenges due to individual differences in the class. These types of pedagogical skills will create a good learning environment and thereby boost students' interest.

Interest has to do with a learner's predisposition to react positively in certain ways towards certain aspects of the environment and is usually developed in relation to and remains allied to more basic motives (Adeyemi & Adeyemi, 2014). In other words, Abande (2014) defines interest as a state of curiosity or concern about something or the attention given to something. In addition, Magnus (2014), further stated that interest encompasses the positive, pleasant feelings an individual has when trying to study a subject-matter.

Datom (2015) studied the effect of Demonstration and Guided Discovery Methods on Interest and Achievement of Upper Basic Science students in Wukari Educational Zone, Taraba State Nigeria. The purpose of his study was to find out the effects of demonstration and guided discovery teaching methods on interest and achievement of Upper Basic Science students, the findings of the study revealed that the interest level of participants showed significant difference after exposure to demonstration method while there was no significant difference in interest level of participants after exposure to guided discovery and lecture methods of instruction. This implies that the pedagogical skills or teaching methods employed by a teacher to facilitate students learning can ignite interest in understanding the concepts. From the above definitions and literature, it could be deduced that interest governs our feeling and attitudes towards a particular thing or activity. Furthermore, Okafor (2015) emphasized that interest is an important factor that supports learning, individual development and achievement. Interest in a subject is therefore indispensable in learning and many are of the opinion that learning cannot take place without it.

Oyenuga (2016) opined that interest is the motive which serves as important influence in producing both activities and attitudes that are favorable to learning. In his views, interest act as a drive or motivation that propels people to act in certain ways. He also advised that in studying learners' interest, care must be taken to identify those undesirable interest areas. Learner's interest has to be guided so that educational objective might be directed towards eliminating undesired activities. He added that students' interest is very

important in the study of any subject because the interest of a learner is in many ways the reflections of his/her deeds. Altogether, it is appropriate to say that the interest of a student in a particular subject or career may influence his/her academic achievement in a positive way. Meanwhile, Oyenuga (2016) equally submitted that it is up to a teacher to make a subject or course interesting. He further stressed that the teacher can help in setting up certain conditions which will enable the students to take or create interest in the subject or course. Conclusively, the literatures have revealed that interest of a student in any subject is borne out of motivation and attitude exhibited by the teacher in the course of his teaching. Students' interest can be reduced if a teacher employs ineffective pedagogy.

It is therefore expedient that teaching of biology should be carefully planned and appropriate pedagogical skills should be applied in order to provide meaningful learning that will arouse students' interest.

### **Objective**

to assess the relationship between teachers' pedagogical skills and students' interest in Biology in Nassarawa Zone, Kano State, Nigeria.

### **Research Question**

What is the relationship between teachers' pedagogical skills and students' interest in Biology in Nassarawa Zone, Kano State, Nigeria.?

### **Research Hypothesis**

There is no significant relationship between teachers' pedagogical skill and students' interest in biology in Nassarawa Zone, Kano State, Nigeria.

### **Methodology**

This study adopted a descriptive survey research design, ex-post facto and observational study to gather data from the participating Biology students and teachers in Nassarawa and Fagge Local Government Areas of Kano State. The total population were 12,996 Biology students and 60 Biology teachers. A sample of 375 SS2 biology students and 38 biology teachers participated in the research and were selected by stratified random sampling technique. Data were collected using two instruments; Biology Students' Interest Inventory (BSII) and Biology Teachers' Pedagogical Skills Observation Schedule (BTPSOS). Face and content validity as well as reliability of the instruments were determined. Split-half method was used to test the reliability of the instruments and the Chronbach's alpha yielded 0.76 for Biology Students' Interest Inventory (BSII) and 0.75 for Biology Teachers' Pedagogical Skills Observation Schedule). This is in line with Uzosike (2008) who stated that a reliability coefficient of 0.5 and above implies that an instrument is internally consistent.

At descriptive level, mean and standard deviation were used to answer the research question while at inferential level, hypothesis was analysed using Spearman ranking coefficient at probability of  $P \leq 0.05$  level of significance for rejecting or not rejecting the null hypotheses.

## Results

In order to answer this research question, a descriptive statistics of mean scores and standard deviation were used and a correlation test on the relationship between teachers' pedagogical skills and students interest in biology.

**Research Question:** What is the relationship between teachers' pedagogical skills and students' interest in Biology in Nassarawa Zone, Kano State, Nigeria.?

**Table 1:** Summary of Mean, Standard Deviation and Correlation Test on the Relationship between Teachers' Pedagogical Skills and Students' Interest

Variables	N	Mean	Standard Deviation	Correlation coefficient	Remarks
Teachers' Pedagogical Skills	38	65.65	8.64	0.50	There is positive relationship
Students' Interest	375	75.78	5.34		

Table 1 showed the relationship using mean and standard deviation of teachers' pedagogical skills and students' interest. Both the mean and standard deviation of teachers' pedagogical skills was 65.65 + 8.64 out of the total/ maximum mean of 125.00 + 0.00 while that of students' interest mean and standard deviation was 75.78 + 5.34 out of the maximum score 100.00 + 0.00. This shows that the higher the teachers' pedagogical skills mean response, the higher the students' mean interest and vice versa. A correlation coefficient of 0.50 also shows a positive relationship between Teachers' Pedagogical skills and students' interest.

## Hypothesis testing

**Research Hypothesis:** There is no significant relationship between teachers' pedagogical skill and students' interest in biology in Nassarawa Zone, Kano State, Nigeria.

**Table 2:** Spearman's Rank Correlation Coefficient (rho) Statistics on the Relationship between Teachers' Pedagogical Skills and Students' Interest in Biology

Variable	N	X	S.D	Df	Rho	P. value	Remark
Teachers' Pedagogical Skills	38	65.65	8.64	411	0.50	0.00	Significant
Students' Interest	375	75.78	5.34				

**Sig at  $\alpha \leq 0.05$**

Results of the Spearman non parametric Test in Table 2 shows that significant relationship exists between teachers' pedagogical skills and students' interest in biology. Reason being that the p value of 0.00 is lower than the 0.05 alpha level of significance, and the level of correlation is put at 0.50. The relationship is proportional, that is the higher the teachers' level of pedagogical skills, the higher the students level of interest and vice

versa. Therefore, the null hypothesis which states that there is no significant relationship between teachers' pedagogical skills and students' interest in biology, is hereby rejected.

## **Discussion**

Outcome of the hypothesis revealed the presence of Significant relationship existing between teachers' pedagogical skills and students' interest in biology. The relationship is proportional, that is the higher the teachers' level of pedagogical skills, the higher the students level of interest and vice versa. This outcome agrees with Hakim (2015) who pointed out that pedagogical competence has a significant influence in improving students' interest. It also agrees with Sauer (2014) who pointed out that the type of pedagogy adopted by teachers shape their actions, judgments and other teaching strategies by taking into cognizance theories of learning, understandings of students and their needs, and the background and interests of individual students. He added that the teacher upholds the learning and growth of all students through instructional practices that create high expectations, safe and effective classroom environment, engage all students and accommodate diverse learning styles, needs, interests, and levels of readiness of the student. This also agrees with the observation made by the researcher using the observation schedule to observe the teachers' pedagogical skills. It was discovered that the schools where the teacher scored above 50% when the data was collated, the students also had a higher interest rate compared to those schools where the teachers' pedagogical skill rating was below 50%. This revealed the presence of Significant relationship existing between teachers' pedagogical skills and students' interest in biology, showing that the higher the teachers' pedagogical skills, the higher the level of interest among students in biology and vice versa.

## **Conclusion**

The result of this study shows a positive correlation between teachers' pedagogical skills and students' interest in biology. Therefore, a significant relationship exists between Teachers' pedagogical skills and students' interest in biology. In conclusion, it was established that teachers' pedagogical skills of biology are strong predictors of interest among secondary school students, Nassarawa Zone, Kano.

## **Recommendations**

On the basis of the outcome of the study the following recommendations are put forward by the researcher;

- I. School managers should employ Biology teachers with adequate pedagogical skills to teach the subject in order to enhance interest of students in Biology.
- II. Certified agents like Teachers Registration Council of Nigeria (TRCN) should employ testing teachers' pedagogical knowledge and skills as a requirement for certification and license.
- III. Biology teachers pedagogical skills can be improved by school authorities providing all the necessary instructional and infrastructural facilities in schools and this will improve interest of students in biology.

## References

- Abande, G.K. (2014). Pedagogical Learning Techniques in the 21<sup>st</sup> Century. Ibadan, Mind Press Ltd.
- Adeyemi, A.M., & Adeyemi, S.B. (2014). Personal Factors as Predictors of Students' Academic Achievement in Colleges of Education in South Western Nigeria. FCE(T), University of Lagos, Akoka, Lagos Nigeria. *Educational Research and Reviews*. Vol9(4), pp.97-109, February, 2014.
- Akinwumi, I.O. & Falemu, F. A. (2020). Effects of Biology Practicals on Academic Performance of Secondary School Students in Biology in Ikere Local Government Area of Ekiti State, Nigeria. 1Department of Science Education, College of Science Education, BamideleOlumilua University of Education, Science and Technology, Ikere- Ekiti, Ekiti State, Nigeria. 2Department of Science Education, College of Science Education, BamideleOlumilua University of Education, Science and Technology, Ikere-Ekiti, Ekiti State, Nigeria.
- Amaefuna, A.I.&Ezeliora, B.A. (2023). Effect of 5 Step Constructivist-Based Instructional Model on Student's Interest in Biology<sup>1</sup>Department of Science Education, NnamdiAzikiwe University, Awka.<sup>2</sup>Department of Science Education, ChukwuemekaOdumegwuOjukwu University, Uli.
- Bhowmik, M., Banerjee, B., & Banerjee, J. (2017). Role of Pedagogy in Effective Teaching. *Basic Research Journal Education Research and Review*, 2(1), 1-5.
- Cook, (2020). Teacher Locus of Control: Identifying differences in classroom practices. *International Journal of Multi Research Approaches*. 6(3), 285-296.
- CUREE, (2014). Evaluation of Learning away: Hypothesis 5: Teachers' Pedagogical Skills. London: Paul Hamlyn Foundation.
- Datom, A.N. (2015). Effectiveness of Demonstration and Guided Discovery Method on Interest and Achievement of Upper Basic Science Students in Taraba State, Nigeria. PhD Thesis (Unpublished).
- Gess-Newsome, J. et al. (2017). Teacher Pedagogical Content Knowledge, Practice and Student Achievement. *International Journal of Science Education Vol. 41* Pages 944- 963.
- Green, P. (2015). How to Motivate Students: a Primer for Learner-Centered Teachers. Mount Saint Mary's University, Los Angeles. American Association of Philosophy Teachers.
- Guerero, S. (2016). Teachers' Pedagogical Knowledge and the Teaching Profession Background Report and Project Objective. <https://pdf4pro.com/view/teachers-pedagogical-knowledge-and-the-89cf7.html>.



- Ibrahim, S. (2016). Effect of Multimedia Instructional Strategies on Students Acquisition of Science Process Skills and Academic Achievement. Unpublished M.Ed. Thesis Submitted to National Open University of Nigeria.
- Li, N. (2023). Approaches to Learning: literature Review, *International Baccalaureate Organization*. Last updated: 06 June 2023.
- Magnus, K.O. (2014). Re-positioning Science Education for the African Child. Asaba: Omega Publishers.
- Moses, A.A., Gospel, N., & Femi, O. (2016). Academic Performance in Biology at Secondary School Certificate Examination (SSCE) and the Influencing Factors among Students in Owerri Municipal of Imo State, Nigeria. *International of Education and Evaluation*. Vol. 2 No.1.
- Nworgu, L.N. (2015). Fundamental Principles and Methods of Teaching Biology. Enugu: Global Publishers.
- Okafor, G.A. (2015). *Effects of note-taking Patterns on Students' Academic Achievement, Interest and Retention in Geography*. Unpublished Ph.D Thesis. Department of Science Education, Faculty of Education, Ebonyi State University, Abakaliki - Nigeria University of Nigeria, Nsukka.
- Okoye, C.M, Okongwu, C.J., & Nweke, S.O. (2015). Students' Interest as correlate of Achievement in Chemistry. 56<sup>th</sup> Annual Conference of Science Teachers Association of Nigeria (STAN) Proceedings. 2015; 222 – 229. Akwa.
- Onyenuga, A.O. (2016). Effect of Models on Interest and Academic Achievement of Auto Mechanics Students in Technical Colleges in Lagos State. University of Nigeria Nsukka. *Academic Leadership: The Online Journal* Vol. 8 Iss. 3
- Salisu, A. (2015). *Impact of Animated-Media Strategy on Achievement, Retention and Interest Among Secondary school Geography Students in Weather Concepts; Katsina State, Nigeria*. An unpublished Masters Thesis Submitted to Department of Science, Faculty of Education, Ahmadu Bello University, Zaria.
- Sauer, K. (2014) The Impact of Student Interest and Instructor Effectiveness on Student Performance. St. John Fisher College Fisher Digital Publications. St. John Fisher College Fisher Digital Publications.
- Shaibu, A.A.M. (2014) Navigating the maze of students' under Achievement in science: Does Science Education Research Provide a Road map? Inaugural Lecture in Department of Science Education A.B.U. Zaria. 2014-07-02.
- Utami, D.N. (2016). The EFL Teachers' Beliefs and their Teaching Practices. State University of Malang. *OKARA Journal of Languages and Literature, Vol. II, Tahun X, November 2016*.

## PERCEPTION OF SENIOR SECONDARY SCHOOL STUDENTS ON THE ROLE OF CIVIC EDUCATION IN PROMOTING ENTREPRENEURSHIP SKILLS IN EDU EDUCATION ZONE, KWARA STATE NIGERIA

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### Abstract

*The study investigated the Perception of Senior Secondary School students on Civic Education as a tool for Promoting Entrepreneurship Skills in Edu Education Zone, Kwara State Nigeria. The study was guided by three (2) objectives, research questions and corresponding hypotheses. The study adopted descriptive research design with total population of six thousand one hundred and one (6,101) students out of which 365 were selected as the sample for the study. Questionnaire titled Civic Education as Tool for Promoting Entrepreneurship Skills Questionnaire (CETPESQ) was used for data collection. Simple percentage was used to compute the bio-data of the respondent, descriptive statistics of means and standard deviations was used to answer the research questions, while the hypotheses were analyzed using t-test statistics. Thus, the study concluded that Entrepreneurship skills provide students with training and support to establish career in small and medium size business, acquisition of basic skills for productive and profitable ventures. It inculcates in students their duties and obligations to the society; and also promotes acquisition of appropriate skills and development of mental, physical and social abilities and contribute to the development of the society. It was recommended that Government should recruit more qualified Civic Education Teachers for the inculcation of civic duties of the citizens; Teachers of Citizenship Education should be sponsored to attend Workshops, Seminars and Conferences to enhance their professional competency in the implementation of Civic Education properly.*

**Keywords:** Perception, Civic Education & Entrepreneurship Skills

### Introduction

One of the objectives of any government over the world is provision of quality education to its citizens which is the bedrock for general development of any society in order to help it becomes functional and enhances awareness within and outside its environment. Although traditional education exists side by side with the western education, its value has been deemphasized. In the early days, education was a tool of Western imperialism as foreign cultures and values were taught as what constituted the social aspect of the curriculum. The discrete social sciences, particularly History, Geography and Civics were taught to produce loyal and obedient British subjects to serve the interest of the colonial masters. At the attainment of independence and afterwards, Nigeria began to take a critical look at the curriculum in schools so as to redirect focus (Ololobou, 2019).

According to African Social and Environmental Studies Programme (ASESP) (1994), the purpose and content of social studies are closely related to African traditional education. Viewed from this perspective; the developmental trend of Social Studies Education in Nigeria can be traced through the African traditional education, colonial, post-colonial and the integrated approach. This is in line with the stand of Ololobou (2019) who posits that, Nigeria like any other African nations had a system of education that integrates the young members into the society through the inculcation of cultural practices, values and beliefs. Social Studies was offered at Junior Secondary Schools, while for those that want to continue at the Senior Secondary Schools offered Civic Education in place of Social Studies.

The introduction of Civic Education in Nigeria according to Lawal (2020), is aimed at inculcating of the right type of knowledge, attitude, values and norms of the society in the learners to enable them to be functional tools for transmission and development of attitude and skills for the survival of the future generation. The main idea behind the introduction of Civic Education is to equip learners with knowledge, competence and skills necessary for the understanding and appreciation of the societal problems with the aim of finding workable solutions to the Nation's problems by imparting the right type of knowledge, values and skills. It also aims at producing graduates that will be vibrant, efficient and capable of creating jobs for themselves not job seekers within and outside their environment to enable them become useful to themselves, society and as well as for national development.

The knowledge of Civic Education through citizenship education provides skills necessary for the preservation of our traditional, customs, beliefs such as religion, blacksmithing, farming, knitting, pot marking etc. It also teaches relationship that provides skills that promote interpersonal relationship e.g. honesty, tolerance, kindness, caring and patience. An entrepreneurship skill as a discipline is offered at both junior and secondary schools. It originated from the traditional apprenticeship which geared towards promoting entrepreneurship skills acquisition through learning by imitation and practice. The trainee is attached to a master, relation, parent or outsider for the training or apprenticeship after which the trainee may decide to be on his own. According to Abubakar (2019) one of the causes of low productivity in Nigeria today is the apparent lack of entrepreneurship skills and competencies. Thus, policy makers should understand that the living standard of the people of any nation largely depends on the economic potential of her citizens which is derived from the knowledge of civic education and entrepreneurship skills to inculcate in mine self-employment, high level of autonomy, achievement orientation, hard work disposition, and help in planning business effectively, this could result in making Nigeria a self-reliant nation (Austin, Stevenson & Wei-Skillern, 2016).

Knowledge of the ideals, values, and principles set forth in the nation's core documents serves an additional and useful purpose. Those ideals, values, and principles are criteria which citizens can use to judge the means and ends of government, as well as the means and ends of the myriad groups that are part of civil society. In Nigeria, values such as respect, dignity of labour, obedience, justice, equity and fairness are necessary in the entrenchment of federal principles on the minds of the young ones which are curricular contents of the Nigerian Civic Education at both primary and secondary schools in the country (Falade, 2018).

According to Alexander (2020), the essences of Civic Education are to transform Nigerians as people of one destiny, reorientation towards self-reliance, understanding of the functionality of the Nigeria system of government and sound knowledge or emerging global social and health issues with particular reference to the Nigerian society. Civic Education for senior secondary study encompasses general human values and harmony in the society which. Identified the characteristics nature of subject. According to Donald and Odey, (2017), Civic Education is designed on a structure based on the needs of the Nigerian child reflecting the national ideals and values the children are expected to acquire. The components of Civic Education in the Nigerian school system include civic knowledge, civic skills and civic disposition.

Civic Education is a core subject in the Senior Secondary School (SSS) curriculum in Nigeria. It was introduced as a solution to the socio-civic problems facing the country. The cardinal aim of the subject is to breed effective citizenry who are useful to themselves, their families, immediate community and the society at large. It is expected that students at senior secondary schools should learn basic socio-economic and political skills that will make them relevant and useful to themselves and society after graduation. Some of the socio-economic skills expected to be inculcated in the students are the thinking skill, academic skill and social learning skills for self-reliance and private enterprise.

Entrepreneurship education is aimed at equipping students with basic skills and competence expected to be creative, autonomous and able to recognize hidden potentials and opportunities within and outside their environment and also to train secondary school leavers on different kinds of occupation so as to be self-reliant after graduation. Despite these efforts, it was observed that at present, the Nigerian society places emphasis on certificate and wealth without corresponding emphasis on character. Consequently, rather than producing objective and patriotic human beings, the Nigeria educational programme produced many citizens who are also selfish and indifferent to public affairs (Mezieobi, 2016).

It became evident that the lack of Civic Education and patriotic orientation has led to disorientation in schools and the larger society. The consequences were being felt at in all strata of our society. The prevalence of trend of corruption, indiscipline, disrespect for both elders and the rule of law, indifference to duty are some of the manifestations of negative trends in the Nigerian society. Therefore, the problem of this study hinges on the determination of the extent to which senior secondary students' perceive Civic Education as tool for promoting entrepreneurship skills in Kwara State.

### **Objectives of the study**

The objectives for this study are to:

- I. Find out the different perception of SS 1 and SS 2 students on the knowledge of Civic Education as a tool for promoting entrepreneurship skills in Edu Education Zone, Kwara State,
- II. Examine the different perception of SS 1 and SS 2 students on the value of Civic Education as a tool for promoting entrepreneurship skills in Edu Education Zone, Kwara State,

## **Research Questions**

The following research questions are set to guide the study.

- I. What is the difference in the mean perception scores of SS 1 and SS 2 students on the knowledge of Civic Education as a tool for promoting entrepreneurship skills in Edu Education Zone, Kwara State?
- II. What is the difference in the mean perception scores of SS 1 and SS 2 students on the value of Civic Education as a tool for promoting entrepreneurship skills in Edu Education Zone, Kwara State?

## **Hypotheses**

The following null hypotheses were tested at 0.05 level of significant.

- I. Ho1: There is no significant difference in the mean perception scores between SSII and SSIII students on the knowledge of Civic Education as a tool for promoting entrepreneurship skills in Edu Education Zone, Kwara State.
- II. Ho2: There is no significant difference in the mean perception scores between SSII and SSIII students on the values of Civic Education as a tool for promoting entrepreneurship skills in Edu Education Zone, Kwara State.

## **Methodology**

Research design adopted for this study was descriptive survey research method which is used when dealing with a very systematic collection of data from population or a sample of the population through the use of personal interview, opinion scale, questionnaire and /or observation ( Abdullahi 2015). The population for this study comprised all the senior secondary schools offering Civic Education as a subject in their schools in Kwara State and for the purpose of this study, Edu Education Zone was used with fifteen senior secondary schools offering Civic Education with a total population of 6101. A stratified random technique was used in selecting the four (4) Senior Secondary Schools to determine sample size for research activities. Three hundred and sixty five (365) students from the six thousand one hundred and one (6,101) students were selected.

The instrument for data collection was titled: Civic Education as Tool for Promoting Entrepreneurship Skills Questionnaire (CETPES), and was developed by the researcher. It was made up of 36 questions and it was used to seek the opinion of students on the extent to which the contents of Civic Education to promote Entrepreneurship skills among them. The questionnaire was divided into two sections Bio-data and test items. Question items are opinion –seeking on the research questions. The questionnaire was designed in accordance with the modified four (4) point Likert scale weighted: SA (4), A (3) D (2) and SD (1). The questionnaire items were studied, modified and corrected by the experts in Test and Measurement and Languages from Ahmadu Bello University, Zaria to ascertain its face and content validity. Pilot study was carried out with an instrument that contained two sections Knowledge and Value aspects of Civic Education. The draft questionnaire was personally administered once by the researcher so as to identify if there were any difficulties in respondents understanding of the items. Upon receipt of the completed questionnaires, Crombach Alpha method was employed to establish the reliability of the instrument. A reliability index of 0.70 on cognitive, 0.76 on affective and

0.75 psychomotor was obtained and as such the instrument was considered appropriate for the research.

The researcher got the permission to have access to the relevant information from the schools concerned. The general administration of the questionnaires which contained 2 sections Knowledge and Value aspect of Civic Education, with the help of research assistants, teachers and class representatives. The face-to face methods of administration of the questionnaires took place at the schools which facilitated the completion and subsequent retrieval of the questionnaires. A day was spent in each School to ensure that the questionnaire was properly distributed. Likewise 365 of the responses were coded and recorded on the computer coding sheets. The data and information gathered were analyzed using, simple percentage to compute the bio-data of the respondent while Descriptive statistics of means and standard deviations were used to answer the research questions. However, the research hypotheses were tested using inferential statistics using t-test statistics due to the fact that each of the categories of responses has 2 levels.  $P > 0.05$  level of significance as a basis for retaining and rejecting the hypotheses formulated for the study.

## Results

### Analysis of Bio-Data Information

**Table 1:** Distribution of Sample Frequency Based on Level

S/N	Class	Total	Percentage
1	SS 1	203	55.6%
2	SS 2	162	44.4%

(Researcher Field Study)

Table 1 indicates that SS 1 student is higher than SS 2 students who participated in the study. It could be deduced that 203 representing (55.6%) are SS 1 students and 162 representing (44.4%) are SS 2 students, which means, there were more SS 1 students that participated in the study.

**Research Question One:** What is the difference in the mean perception scores of SS 1 and SS 2 students on the knowledge of Civic Education as a tool for promoting Entrepreneurship Skills in Edu Education Zone, Kwara State?

**Table 2:** Mean and standard deviation between SS 1 and SS 2 students on the Knowledge Aspect of learning Civic Education

level	N	Mean	SD	Std. Error Mean	Mean Difference
SS 1	203	14.1527	1.32804	.09321	0.5
SS 2	162	13.6543	1.60868	.12639	
Total	365				

(Researcher Field Study)

From Table 2, the result indicated that there was a difference in the mean perception scores of SS 1 ( $M=14.1527$ ,  $SD=13.28$ ) and that of SS 2 ( $M=13.6543$ ,  $SD=16.09$ ) students on the knowledge aspect of learning Civic Education as a tool for promoting entrepreneurship skills. Based on the mean difference of 0.5, it indicates that there is a significant difference in the mean perception of SS 1 and SS 2 on cognitive aspect of civic education as a tool for promoting entrepreneurship skills through Civic Education.

**Research Question Two:** What is the difference in the mean perception scores of SS 1 and SS 2 on the value of Civic Education as a tool for promoting entrepreneurship skills in Edu Education Zone, Kwara State?

**Table 3:** Mean and standard deviation of SS 1 and SS 2 students on the Value aspect of learning Civic Education

level	N	Mean	SD	Std. Error Mean	Mean Difference
SS 1	203	14.2956	1.09514	.07686	0.28
SS 2	162	14.0123	1.11449	.08756	
Total	365				

(Researcher Field Study)

From Table 3, the result indicates that there was a 0.28 means difference in the perception scores of SS 1 (M=14.2956, SD=10.2) and that of SS 2 (M=14.0123, SD=11.114) students on the affective aspect of learning Civic Education as a tool for promoting entrepreneurship skills. Based on the mean difference of 0.28, it indicates that, there is a significant difference in the mean perception of SSII and SSIII on value aspect of Civic Education.

#### Analysis of Null Hypotheses

**H<sub>01</sub>:** There is no significant difference in the mean perception scores of SS 1 and SS 2 senior secondary school students on the knowledge of Civic Education as a tool for promoting entrepreneurship skills among senior secondary school students in Edu Education Zone, Kwara State.

**Table 4:** Summary of Independent t-test statistics of SS 1 and SS 2 students on the Cognitive Aspect of Learning Civic Education

level	N	Mean	SD	Mean Diff.	t	Df	P	Decision
SS 1	203	14.1527	1.32804	.5	3.242	363	.001	Rejected
SS 2	162	13.6543	1.60868					
Total	365							

(Researcher Field Study)

The result of independent t-test result reveals that, there is a significant difference in the mean perception scores of students on the perception of senior secondary school on the cognitive aspect of learning Civic Education as a tool for promoting entrepreneurship skills. This is, because the calculated t-value = 3.242, df = 363, p-value = .001. Based on the decision rule the null hypothesis which states that there is no significant difference in the mean perception scores of SS 1 and SS 2 senior secondary school students on the knowledge aspect of learning Civic Education as a tool for promoting entrepreneurship skills is hereby rejected.

**H<sub>02</sub>:** There is no significant difference in the mean perception scores of SS 1 and SS 2 on the value of Civic Education as a tool for promoting entrepreneurship skills in Edu Education Zone, Kwara State

**Table 5:** Independent t-test statistics of SS 1 and SS 2 students on the affective aspect of learning civic education

level	N	Mean	SD	Mean Diff.	t	Df	P	Decision
SS 1	203	14.2956	1.09514					
SS 2	162	14.0123	1.11449	.28322	2.436	363	.015	Rejected
Total	365							

(Researcher Field Study)

The result of analysis of independent t-test statistics for null hypothesis reveals a significant difference in the mean perception scores between SS 1 and SS 2 senior secondary school students on the affective aspect of learning Civic Education as a tool for promoting entrepreneurship skills. This is, because, the calculated t-value = 2.436, df = 363, p-value = .015. Therefore, the stated null hypothesis which states that, there is no significant difference in the mean perception scores of SS 1 and SS 2 students on the affective aspect of learning Civic Education as a tool for promoting entrepreneurship skills in Edu Education Zone, kwara state is hereby rejected.

## Discussion

The study found that Entrepreneurship skills provide students with the training and support to establish career in small and medium size business, which in line with study of Babatunde and Durowaiye (2018), it was established that exposure to entrepreneurship education influences students intentions of becoming self-employed, in reducing of the problems of unemployment and other social vices in our societies. Acquisition of basic Entrepreneurship skills for productive and profitable venture help a lots as indicated by the outcome of the study carried out by Shu'aibu, Peter and Ubah (2019), they established that, there is significant relationship between Social Studies and Entrepreneurship Education and sustainable development.

Entrepreneurship promotes acquisition of appropriate skills and development of mental, physical and social abilities and competencies as equipment for the individual to live in and contribute to the development of the society. In line with study of Hassan (2019) established positive perception towards the role of entrepreneurship education in relation to employment provision to the graduates.

Civic Education inculcate in students their duties and obligations to the society in line with study of Kurato (2017), established that, an extension of this trend in employment creation as observed by the entrepreneurs in COET campus can be replicated in other parts of the country and will go a long way in curbing the problem of unemployment.

## Conclusion

Conclusively, Entrepreneurship skills provide students with the training and support to establish career in small and medium size business. It helps in acquisition of basic skills for productive and profitable ventures; it also enhances economic growth for the individual's citizens and the Nation. Civic Education raise morally upright and well-adjusted individuals who can think independently and rationally, respect the views and feeling of others and appreciate the dignity of labour; inculcate in students their duties and obligations to the society; and also promote acquisition of appropriate skills and development of mental, physical and social abilities and competencies as equipment for



the individual to live in and contribute to the development of the society. The combination of Entrepreneurship skills and Civic Education is a winning combination as such its teaching and application.

### **Recommendations**

Based on the findings of the study, the following recommendations are provided:

- I. There should be training and retraining of Civic Education teachers to enhance their professional competency in the implementation of the curriculum
- II. Government should provide qualitative teaching and learning materials for effective teaching of Civic Education in the schools;
- III. Graduates that read Civic Education should be given soft loans to establish small scale industries for economic growth and National Development;
- IV. Teachers of Citizenship Education should be sponsored to attend Workshops, Seminars and Conferences to enhance their professional competency in the implementation of Civic Education properly.

### **References**

- Abubakar, S.A. (2019) *Global Education*. In J. Zajda (Ed.).*Second International Handbook on Globalization, Education and Policy Research*. Dordrecht. The Netherlands: Springer, 783-803.
- Alexander, M.E.(2020). Entrepreneurship among Graduates to be of Business Management Faculties and Economics Development in Nigeria. *European Journals of Economics and Administration Sciences*, No 14.
- Austin, J., Stevenson, H. & Wei-Skillern, J. 2016. Social and commercial entrepreneurship: same, different, or both? *Entrepreneurship Theory and Practice*, 30, 1-22.
- Babatunde, , I.B & Durowaiye, M.I. (2018). *Democratic Governance and Development Management in Nigeria's Fourth Republic (1999-2003)*.In I.B. Imam, and M.I. Obadan (Eds), *Democratic Governance and Development Management in Nigeria's Fourth Republic (1999-2003)*.JODAD Publishers, 1-14
- Donald J. P. & Odey, E.N. (2017) Civic Education as Citizenship Mission. *Nigeria Journal of Social Studies*, (1), 50-61
- Falade, D.A. (2018). Civic education as a tool for nation building in Nigeria. *Nigerian journal of social studies*, XI (1) 15 -27
- Hassan, M. R. (2019). An Attainable Global Perspective. NewYork: Center for Global Perspectives. *Nigerian Journal of Social Studies and Civic Education*, 7 (1),21.
- Kuratko, D.F. (2017). The Emergence of Entrepreneurship Education: Development, Trends and Challenges. *Entrepreneurship Theory and Practice*. 577- 597.
- Lawal , U. S. and Muhammad, A. (2020 ) Promoting Socio-Economic Skills in Learners through Social Studies Education in Nigeria. A Paper presented at 30th

Annual National Conference of Social Studies and Civic Education Association of Nigeria held at ABU, Zaria, 24th -29th April.

Mezieobi, D. I. (2016). The place of social studies education in the development of citizenship education in Nigeria. *Nigerian Journal of Citizenship Education*, 4, 113-122.

Ololobou C. O (2019) *Methodological Approaches in Social Studies Education Kano: Jaleyemi General Enterprise.*

Shuaibu, A., Peter, G. & Ubah, U. (2019). *Entrepreneurship Key to Self-renewing Economies. Economic Development Commentary*, 5, 19-23.

## TRACER STUDY OF 2000-2019 GRADUATES OF FEDERAL COLLEGE OF EDUCATION (TECHNICAL) GUSAU ZAMFARA STATE, NIGERIA

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### Abstract

*This study traced the 2000-2019 graduates of Federal College of Education (Technical) Gusau Zamfara State, Nigeria. The study employed descriptive (survey) design. 265 graduates and 138 employers of labour were traced across the North-west, Nigeria. Purposive sampling technique was used in this study. A researchers-designed questionnaire titled "Tracer Study of 2000-2019 Graduates of Federal College of Education (Technical) Gusau Questionnaire" was used for data collection. The data collected was analysed using percentage and weighted average. The findings of this study revealed that 79.2% of the graduates traced were employed while 81.5% were found in the teaching profession; and many employers of labour were satisfied with the graduates employability skills but life skills and adaptation to environment, creativity and innovation, computer skills and application of ICTs and development of self-esteem were the training gaps that needed improvements in the NCE Curriculum. This study concluded that if the curriculum is reviewed to meet the changing demands of the labour market, it is hoped that FCET Gusau has greater capacities to train better graduates that would meet the specifications of contemporary labour market. This study recommended among others that the NCE curriculum and programmes should be reviewed to incorporate life skills and adaptation to environment prepare graduates for success in their professional world of works.*

**Keywords:** Tracer study, Graduates, Employers of labour, Curriculum, Training gaps

### Introduction

Education and training play a key role in ensuring that opportunities are provided for all individuals to develop their skills continually in a lifelong learning perspective, enabling them to adapt to rapidly changing labour market requirements and conditions. Training and labour market policy makers decide on the configuration of education and training systems, employment policies and investments. The success of the nation depends on the quality of graduates higher education institutions produce (Narayangarh, 2017). One of

the objectives of any educational institution is to provide the country with graduates well-equipped with the knowledge and skills with positive attitude and determine the employability status of its graduates. Schomburg (2003) notes that graduate surveys are popular for analysis of the relationship between higher education and work.

Tracer study is one of the most important elements to determine the success of the programs or courses the school offers in terms of the status, characteristics of employment, struggles, and extent of successes of the programs or courses the school offers. Towards the end of the 20th Century, European Universities embraced the use of tracer studies for a plethora of reasons; especially to accredit their study programmes; to explain the link between study programmes and the job market; to show uniqueness and positioning of individual universities; and also to enable universities and institutions in managing higher education in their respective countries to make informed and evidence based decisions about improvements on quality education and services in higher education (Schomburg & Teichler, 2011).

To remain viable in today's global competitive educational market, higher education institutions must acknowledge that learning and pedagogy are changing in the 21st century while reaffirming their commitment to facility planning. Consequently, considering the needs of multiple stakeholder groups, especially students and faculty, it becomes vital to this reaffirmation in order to adequately support modern educational practices and learning space planning.

It is essential to consider the academic curriculum delivery system in producing employable graduates because, it is during this process that the adequacy of physical facilities and instructional materials, human assets, methods to adopt in teaching as well as assessment strategies are technically required in the production of employable graduates (Ogunniran, 2021). In addition, the teachers are considered to be the driving factor for academic curriculum delivery system, without which the materials, methods and assessment cannot be effective in producing graduates with employability skills.

Various tracer studies of graduates have been conducted in some African countries (like Ghana, Kenya, South Africa and Nigeria among others) by prominent scholars among which include (Anyanwu 2000; Kaijage, 2001; Cosser, 2003; and RUFORUM 2009). Also, Schomburg (2016) revealed that in many countries, conducting tracer studies is a formal requirement for the accreditation of study programmes and educational institutions are also increasingly interested in feedback from their former students to improve their study programmes, and to show new applicants how their graduates have managed the transition to employment. These studies sought to ascertain the whereabouts of the graduates, their transition from higher education to work, job search, employment conditions, use of knowledge and skills, appropriate position and job satisfaction, retrospective assessment of their study condition.

In Nigeria, tracer study is a necessary requirement and a duty of every College of Education Academic and Quality Assurance Unit. Accreditation Toolkit for the Colleges of Education (2012) also emphasised the need for tracer study reports with a view to strengthening evidence based research informing decisions on teaching effectiveness and efficiency. Worth mentioning are frequent demands for reports of tracer studies by intervention agencies such as Teachers Development Program (TDP), Teachers Upgrade Program (TUP), Universal Primary Education Boards, and Need Assessment Committees. A tracer study will avail the College with the data on the relevance and effect of

technology teacher training to the society: the data of those employed, and types of employment vis-à-vis the training received, gaps between expectations and realities and key areas that will require revisions, reviews and improvements of the National Commission for Colleges of Education (NCCE) Minimum Standards.

In this study the researchers adopted the Human Capital Development Theory because we consider it to be a suitable theory to explain a tracer study of graduates and employability. The theory used in this study was the Human Capital Development Theory. It is presumed on the supposition that education or training enhances the efficiency of workers and useful life skills of the people, all things being equal. The notion of human capital first emerged post-World War II when it was advanced that investments in health, training and education could explain levels of economic growth that investment in physical capital could not (Becker, 1964). One of the proponents of this theory, Becker believed that the height of workforce generation has positive relationship with the educational and training structure in which the higher the education and training a man gets, the higher the efficiency or achievements of an individual.

Based upon the work of Schultz (1963), human capital theory lays on the supposition that formal instruction is very instrumental and even important to enhance the creation capacity of a populace. The rationality behind the investment in human capital as emphasised by Babalola (2003) is based on the following that:

1. the new generation must be given the appropriate parts of the knowledge which have already been accumulated by previous generations;
2. new age ought to be shown how the current information ought to be utilised to generate new products and creation strategies and social administration;
3. individuals must be urged to grow totally new thoughts, items, procedures and techniques through innovative methodologies.

This theory is very important and relevant to the current situation of relevance and effect of technology teacher training to the society: the training received, gaps between expectations and realities and key areas that will require improvements in developing nations like Nigeria where graduates are poorly trained and unemployable because they could not meet up with labour market requirements in many cases. Hence, the necessity to conduct this study, in this context, that is characterized by low manpower and poor socio-economic base.

Although, many studies have been carried out by different scholars on tracer studies like the study of Aljumah (2023) examined the impact of job training on recruitment and employability skills among graduates by utilizing the self-perceived employability scale. The study used a sample of 190 graduate students who underwent job training with a specific company. The findings of this study indicated that a significantly positive impact was found of job training on employability, highlighting the contribution of job training to the development and enhancement of employability skills among graduates.

Ugbe (2018) conducted a study on the extent to which graduates of Business Education acquired employability skills on graduation from Colleges of Education in North-West Nigeria. The population for the study consisted of all business education lecturers in Colleges of Education, registered Small and Medium Scale Enterprises and Ministry of Commerce and Industries staff in North West Nigeria. The proportionate stratified and

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purposive sampling techniques were employed to selected sample size of 302 respondents, made up of 87 lecturers, 220 Directors/managers of SMSEs and staff of Ministry of Commerce and Industries in North West Nigeria. A structured questionnaire was used as instrument for data collection, which was face validated by experts. Cronbach Alpha Reliability Coefficient of 0.86 was obtained for the study. The instrument was administered on personal contact with the help research assistants. The data collected were analyzed using mean in answering the research question while t-test analysis was employed in testing the null hypothesis at 0.05 level of significance. The study recommended that Business Education NCE graduates possess employability skills to a moderate extent from departments of business education, Colleges of Education North West Nigeria. Business educators in Colleges of Education North West Nigeria should adopt teaching pedagogies that will help to inculcate employability skills in NCE students (Ugbe, 2018).

However, the scholars of these previous studies have not explored the tracer studies of 2000-2019 Graduates of Federal College of Education (Technical) Gusau Zamfara State, Nigeria. The researchers considered to cover graduates of the college for a period of twenty (20) years as the first phase of the study while graduates of 2020 – 2024 would be covered in second (2nd) phase of the studies. The justification for this is that the minimum standard used for the production of 2000-2019 graduates was outdated while the graduates from 2020 are trained with the reviewed minimum standard.

Therefore, it became necessary to examine strategies to improving the transition of graduates from college of education to the labour market, and to better matching the supply of skills with the demand for them. The Federal College of Education (Technical), Gusau has been outstanding in science and technical teacher production, and being the only college of education for women only in the country requires a tracer study of her graduates so as to assess and meaningfully respond to both the local and global science and technology employment needs. Therefore, this study is conceptualized as presented in figure 1:

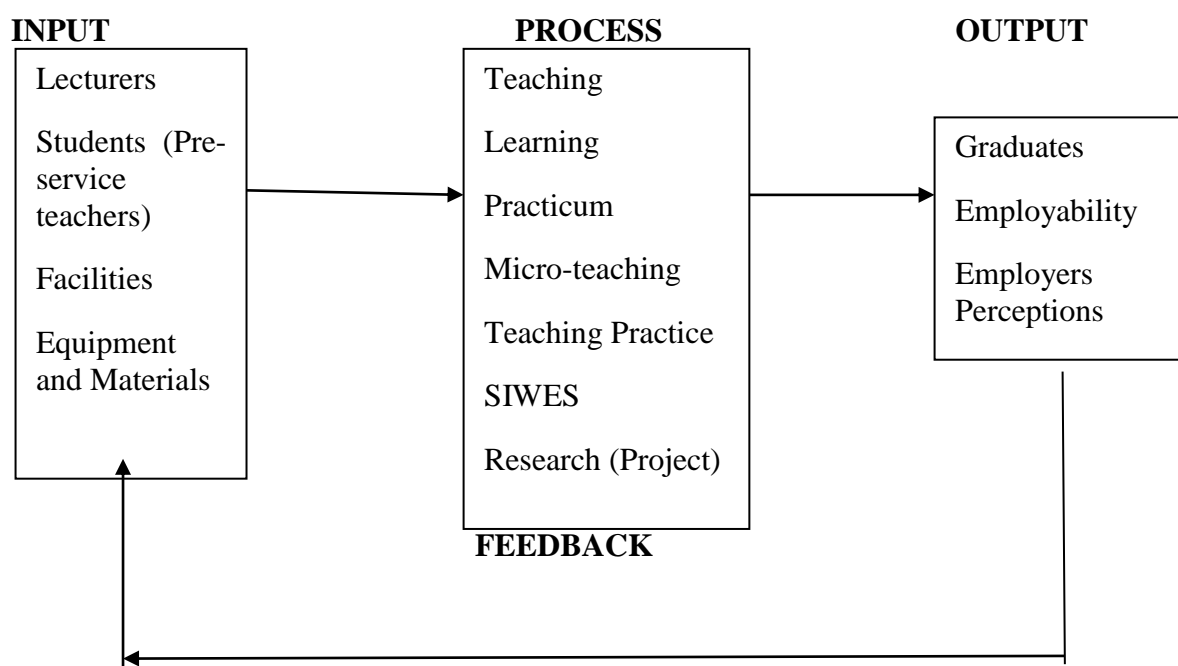


Figure 1: Conceptual Clarification

## **Objectives of the study**

The purpose of this study is to trace the Graduates of Federal College of Education (Technical) Gusau Zamfara State within the North-west Geo-political Zone of Nigeria. The specific purposes of this study are to:

- I. Find out the employment status of Graduates of Federal College of Education (Technical) Gusau Zamfara State, Nigeria from 2000-2019
- II. Examine the level of satisfaction on the NCE programme of graduates of Federal College of Education (Technical) Gusau in Zamfara State, Nigeria
- III. Find out the level of satisfaction of employers of labour on the graduates of Federal College of Education (Technical) Gusau employability skills in Zamfara State, Nigeria
- IV. Identify training gaps (areas that require improvements) in NCE curriculum

## **Research Questions**

The following research questions are raised to guide this study:

- I. What is the employment status of Graduates of Federal College of Education (Technical) Gusau Zamfara State, Nigeria from 2000 to 2019?
- II. What is the level of satisfaction of graduates of Federal College of Education (Technical) Gusau in Zamfara State, Nigeria on the NCE programme?
- III. What is the level of satisfaction of employers of labour on graduates of Federal College of Education (Technical) Gusau employability skills in Zamfara State, Nigeria?
- IV. What are the training gaps (areas) that require improvements in NCE curriculum

## **Methodology**

This study was a quantitative research that utilized the survey technique for data collection. The population of this study was 394 which comprised 265 FCET Gusau graduates and 138 employers of labour across the North-west, Nigeria. This study traced 265 FCET Gusau graduates to the North-west, Nigeria which are Kaduna, Kano, Katsina, Kebbi, Jigawa, Sokoto and Zamfara States. A researchers-designed questionnaire entitled Tracer Study of 2000-2019 Graduates of Federal College of Education (Technical) Gusau Questionnaire was used for data collection. This instrument contains graduates' employment status, level of satisfaction with the NCE programme, perceptions of employers of graduates' employability skills and training gaps to be filled in improving the NCE curriculum. The questionnaire was transmitted online to the graduates that were traced in this study. The instrument was subjected to face and content validation by two (2) research experts. Also, the reliability of the instrument was tested through pilot study while the items in the instrument were calculated from the result of the pilot study using Cronbach Alpha Reliability Coefficient. The result of the test was found to be 0.80 reliability index. This confirms that, the research instrument was not only suitable but

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also reliable for use as an instrument for data collection for this study. The data collected was analysed using descriptive statistics of percentage and mean score.

## Results

**Table 1:** Employment Status of Graduates of Federal College of Education (Technical) Gusau Zamfara State, Nigeria from 2000 To 2019

Variables		Frequency	Percentage
<b>Employment Status</b>	Employed	210	79.2
	Unemployed	46	17.4
	Under Employed	9	3.4
	<b>Total</b>	<b>265</b>	<b>100</b>
<b>Nature of Employment</b>	Work with Government	169	63.8
	Private Organisation	48	18.1
	Self-employed	48	18.1
	<b>Total</b>	<b>265</b>	<b>100</b>
<b>Forms of Employment</b>	Permanent	151	57.0
	Temporary	55	20.8
	Contract	38	14.3
	Casual	21	7.9
	<b>Total</b>	<b>265</b>	<b>100</b>
<b>Types of Employment</b>	Teaching	218	81.5
	Non-teaching	49	18.5
	<b>Total</b>	<b>265</b>	<b>100</b>
<b>Level of Teaching</b>	Primary	64	24.2
	Secondary	170	64.2
	Tertiary	31	11.7
	<b>Total</b>	<b>265</b>	<b>100</b>

Table 1 shows the employment status of 2000 - 2019 graduates of Federal College of Education (Technical) Gusau Zamfara State, Nigeria. From the Table, it was revealed that 210 (79.2%) of the graduates traced were employed, 46 (17.3%) unemployed while 9 (3.4%) was under employed. Also, 169 (64%) of the graduates worked with government, 48 (18.1%) worked with private organizations and 48 (18.1%) were self-employed. Similarly, 151 (57%) of the graduates were employed on permanent basis, 55 (20.8%) on temporary basis, 38 (14.3%) on contract while 21 (7.9%) were casual workers. Among the graduates traced in this study, 218 (81.5%) were teachers while 49 (18.1%) of the graduates were into non-teaching profession. 64 (24.2%) of the graduates in the teaching profession teach at primary/basic level of education, 170 (64.2%) teach at secondary level while 31 (11.7%) teach at tertiary level of education.



**Table 2:** The level of satisfaction of 2000-2019 Graduates of Federal College of Education (Technical) Gusau on the NCE programme in Zamfara State, Nigeria

\*F = Frequency P = Percentage (%)

S/N	Items	Very Satisfied F(P)	Satisfied F(P)	Not Satisfied F(P)	Weighted Average	Remarks
1.	Preparation of lesson plan and lesson notes	139(52.5)	115(43.4)	11(4.2)	2.48	Satisfied
2.	Meaning and implications of professionalization of teaching	90(34.0)	157(59.2)	18(6.8)	2.27	Satisfied
3.	Area of specialization /teaching subject	107(40.4)	144(54.3)	14(5.3)	2.35	Satisfied
4.	Lesson delivery, questioning techniques and class management	100(37.7)	151(57.0)	14(5.3)	2.32	Satisfied
5.	Variety of strategies to evaluate students' performance	91(34.4)	150(56.6)	24(9.1)	2.25	Satisfied
6.	Variety of teaching methods	108(40.8)	139(52.5)	18(6.8)	2.34	Satisfied
7.	Strategies for self-development	96(36.2)	149(56.2)	20(7.5)	2.87	Satisfied
8.	Improvisation and application of instructional resources	89(33.6)	136(51.3)	40(15.1)	2.18	Satisfied
9.	Life skills and adaptation to environment	86(32.5)	133(50.2)	46(17.4)	2.15	Satisfied
10.	Entrepreneurial skills, creativity and innovation	83(31.3)	135(50.9)	47(17.7)	2.14	Satisfied
11.	Computer skills and use of educational technology	76(28.7)	126(47.5)	63(23.8)	2.05	Satisfied

**Source:** The Researchers (2024)

Based on the weighted average analysis of the 11 questions, it's evident that the majority of graduates from Federal College of Education (Technical) Gusau on the NCE programme in Nigeria express satisfaction with various aspects of their education. Specifically, there is a notable satisfaction with strategies for self-development, as indicated by the highest mean score of 2.87. Additionally, preparation of lesson plans and notes, meaning and implications of professionalization of teaching, area of specialization/teaching subject, lesson delivery techniques, questioning techniques, class management, variety of teaching methods, and improvisation/application to the environment all received mean scores above 2.0, signifying a generally positive perception among graduates.

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However, there are areas where satisfaction appears to be lower. Specifically, graduates expressed less satisfaction with life skills and adaptation to the environment, with a mean score of 2.05, indicating a potential area for improvement in the curriculum or support services offered to students. To sum it up, 89% of the graduates expressed their satisfaction while 11% of the graduates with the NCE programmes received at FCET Gusau, Zamfara State.

However, while there are areas for improvement, overall, the findings suggest a moderate to high level of satisfaction among graduates of the NCE programme at Federal College of Education (Technical) Gusau. These results provide valuable insights for curriculum development and enhancement efforts to better meet the needs and expectations of graduates in the future.

**Table 3:** Level of Satisfaction of Employers of Labour on the Employability Skills of graduates of Federal College of Education (Technical) Gusau in Zamfara State, Nigeria  
\*F = Frequency P = Percentage (%)

S/N	Items	Very Satisfied F(P)	Satisfied F(P)	Not Satisfied F(P)	Remarks
1.	Knowledge of specialty/teaching subject	87 (63)	39 (28)	12 (9)	<b>Satisfied</b>
2.	Lesson delivery including questioning	48 (35)	62 (45)	28 (20)	<b>Satisfied</b>
3.	Class Management	56 (41)	82 (59)	-	<b>Satisfied</b>
4.	Evaluation of students' performance with feedback	36 (26)	72 (52)	30 (22)	<b>Satisfied</b>
5.	Punctuality with conduct	21 (15)	79 (57)	38 (28)	<b>Satisfied</b>
6.	Writing of lesson plans	57 (41)	60 (44)	21 (15)	<b>Satisfied</b>
7.	Writing of lesson notes	41 (30)	70 (51)	27 (18)	<b>Satisfied</b>
8.	Improvisation	51 (37)	59 (43)	28 (20)	<b>Satisfied</b>
9.	Application of instructional resources	44 (32)	73 (52)	22 (16)	<b>Satisfied</b>
10.	Life skills and adaptation to environment	9 (7)	35 (25)	94 (68)	<b>Not Satisfied</b>
11.	Use of variety of instructional methods	31 (22)	69 (50)	38 (28)	<b>Satisfied</b>
12.	Creativity and innovation	15 (11)	41 (30)	82 (51)	<b>Not Satisfied</b>
13.	Computer skills and application of ICTs	24 (18)	35 (25)	79 (57)	<b>Not Satisfied</b>
14.	Overall professional behavior	31 (22)	69 (50)	38 (28)	<b>Satisfied</b>
15.	Self-esteem	18 (13)	51 (37)	69 (50)	<b>Not Satisfied</b>

**Source:** The Researchers (2024)

Table 3 indicated the level of satisfaction of employers of labour on the employability skills of graduates of Federal College of Education (Technical) Gusau in Zamfara State, Nigeria. As shown in the Table, majority of the employers of labour (81.5%) expressed their level of satisfaction in knowledge of specialty/teaching subject, lesson delivery including questioning, class management, evaluation of students' performance with feedback and punctuality with conduct. The employers of labour (81.5%) also indicated their satisfaction with the employability skills of 2000-2019 FCET Gusau graduates in the areas of writing of lesson plans, writing of lesson notes, improvisation and application of instructional resources, use of variety of instructional methods and overall professional behavior.

On the contrary, majority of the employers of labour were dissatisfied with the employability skills of graduates of Federal College of Education (Technical) Gusau in Zamfara State, Nigeria in (the areas) life skills and adaptation to environment (68%), Creativity and innovation (51%), Computer skills and application of ICTs (79%) and self-esteem (69%). This implied that there is the need for review and improvements in the training of teachers in these identified areas.

**Table 4:** The Training Gaps (Areas) that Require Improvements in NCE Curriculum (in Nigeria)

*F = Frequency		P = Percentage (%)		
S/N	Items	Adequate (A) F (%)	Needs Improvements (NI) F (%)	Remarks
1.	Teaching Profession	102 (74)	36 (26)	Adequate
2.	Lesson planning	113 (82)	25 (18)	Adequate
3.	Course Contents	61 (44)	77 (56)	NI
4.	Teaching Practice	44 (32)	94 (68)	NI
5.	Class Management	98 (71)	40 (29)	Adequate
6.	Evaluation	111 (80)	27 (20)	Adequate
7.	Methods of teaching	125 (91)	13 (9)	Adequate
8.	Students' self-development	97 (70)	41 (30)	Adequate
9.	Utilisation of instructional resources	105 (76)	33 (24)	Adequate
10.	Application of instructional resources	110 (80)	28 (20)	Adequate
11.	Life skills and adaptation to environment	35 (25)	103 (75)	NI
12	Creativity and innovation	47 (34)	91 (66)	NI
13	Computer skills and application of ICTs	52 (38)	86 (62)	NI
14	Provision of feed-back to students	116 (84)	22 (16)	Adequate
15	Development of Self-esteem	60 (43)	78 (57)	NI

**Source:** The Researchers (2024)

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Table 4 shows the training gaps (areas) that require improvements in NCE curriculum (in Nigeria) as perceived by employers of labour. The employers of labour of FCE(T) graduates in this study indicated that teaching profession, lesson planning, class management, and evaluation were adequate in the NCE curriculum. Not only this but also methods of teaching, students; self-development, utilization and application of instructional resources as well as provision of feedback to students were adequate. However, majority of the employers (58%; 68; 75%; 66%; and 62% respectively) perceived that course contents, teaching practice, life skills and adaptation to environment, creativity and innovation, computer skills and application of ICTs and development of self-esteem needed more reviews and improvements in the NCE curriculum.

## **Discussion**

The first purpose of this study is to examine the employment status of Graduates of Federal College of Education (Technical) Gusau Zamfara State, Nigeria from 2000 to 2019. The findings to this purpose revealed that 79.2% of the graduates traced in this study were employed and 81.5 of them are teaching. This implied that FCET Gusau has contributed positively to the national development through the training and production of pre-service teacher in Nigeria and beyond. This finding is in congruence with the assertion of Aljumah (2023) that learning institutions and have ability to provide students with employable skills.

The second purpose of this study was to examine the 2000-2019 graduates of Federal College of Education (Technical) Gusau level of satisfaction on the NCE programme they received in Nigeria. The findings to this purpose revealed that the graduates were satisfied with the training they received at FCET Gusau. The findings also revealed that the graduates' level of satisfaction was low in the area of life skills and adaptation to the environment.

The third purpose was raised to find out the level of satisfaction of employers of labour on the employability skills of 2000-2019 graduates of Federal College of Education (Technical) Gusau in Zamfara State, Nigeria. The finding to this purpose revealed that the employers of labour were satisfied with the 2000-2019 graduates of Federal College of Education (Technical) Gusau in Zamfara State in the areas of writing of lesson plans, writing of lesson notes, improvisation and application of instructional resources, use of variety of instructional methods and overall professional behavior. These findings are in congruence with the finding of Ogunniran (2021) that the teachers are considered to be the driving factor for academic curriculum delivery system, without which the materials, methods and assessment cannot be effective in producing graduates with employability skills. It was also revealed that employers of labour were dissatisfied with the graduates' employability skills in life skills and adaptation to environment, creativity and innovation, computer skills and application of ICTs and self-esteem. These findings corroborated with the affirmation of (Mainga Murphy-Braynen, Moxey, & Quddus., 2022) that factors contributing to misalignment between academic curricula and employment requirements may include failure of curriculum development specialists to keep pace with technology and data management innovation, paucity of pedagogical approaches to active learning (Mainga et al., 2022)

The fourth purpose of this study was to identify the training gaps (areas) that require improvements in NCE curriculum (in Nigeria). The findings to this indicated that course

contents, teaching practice, life skills and adaptation to environment, creativity and innovation, computer skills and application of ICTs and development of self-esteem need more review and improvements in the NCE curriculum. These findings supported the argument of Ogunniran (2021) that it is essential to consider the academic curriculum delivery system in producing employable graduates because, it is during this process that the adequacy of physical facilities and instructional materials, human assets, methods to adopt in teaching as well as assessment strategies are technically required in the production of employable graduates.

## **Conclusion**

This study carried out a tracer study of 2000-2019 graduates of Federal College of Education (Technical) Gusau Zamfara State, Nigeria. Based on the findings of this study, it is concluded that the 2000-2019 graduates of Federal College of Education (Technical) Gusau Zamfara State, across the North-west, Nigeria are performing optimally in the labour market. However, more emphasis is required on the need to review the NCE curriculum in the identified gaps in the areas like teaching practice, life skills and adaptation to environment, creativity and innovation, computer skills and application of ICTs and development of self-esteem among teacher trainees for better improvements in the profession. This study, therefore, established that Federal College of Education (Technical) Gusau Zamfara State, Nigeria has been an effective institution over the past years (2000-2019) in her core mandate of training and production of teachers (human capital) for national development. However, if the curriculum is reviewed to meet the changing demands of the labour market, it is hoped that FCET Gusau has greater capacities to train and produce better graduates that would meet the needs and specifications of contemporary competitive labour market.

## **Recommendations**

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

- I. This study found out that there were training gaps in course contents and teaching practice of teacher education programme, therefore, it is recommended that both general and specialized disciplines (teaching subjects) should be reviewed to produce more teachers that would meet the needs of employers of labour and the general society; thereby increasing the employability index of the institution;
- II. Teacher educators should put in more emphasis in the training of pre-service teachers on life skills and adaptation to environment. This would help the (graduates) to be able to adjust, adapt and contribute effectively any endeavor at any place they find themselves;
- III. Creativity and innovation, computer skills and application of ICTs are core, soft employability skills sought after by employers of labour in determining graduates' employability, therefore, FCET Gusau, other teacher training institutions and curriculum experts should extend pedagogical activities of pre-service teachers more actively (practically) in the acquisition of these sought after employability skills; and

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- IV. More training and motivation should be given to the pre-service teachers on development of self-esteem as an employability skill.

### **Practical Implications of the Study**

The practical implications of this study highlight the significance of proactive steps to ensure that teacher training programmes are aligned with changing needs of the labour market. By updating the curriculum, offering chances for skill enhancement opportunities, incorporating technology, encouraging hands-on learning, partnering with employers, and offering career support, teacher training institutions can better prepare graduates for success in their professional world of work.

### **Theoretical Implications of the Study**

The theoretical implications of this study underscore the importance of teacher training programmes to align with contemporary educational theories and pedagogical practices to effectively develop employability skills among graduates. By integrating theory-driven instructional approaches, fostering active learning environments, and leveraging technology-enhanced learning strategies, teacher training programmes can better prepare educators for success in their different professional careers.

### **Limitation of the Study**

The following are the limitations of this study:

- I. This study covered only 2000-2019 Graduates of Federal College of Education (Technical) Gusau Zamfara State, Nigeria.
- II. The graduates were traced to only the North-west, Nigeria (Kaduna, Kano, Katsina, Kebbi, Jigawa, Sokoto and Zamfara States).
- III. It was a quantitative study, descriptive in nature and used survey for the research design.
- IV. The graduates were examined irrespective of their areas of specialization

### **Suggestions for Further Studies**

The following are suggested (to future researchers, scholars and teacher educators) for further studies that:

- I. Further tracer studies be conducted to cover other sets of FCET Gusau graduates that were not covered in the scope of this study;
- II. Also, a tracer study of this nature be conducted in other teacher training institutions in Nigeria;
- III. More graduates of FCET Gusau can be traced to other parts of the geo-political zones of Nigeria (North-central, North-east, South-west, South-south and South-east);
- IV. Further studies can be conducted using qualitative approach

- V. Studies of this nature could be conducted to examine graduates' employability skills in a particular discipline among others.

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### **References**

- Aljumah, A. (2023). The impact of job training on recruitment and employability skills among graduates. *International Journal of Professional Business Review*. 8(10), 1-32.
- Anyanwu, G. A. (2000). Graduates' transition from study to employment: A study of the arts and agriculture graduates of university of Nigeria in the world of work. A study Report submitted to the Association of African Universities.
- Babalola, J. B. (2003). Budget preparation and expenditure control in education. In Babalola, J. B. (ed.). *Basic text in educational planning*. Ibadan: Awemark Industrial Printers.
- Becker, G. A. (1964). *Human capital: A theoretical and empirical analysis with special reference to education*. Columbia University. New York: National Bureau of Economic Research.
- Cosser, M. (2003). *Technical college responsiveness: learner destinations and labour market environments in South Africa*. Cape Town: HSRC Publishers.
- Kaijage, E.S. 2001. Knowledge and skills of b.com graduates of the faculty of commerce and management, university of Dar es Salaam in the job market. Published as Research Paper No. 8. AAU.
- Mainga, W., Murphy-Braynen, M. B., Moxey, R., & Quddus, S. A. (2022). Graduate employability of business students. *Administrative Sciences*, 12(3), 72-107. <https://doi.org/10.3390/admsci12030072>
- Ogunniran, O. O. (2021). Quality of academic curriculum and employability skills among university science graduates in the South-west, Nigeria. A Ph.D. Thesis Department of Educational Management, University of Ibadan, Nigeria.
- RUFORUM (2009). A study of agricultural graduates in Eastern, Southern and Central Africa: Demand, quality and job performance issues.
- Schomburg, H. (2016). Carrying out tracer studies: Guide to anticipating and matching skills and jobs. *European Centres for the Development of Vocational Training*. 6 (1), 17-18.
- Schomburg, H. & Teichler, U. (2011). *Employability and mobility of bachelor graduates in Europe*. New York: Springer

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<sup>3</sup>Solomon Akintola Adeniran

Schomburg, H. (2003). *Handbook for graduate tracer studies: Centre for research on higher education and work*, University of Kassel, Germany. Also available at: [http://www.qtafi.de/handbook\\_v2.pdf](http://www.qtafi.de/handbook_v2.pdf)

Schultz, T. W. (1963). *The economic value of education*. New York and London: Columbia University.

Ugbe, A. S. (2018). Employability Skills of Business Education Graduates of Colleges of Education in North-West Nigeria. *Research on Humanities and Social Sciences* 8(24), 1-5.



## SCHOOL SECURITY MANAGEMENT IN NIGERIA: BENEFITS, CHALLENGES AND WAY FORWARD

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### Abstract

*This paper argues that school security management has a lot of relevance on the overall academic success of students and thus, requires a significant priority by school management. This review examines some of the benefits of school security management as well as the challenges being encountered by school management officials in the process of ensuring school security. The paper after clarifying the key concepts, illustrates that the school facilities that need to be fully secured in the school include the school gate, school fence, classrooms, library and hostels. However, challenges such as lack of maintenance, lack of personnel training, inadequate funds, affect the smooth implementation of school security management. To get rid of these challenges, the paper suggests among other things that the government should make and implement good security policies at all levels of educational institutions in order to provide adequate security atmosphere for the schools to as to establish a secured and favourable climate for teaching and learning that could translate in boosting students' academic achievements.*

**Keywords:** School, Security, Management, Student, Academic, Achievement

### Introduction

The concept of school has been described as an educational organization that is made up of people whose common goal is to pursue teaching and learning for the transformation of younger generations to become functional members of their respective societies (Eziuzo, 2018). Secondary school on the other is an educational institution that provides secondary education to children following their successful completion of primary school before proceeding to higher level of education; it therefore, serves as a link between primary and tertiary education (Eziuzo 2018).

The term security signifies the state of being free from danger or threats; it is the activity involved in protecting an individual or a country from attack, danger, fear, and anxiety (Ike, 2015). Ike further states that the concept entails a stable, relatively predictable environment in which an individual or a group can pursue its goal without disruption or harm, and without fear of disturbance or injury. According to Thank God (2018), security can be defined as a condition of freedom from all forms of damage and injury. It means that human resources in the workplace enjoy a certain level of comfort while at work.

The term management has been described by Anyaogu (2021) as the study of human behavior in which managers plan, organize, direct, staff, and control the people, material, and financial resources of an organized group. Based on this viewpoint, management is all about getting things done through people of an organisation. The National policy on Education (2014), illustrates that though management could be viewed as a process by which an organized group directs attention towards the achievement of set organizational goals, the goals of secondary education which include: preparing individuals for useful living in the society and preparing them for higher education, these two goals on the other hand cannot be achieved in an unsecured environment. Therefore, a school environment that is marred by insecurity cannot realistically achieve these set goals of secondary education, it is therefore necessary that educational managers endeavor to put materials together towards ensuring a secure work environment. According to Ogbonna (2018), managers need to continuously manipulate the available resources at their disposal to ensure security of the school system.

The concept of school management can be defined as the process of organizing, planning, leading, reporting, budgeting, and controlling the effort of organization members and using all other available resources to achieve stated objectives (Ogbonna, 2018). The issues of Planning, arranging, and integrating human, financial, temporal, and material resources in a methodical manner to carry out the school programme in order to achieve pre-established learning goals and objectives is known as school management (Onwuchekwa & Onwuchekwa 2018).

School security management is a paramount aspect of an effective school management which has attracted a great deal of attention and concern from learners, educators, teachers, parents, and the public at large (Danatus & Udebunu, 2017). Students are seen as the most important members of educational institutions, as the schools exist primarily for their benefit, they are considered a crucial component of these institutions and are referred to as students because they are enrolled to learn, the school authorities enroll them to acquire knowledge and skills, and upon graduation, they receive a certificate that enables them to pursue further education (Mohammed, & Ogunode, 2022).

The Nigerian system has witnessed a huge amount of changes in the past decades, a quick analysis of the past five decades, reveals that insecurity was not a major issue in the country then, sadly, the past 13 years have witnessed unprecedented rise in insecurity plaguing the entire system and the education sector in particular (Ogunode & Kolo 2021). According to them, there were rampant cases of abduction of hundreds of students, killings of innocent students, and several attacks of armed bandits in the schools.

Therefore, principal been the head of the school that is usually appointed as a result of qualifications and seniority, it is his duty to oversee the proper running of the school in the implementation of educational programmes, provision of proper instruction of school community relation, discipline and proper keeping of school records, students' documentation, finances and creation for conducive learning atmosphere (Jude, & Okoli 2021). Principals as managers must therefore ensure that they are aware of security situations in their school, have a procedure to follow up on the security threats, and must enlighten students, staff and visitors of what steps to take during an emergency (Ukaigwe2018).

### ***Relevance of School Security Management on School Academic Success***

For any society or organization to survive, actualize their desire aims and objectives, security management in school played some important roles. These are expatiated as follows:

- I. The implementation of school security management policies enhances the achievement of secondary school goals. This is because, it sets clear security goals and objectives, ensures management commitment to continuously improve safety, brings about continuous improvement in security level, building upon existing security procedures, maintains minimum standard of security management, leads to continuity of organizational processes, and promotion of security consciousness amongst staff and students (Udenwa 2015).
- II. Safety risk management programmes can enhance the quality of the work environment in public schools when security policies are made in school, it helps to curb security threats (Chukwudi 2018).
- III. Prevents the infiltration of weapons and other unlawful equipment, reduced crime rate, violence etc. in schools can eventually reduce insurance claims, law suits, riots etc. and this saves cost.

### ***School Facilities to Be Secured for Achieving Academic Success in Schools***

For secondary school students to achieve their desires objectives the followings facilities need to be properly secured for the betterment of the school:

- I. School Gate. A school gate should be boldly and solidly constructed to withstand forceful entry. It should have a separate entry point and an exit point so that people can be checked when they are going in when they are coming out of school without obstructing traffic as in a one-way channel. The entry and exit gates should have strong bars with stop signs attached to force vehicles to stop for security checks. The gate should be well lit at night see all people coming in and going out of the school. A Security Room should be attached to the main gate to provide shelter to security staff at the gate even when it is raining. The security room should also serve as a store to keep weapons and other gadgets that may be required for security duties (Manga, 2019).
- II. School Fence. When an appropriate site is selected, it may be more appropriate to start the construction of school plant by erecting a formidable fence around the perimeter of the school. This will help to establish school boundaries from the start and as well as forestall future incursions into school land by members of the community. This will also help to avoid future boundary clashes between the school and the community with all the possible security implications (Chiaha & Mbanefo, 2013). Providing a strong school fence with only one entry and exit point located at the main gate will help to deter trespassers who would otherwise be passing through the school compound from different routes. A high solid wall with security spikes or barbed wiring or other sharp objects at the top will discourage those who might wish to jump or climb the school fence. Electrical fences with warning signs may also be considered.
- III. Classrooms. One of the sole objective for school is to provide a safe and secure learning environment for student and a safe work place for teacher several times, the demarcation between a tragedy and normal school day depends on how

teachers address security in their own classroom. This shows that what present a threat to classrooms are not necessarily the results of external attacks, this situation is not limited to secondary schools and colleges in Nigeria alone, but equally obtains in Africa and globally, several teaching materials may sometimes pose danger to the classrooms, students and teachers (Manga 2019).

- IV. **Library:** The school library is one of the basic ancillary services that should be provided in educational institutions. In every level of education, be it pre-primary, primary, secondary and tertiary, books appropriate to the age of students of such school should be provided (Asiegbu, 2014). The school library can be seen as a room or building in a school where books, magazines, journals, periodical, cassettes, films, filmstrips and projectors are stored for students use. In other words, it is a central laboratory of the whole school which stakes books in all subject areas, including non-book materials (Oboegbulem, in Asiegbu, 2014).
- V. **Hostels.** This is a cheap boarding accommodation facility provided for students (Stephen & Zotorvie, 2017). Hostel accommodation is conceived to keep students within the learning environment to facilitate ease of accessing the education facilities (Philip et al., 2018). According to Owolabi (2015), a study revealed that hostel accommodation enhances academic success, especially among the students of poor background as it blends this category of students with the brilliant ones, improve students social value through enhanced interactions, expose students to resource management, and prepared students for self-reliance and leadership resilience.

#### ***Challenges Associated with the School Facilities Security Management***

In spite of the fact that school security management and facilities are provided to enhance the students' academic achievement, still the following problems confront the process:

- I. **Lack of maintenance.** The principal, being the chief academic and administrative officer of the secondary school system in Nigeria, has the responsibility of not only planning school plant but also the maintenance, ensuring that the school environment is conducive for the teaching and learning process, most of them lack maintenance culture of the schools' facilities that will enhances the academic achievement for secondary school student (Ekpoh, 2018).
- II. **Lack of personnel training.** Training programmes for personnel such as workshops, conferences and seminars can lead to setback for the academic achievement for secondary school students.
- III. **Inadequate funds.** The success or failure of any school maintenance programme hinges on finance. In most cases, funding of facility maintenance is often given less attention by those whose responsibility it is to provide funds. The seriousness of this problem is acknowledged noted that, the costs of managing school facilities have historically received much less attention than facility planning. This serves as another setback to academic achievement for secondary school students (Lackney & Picus 2019).

## **Conclusion**

It is worth concluding that school security management is of much value in that the implementation of school security management policies could enhance the achievement of secondary school goals. Similarly, safety risk management programme can enhance the quality of the work environment in public schools when security policies are made in school, it helps to curb security threats. It was also established that security practices prevent the infiltration of weapons and other unlawful equipment, reduced crime rate, violence etc. In schools can eventually reduce insurance claims, law suits, riots etc. and this saves cost. The paper also highlighted the school facilities to be secured for academic achievement of secondary school students to include school gate, school fence, classrooms, library, hostels. However, challenges such as lack of maintenance, lack of personnel training, inadequate funds, affect the smooth implementation of school security management. If the recommendations are properly followed, the challenges could be overcome and much success could be recorded.

## **Suggestions/Recommendations**

Based on the identified challenges, the paper hereby recommends that:

- I. The school principals and teachers should be trained to acquire knowledge in school security management to enhance academic achievement for secondary school students.
- II. School facilities maintenance should be a joint responsibility of principals and teachers.
- III. The ministry of education should carefully consider the security of school when planning out a school site.
- IV. Government should make and implement good security policies at all levels of education.
- V. Regular in-service trainings on security management should be organized for teachers by the ministry of education.
- VI. Government should provide enough funds to manage school security problems.

## **References**

- Anyaogu S. (2021). Factors That Affect Students' Academic Achievement in the Faculty of Social Science at the University of Bosaso, Garowe, Somalia. *Open Journal of Social Sciences*, 11, 446-461.
- Asiegbu E.C. (2014). School plant maintenance, objectives chapters, Nnamdi Azikiwe University, Awka, <https://www.researchgate.net/publication/354076933>.
- Chiaha, G.T.U. & Mbanefo, M.C. (2013). Managing education for personal safety and security in Nigerian schools. In Ayeni, A.O; Emetrom, U.G; Abdulkareem, A.Y; Undie, J.A. & Okon, J.E. (Eds). *Managing Education for National Security*. NAEAP. Ibadan. His Lineage Publishing House.
- Chukwudi, J. (2018). Safety management for quality work environment of public primary schools in Abia State. An Unpublished Thesis of Abia State University, Uturu.
- Danatus N, & Udebunu I.M. (2017). Appraisal of security and safety management in public secondary schools in Enugu state Educational Foundations, Godfrey Okoye University, Enugu, Nigeria.
- Ekpoh U.I. (2018). School Plant maintenance culture and utilization. *International Journal of Social Sciences*, 3(2), 34-45.
- Eziuzo, G. O. (2016). *Secondary school administration and supervision*. SAGE.
- FGN (2014). *National policy on Education*. Lagos.
- Ike, A.O. (2015). Security management situations in public secondary schools in North Central Zone of Nigeria. An Unpublished Ph.D. Thesis, University of Nigeria, Nsukka.
- Jude, A.C., & Okoli J. (2021). *Principal Administrative Strategies and Teacher Job Performances in Secondary Schools in Onitsha North L.G.A.*
- Lackney, J. A., & Picus, L. O. (n.d.). School facilities- overview, Maintenance and modernization of. Retrieved from <http://education.stateuniversity.com/pages/2394/school-facilities.html>
- Manga, S.D. (2019). Safety and security considerations in school plant construction in West Africa: implications for research and development. *Educational Research International* Vol.8 (3) August 2019
- Mohammed, H. & Ogunode, N. J. (2022). Impact of Insecurity on Secondary School Administration in North-West-Geo-Political Zone, Nigeria. *International Journal on Integrated Education* .5(3), 20-32.
- Ogbonna, S. (2018). Effect of insecurity of school environment on the academic performance of secondary school students. *Academic Journal of Science*, 5(1) 138-151.
- Ogunode, N. J. & Kolo, F. (2021). Effects of Insecurity on Basic Education Administration in Northern Nigeria. *International Journal of Discoveries and innovation applied science* 1(7),1-8.

- Onwuchekwa D. & Onwuchekwa J. (2018). Management of school security for academic achievement of secondary school students in Rivers state. *International Journal of Research in Education and Sustainable Development*, 3(2), 45-54.
- Owolabi, B.O. (2015). The Effects of Students' Housing on Academic Performance at the University of Ibadan in Nigerian. *International Journal of Scientific & Engineering Research*. 6(3), 1118-1132.
- Philip., S. L., Steinmayr, R., Meiner, A., & Weideinger, A. F. (2018). School Security and Academic Achievement. *Technische Universitat Dortmund*.
- Stephen, J., & Zotorvie, T. (2017). Students's Accommodation and Academic Performance: The Case of Ho Technical University, Ghana. *European Scientific Journal*, 13(13), 290–302. <https://doi.org/10.19044/esj.2017.v13n13p290>
- Thank God, B. (2018). Management of school facilities for academic achievement in Government secondary schools in Abia State. *International Journal of Science Education*, 5(6) 23-3 8.
- Udenwa, A. (2015). Assessment of challenges inhibiting safety management in secondary schools in Rivers state. An unpublished thesis of University of Port Harcourt.
- Ukaigwe, G. (2018). Roles of Security Management in School. *Journal of School Management*, 8(2), 121-131.

## EFFECT OF RUSBULT'S PROBLEM SOLVING MODEL ON UPPER BASIC SCHOOL STUDENTS' ACHIEVEMENT AND RETENTION IN TRIGONOMETRY IN NASARAWA WEST SENATORIAL ZONE, NIGERIA

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### Abstract

*The study investigated the Effect of Rusbult's Problem Solving Model on Upper Basic School Students' Achievement and Retention in Trigonometry. two research questions guided the study and two research hypotheses were formulated and tested at 0.05 level of significance. The design for the study was quasi-experimental design (non-equivalent pre-test, posttest, post posttest, control design). Trigonometry Achievement Test (TAT) was used for data collection, which had internal reliability coefficient of 0.91 and validity index of 0.91. The Trigonometry Retention Test (TRT) was the same in content but differs in structure with the achievement test. Purposive sampling technique was used to select a sample size of 108 students. For the study, two classes were randomly chosen from the coeducational schools owned by the government, and both classes remained intact. Data collected from the subjects were analyzed using mean, standard deviation and analysis of covariance (ANCOVA). The results from the analysis indicated that Rusbult's Problem Solving Model enhanced students' achievement and retention in Trigonometry. It was recommended among others that, students should be taught Trigonometry using Rusbult's Problem Solving Model so as to improve their achievement and retention.*

**Keywords:** Rusbult's Problem solving model, Achievement, Retention, Trigonometry, Upper Basic School

### Introduction

Mathematics is a crucial subject that plays a vital role in everyday life due to its relevance to the individual and its interrelationship with other fields of studies. Wherever an individual finds himself in the society, he makes use of the knowledge of Mathematics either knowingly or unknowingly. Mathematics, according to Merriam-webster Dictionary, is the science of numbers and their operations, interrelations, combinations, generalizations and abstractions, as well as their space configurations and structure, measurement, transformations and generalizations. To Simeon and Francis (2012); Tukur and Adesina (2013), Mathematics is the queen of science and technology and also a tool for scientific and technological development. According to (Suleiman & Hammed 2019), without the study of mathematics, a country will never be rich or economically independent because science and technology rely on it for their basis. The technology driven society cannot thrive successfully without Mathematics. In the view of Obarakpo (2015), for any nation to survive and develop, it has to improve on the teaching and



learning of Mathematics; a subject that has become the bedrock of any technological development.

Because of the importance of Mathematics in building a technology driven society and developing individuals thinking ability, the Federal Government of Nigeria (2014) has identified Mathematics as a core subject at both primary and secondary schools in Nigeria. Also, Mathematics is made a compulsory subject to be passed at credit level before securing admission to study any course in Nigerian Tertiary Institutions.

One of the important aspects of Mathematics is Trigonometry, a fundamental branch of mathematics that plays a crucial role in various fields, including engineering, physics, and astronomy (Bekene & Machaba, 2022). Trigonometry is a branch of school mathematics that has everyday application in the life of the child especially in estimation, construction technology and astronomical relationship (Sidhu, 2006). It is the aspect of school mathematics involving the measurement of distance, angles, lines, relationship and surfaces. Trigonometry enables the child to use the knowledge of mathematics in latitude and longitude, when he eventually becomes a pilot, sailor or navigator to locate position of landing (Chire & Akewn, 2010). The knowledge of trigonometry assists students to appreciate shapes and situations around their environment and helps to develop their inductive reasoning skills that become necessary ingredient for learning mathematics. The introductory aspect of Trigonometry at the basic secondary school level focuses on angles between lines, calculation of sizes of angles, angles in a triangle, Pythagoras theorem, bearing and angles of elevation and depression. The concept of Trigonometry is formally introduced in year three of the Upper Basic School in the Nigerian education curriculum where attention is focused on trigonometric ratios; the sine, cosine, tangent, use of trigonometric tables and application of trigonometric ratios. (Federal Ministry of education 9-year Basic Education Curriculum 2017). As the learners advance in Trigonometry, it becomes more of analysis and reasoning which help students to develop the skills of critical thinking, problem solving ability, deductive reasoning, logical argument and proof. Therefore, if students' foundation is well laid to have a clear understanding of the basic concepts in trigonometry at this level, it will go a long way to improving their performance in Trigonometry in particular and Mathematics in general, thereby enhancing their high achievement in the subject.

Despite the importance of Trigonometry, many students find it challenging due to its abstract concepts and complex formulas (Abdullahi, 2022). According to WAEC Chief examiner's report (2017), question on Trigonometry was poorly answered by most candidates because they could not analyze and deduce from the given diagram the correct trigonometric ratios to find the value of  $x$ . in order to unravel the mystery behind the poor achievement in the subject, Obarakpo (2015) opined that most teachers adopt the conventional approach to teaching which is the traditional approach to teaching whereby the teacher disseminates the information verbally to the students. Sometimes, the teacher writes on the chalkboard while the students listen, take notes and ask questions for clarification. He stated that, in the conventional approach, the teacher is in charge of the entire environment and serves as the decision maker.

To address the limitations of the conventional approach and its effects on poor performance of students in trigonometry, efforts have been made by researchers towards improving on students' achievement in Mathematics in general and Trigonometry in particular; especially at the secondary school level. (Egara & Mosimege 2023) posited that problem solving based strategy will lead to a significant improvement in students'

academic achievement in trigonometry and thus recommended that these be taught in our classrooms. According to Nekang (2013), problem solving in any academic area involves presenting a situation that requires resolution to the learner in instruction session in the classroom. Nekang said that, being a problem solver requires an ability to come out with means to resolve the situation fully. He added that in Mathematics, problem solving generally involves presenting a written out problem in which the learner has to interpret, devise a method to solve it, follow Mathematics procedures to achieve the result and then analyze the result to see if it is an acceptable solution to the problem presented.

Problem solving models in Mathematics have been developed by many researchers some of which include: Polya, 1957; Guilford and Holfiner, 1971; Newell and Simpsons, 1972; Greeno, 1973; Brandsford and Stein, 1984; Schoenfeld, 1985 and Rusbult, 1989.

On his part, Rusbult (1989) developed a four-step problem solving model. The four steps are as follows:

- I. Orientation: translating problem's words, pictures and free information into a clear idea of NOW (the situation that is defined by the problem statement) and the GOAL (what the problem is asking you to do)
- II. Planning: figuring out how to get from where you are NOW to the GOAL
- III. Action: start doing your plan, and continue until you have reached the GOAL.
- IV. Check: ask yourself, "Have I answered the questions that were asked?" "Have I reached the GOAL?"

To ascertain the effectiveness of problem solving methods on students achievement, (Egara & Mosimege 2023) employed a non-equivalent control group pre-test-post-test quasi-experimental design to examined the effect of blended learning approach on secondary school learners Mathematics achievement with a sample size of 94 SS1 students in the Uzo-Uwani Local Government Area (LGA) of Enugu State. The data was analysed using mean (M) and standard deviation (SD), and the hypotheses were tested using analysis of covariance (ANCOVA) at a significance level of 0.05. Findings showed that learners tutored mathematics utilising blended learning improved their mathematics achievement. In another study, (Abiodun, Aderibigbe, Adebola & Ayoola 2024) Investigated the effects of heuristic problem solving strategies on students achievement and retention in mathematics in Ogun State using quasi experimental design with a sample size of 80 students. Data was analysed using independent t test. Results revealed that students in the experimental group achieved better than those in the control group. (Sualimon, Yusuf, Yakub, Isiaka & Syarif 2023) in their study investigated the effect of problem-solving method on pupils' academic achievement in mathematics in Ilorin South local government area of Kwara State. The study adopted a quasi-experimental design. The sample of the study consisted of 75 basic five (5) pupils. Data collected for the study were statistically analysed using mean and ANCOVA statistical tool. The results of the study revealed that problem-solving method had significant effects on the academic achievement of pupils in mathematics. Those taught using the problem-solving method (the experimental group) outscored those in the control group.

Another variable considered in this study is Retention. According to Hornby (2000), retention is the ability to remember experiences and things learnt after a period of time. This implies that the amount of knowledge or skills learnt, kept, maintained and

reproduced after a period of time reflects what is retained (Obarakpo,2015). According to (Onyeka, Eze & Okonkwo 2023), students who were exposed to a problem based strategy had a higher retention in Mathematics. In another study, (Egara & Mosimege 2023) examined the effect of blended learning approach on secondary school learners Mathematics achievement and retention. Results revealed that learners tutored using blended learning improved their retention scores more than those exposed to the conventional teaching method.

From the above-reviewed studies, what is evident is that problem-solving is a viable approach for enhancing students' academic achievement. However, what is not known is the effect of Rusbult problem solving model on Upper Basic School Students Achievement and Retention in Trigonometry in Nasarawa West Senatorial Zone, Nigeria. Therefore, the researcher investigated to find answers to that effect.

### **Research Questions**

The study was guided by the following research questions

- I. What are the mean achievement scores of students taught trigonometry using Rusbult Problem Solving Model (RPSM) and those taught using Conventional Lecture Teaching Method (CTM)?
- II. What are the mean retention scores of students taught Trigonometry using RPSM and those taught using CTM?

### **Hypotheses**

The following null hypotheses (Ho) were formulated to guide the study and were tested at 0.05 level of significance.

Ho<sub>1</sub>: There is no significant difference in the mean achievement scores of students taught Trigonometry using RPSM and those taught using CTM.

Ho<sub>2</sub>: There is no significant difference in the mean retention scores of students taught Trigonometry using RPSM and those taught using CTM.

### **Methodology**

The design used for this study was the quasi-experimental design (non-equivalent pretest, posttest, post posttest, control group design).

The Sample of the study comprised 108 students purposively drawn from two upper basic schools in Nasarawa West Senatorial Zone. Two schools were selected using simple random sampling techniques, of the two schools one was assigned experimental group and the other control group using lucky dip method. Data was collected using Trigonometry Achievement Test (TAT) which was developed by the researcher. The TAT was used for pretest and posttest. In order to determine retention, Trigonometry Retention Test (TRT) which comprised of the reshuffled items of the TAT was used. The TAT consisted of 27 multiple choice objective questions with options (A-D) developed by the researcher, derived from the topics on Trigonometry in upper basic three scheme of work. TAT items were adapted from recommended text books (MAN Mathematics and New General Mathematics Text books)

TRT was obtained by rearranging the items of the TAT. Hence both the TAT and TRT were alike in content but different in structure. The TAT was validated by three specialists, one in Measurement and Evaluation and two in Mathematics Education. The validity index was computed by taking the average of the index by various experts which yielded 0.91 coefficient of internal consistency. The reliability coefficient of TAT was determined using rank correlation and Spearman Brown’s formula method. The internal consistency index was found to be 0.91. The data collected from the pretest, posttest and retention test were analyzed using mean and standard deviation to provide answers to the research questions while the hypotheses were tested at 0.05 significant level using Analysis of covariance (ANCOVA).

## Results

**Research Question one:** What are the mean achievement scores of students taught Trigonometry using Rusbult Problem Solving Model (RPSM) and those taught using conventional lecture method (CTM)?

**Table 1:** Means and Standard Deviations (SD) of Students in TAT

Teaching method	Type of Test	N	Mean	SD
RPSM	Pre TAT	50	7.72	<b>2.61</b>
	Post TAT	50	18.68	<b>2.29</b>
CTM	Pre TAT	58	7.42	<b>2.64</b>
	Post TAT	58	10.53	<b>2.29</b>
Total		108		

Table 1 shows that the students taught Trigonometry using RPSM had mean score of 7.72 and 18.68 in pre-test and posttest respectively and standard deviations of 2.61 and 2.29 in that order. The students taught Trigonometry in the control group had mean scores of 7.42 and 10.53 in pre-test and posttest respectively and standard deviations 2.64 and 2.29 respectively.

**Research Hypothesis One (H<sub>01</sub>):** There is no significant difference in the mean achievement scores of students taught trigonometry using RPSM and those taught using CTM.

**Table 2:** ANCOVA Result of Mean Achievement Scores of Students Taught Trigonometry Using RPSM and CTM  
Computed at alpha = 0.05

Table 2 shows that the exact probability,  $p = 0.00$  which is less than  $\alpha = 0.05$  level of

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Decision
Corrected Model	1891.839 <sup>a</sup>	4	472.960	109.452	.000	S
Intercept	1686.037	1	1686.037	390.183	.000	S
Pre TAT	67.762	1	67.762	15.682	.000	S
Groups	1736.216	1	1736.216	401.795	.000	S
Error	445.078	103	4.321			
Total	24439.000	108				
Corrected Total	2336.917	107				

significance ( $p < 0.05$ ), i.e ( $F_{(1,103)} = 401.795$ ;  $p = 0.00 < \alpha = 0.05$ ). This implies that the treatment (RPSM) is a significant factor on student's achievement in Trigonometry. Hence the hypothesis of no significant difference is rejected. This implies that there was a significant difference in the mean achievement scores in favour of the students exposed to RPSM

**Research Question Two:** What are the mean retention scores of students taught Trigonometry using RPSM and CTM?

**Table 3:** Means and Standard Deviations (SD) of Students in TRT

Teaching Method	Type of Test	N	Mean	SD
RPSM	Post TAT	50	18.68	2.29
	Retention test	50	18.92	3.00
CTM	Post TAT	58	10.53	2.29
	Retention test	58	10.10	2.08
Total		108		

Table 3 shows that students taught Trigonometry using RPSM had mean score of 18.68 and 18.92 in posttest and retention test respectively and standard deviations of 2.29 and 3.00 in that order. While students taught Trigonometry using CTM had mean scores of 10.53 and 10.10 in posttest and retention test respectively, with standard deviations of 2.29 and 2.08 in that same order.

**Research Hypothesis Two (Ho2):** There is no significant difference in the mean retention scores of students taught trigonometry using RPSM and those taught using CTM

**Table 4:** ANCOVA Result of Mean Retention Scores of Students Taught Trigonometry

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Decision
Corrected Model	2277.058 <sup>a</sup>	4	569.264	117.447	.000	<b>S</b>
Intercept	104.796	1	104.796	21.621	.000	<b>S</b>
Posttest	147.704	1	147.704	30.474	.000	<b>S</b>
Groups	120.711	1	120.711	24.904	.000	<b>S</b>
Error	499.239	103	4.847			
Total	24508.000	108				
Corrected Total	2776.296	107				

Using RPSM and CTM

Computed at alpha = 0.05

Table 4 indicates that the exact probability,  $p = 0.00$  is less than  $\alpha = 0.05$  ( $p < 0.05$ ), i.e. ( $F_{(1,103)} = 24.904$ ;  $p = 0.00 < \alpha = 0.05$ ) implying that the treatment (RPSM) is a significant factor on students' retention in Trigonometry. Therefore, the hypothesis of no significant difference is rejected. This means that there was a significant difference in the mean retention scores in favour of subjects exposed to RPSM.

### Discussion

The findings of this study have shown that Rusbult problem solving model is effective in enhancing students' achievement in trigonometry compared to the conventional method. Moreover, the test of hypothesis one proved that a significant difference exists between the achievement scores of students who received trigonometry instruction using Rusbult problem solving model than those who were taught with the conventional approach, in favour of those who received trigonometry instruction with Rusbult problem solving model. This implies that the Rusbult problem solving model effectively enhances students' achievement in the mathematics concept. It shows that students in the experimental group achieved higher than those in the control group because they had mastery of the topics taught as a result of the method used in teaching them. This finding agrees with the findings of (Egara & Mosimege 2023; Abiodun, Aderibigbe, Adebola & Ayoola 2024 and Sualimon, Yusuf, Yakub, Isiaka & Syarif 2023) who showed that problem solving method of teaching positively affected the students' performance in Mathematics. Furthermore, the result showed that the mean retention scores of students in the experimental group were significantly above those in the control group. Thereby agreeing with the findings of (Onyeka, Eze & Okonkwo 2023 and Egara & Mosimege 2023 ). The ANCOVA result showed that there was a significant difference in the achievement and retention of students taught Trigonometry using RPSM. This implies that teaching Trigonometry using RPSM improved students' achievement and retention.

This study proves that the problem-solving Model has more positive effect on students' achievement in mathematics than the conventional lecture method. Overall, the results obtained from this study agree with the general expectation of Mathematics educators that activity-oriented teaching strategies which center on the learner are more educationally rewarding than the conventional lecture method which is teacher-centered.

## **Conclusion**

Using Rusbult problem solving model significantly improved students' achievement in trigonometry more than the conventional approach. This was observed in the mean achievement score of students in the experimental group being higher than that of students in the control group. The results obtained from this study agree with the general expectation of Mathematics educators that activity-oriented teaching strategies which are students-centered are more educationally rewarding than the conventional lecture method which is more of teacher-centered. It is therefore, imperative for a better students' academic achievement in trigonometry because, it is a fundamental branch of mathematics that plays a crucial role in various fields, including engineering, physics, and astronomy.

## **Recommendations**

Considering the findings from the study, the following recommendations were made:

- I. Mathematics teachers at the secondary school level should be encouraged to use RPSM for teaching their students Trigonometric concepts in Mathematics.
- II. Curriculum planners should include RPSM as one of the recommended strategies for teaching Trigonometry.
- III. Mathematics educators, Federal and State ministries of education, and teacher training institutions should train and organize workshops to expose pre-service Mathematics teachers on the use of RPSM in teaching Trigonometry and Mathematics in general.

## **References**

- Abdullahi U. (2022). Effect Of Emotional Intelligence On Performance And Retention In Trigonometry Among Senior Secondary School Students in Katsina State, Nigeria
- Abiodun, T. O., Aderibigbe, O.O., Adebola, I. S. & Ayoola, A. A. (2024). Effect of Heuristic Problem-Solving Strategies on students Achievement and Retention in Mathematics in Ogun State Nigeria. *Journal of Science and Mathematics Letters*, 12(1).
- Bekene, T. B & Machaba, F (2022). The Effect of GeoGebra on STEM Students Learning Trigonometric Functions. *Cogent Education* 9(1).  
<https://doi.org/10.1080/2331186X.2022.2034240>.
- Brandsford, J. & Stein, B (1984). *The ideal problem solver: A Guide for Improving Thinking, Learning and Creativity*. New York: W.H. Freeman and Company.

- Chire, S.T.C. & Akem, J., A. (2010). Mathematics for Everyday Living: Implication for Tertiary Education. *CAPS Journal of Multidisciplinary 1(1)*, 222-228.
- Egara, F. O. & Mosimege, M. (2024). Effect of blended learning approach on secondary school learners' mathematics achievement and retention. *Education and Information Technologies* <https://doi.org/10.1007/s10639-024-12651-w>
- Federal Republic of Nigeria (2014). *National Policy on Education*. Lagos.
- Greeno, J.G. (1973). The structure of memory and process of solving problem. *Technical Report, 37 University of Michigan, Human Performance Centre. Ann Arbor, Michigan*.
- Hornby, A.S. (2000). *Oxford Advanced Learners Dictionary*. Oxford University Press.
- Masha, A. , Ali, I. & Abbas, M.(2023). Impact Of Students Team Achievement Division Strategy On Academic Achievement In Trigonometry Among Senior Secondary Schools, Maiduguri Metropolis Borno State. *African Journal of Educational Management, Teaching and Entrepreneurship Studies 10 (1)*,325-336
- Mathematical Association of Nigeria (2006). *MAN Mathematics for Junior Secondary School Book 3*. Merriam-Webster Dictionary. A Mobile Product.
- Nekang, F.N. (2013). Effect of Rusbult's Problem Solving Strategy on Secondary school students' achievement in trigonometry classroom. *Journal of mathematics Education, 6(1)*,38-55.
- Obarakpo, J.S. (2015). Effect of two problem solving models on senior secondary school students achievement interest and retention in geometry in Keffi Education Zone, Nasarawa State, Nigeria. *An unpublished PhD thesis, Nasarawa State University, Keffi*.
- Onyeka, E. C., Eze, F. B. & Okonkwo, O. K. (2023). Upgrading Students' Academic Retention In Mathematics Using Demonstration Teaching Method In Rivers State Nigeria. *Advance Journal of Education and Social Sciences*,8(3)
- Rusbult, C. (1989). *Mathematical Problem Solving*. Princeton, NJ: University Press. Schoenfeld, A.H. (1985). *Mathematical Problem Solving*. Orlando, FL: Academic Press Inc.
- Sidhu, K.S. (2006). *The Teaching of Mathematics*. New Delhi: Starling Publishers Private Ltd.
- Simeon, U. E & Francis, O. U. (2012). The Role of Mathematical Graph Board in the Teaching and Learning of Mathematics in Senior Secondary Schools in Delta State. *Proceedings of the Annual National Conference of the Mathematical Association of Nigeria*. 222-229.
- Sualimon, J. T., Yusuf, M.O. Yakub, K. I. Isiaka, A. T. & Syarif, M. I (2023). Effect of Problem-Solving Method on Pupils' Academic Achievement in Mathematics. *Journal of Primary Education, Vol. xx, No. xx, Bulan Tahun, xxx – xxx*



- Suleiman, Y. and Hammed,A. (2019). Perceived causes of students ' failure in mathematics in Kwara State Junior Secondary Schools : Implication for Educational Managers, *Int. J. Educ. Stud. Math.*, vol. 6, no. 1, pp. 19–33, 2019.
- Tukur, M.Y. &Adesina, A.G. (2013). Factors influencing effective learning of Mathematics at senior secondary schools within Gombe Metropolis. *Journal of Education and Practice*, 4(25), 61-66.
- WAEC (2017). West African Senior School Certificate Examination. Chief Examiner's Report, May/June. Lagos.

## **PROMOTING THE PARTICIPATION OF WOMEN IN TRADES CONTROLLED BY MEN IN NIGERIA: AN INVESTIGATIVE MIXED METHOD APPROACH**

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### **Abstract**

*This research uses a mixed-method approach to examine the involvement of women in trades that have historically been dominated by males in Nigeria. The quantitative study demonstrates a notable rise in the percentage of women working in certain trade vocations from 2013-2018 to 2019-2024. Qualitative evidence reveals enduring obstacles that impede female participation, including gender stereotypes, insufficient understanding of trades, intimidation, and harassment. Suggested strategies to tackle these difficulties include questioning gender stereotypes, advocating for vocational training, combating harassment, adopting structural changes, and creating cooperation. This study underscores the necessity of comprehensive and inclusive initiatives in various industries to encourage women's participation in traditionally male-dominated trades. These efforts aim to provide equal chances for people regardless of their gender. Additional research and cooperative efforts are necessary to promote significant advancements in gender diversity and inclusion within Nigeria's trades.*

**Keywords:** Male-dominated trades; Vocational education and training; Participation; Traditional occupations; Women in trades

### **Introduction**

In several emerging and developed countries, the sectors of construction, electro-technology, manufacturing, and automobile industries, together with their related trades, are predominantly occupied by male professionals who hold trade qualifications (Bridges et al., 2020). Male-dominated trades in Nigeria refer to sectors or professions where there is a significant disparity in gender representation, with a higher number of men compared to women in terms of participation or employment. The 2021 report from the National Bureau of Statistics (NBS) revealed that women constituted around 21% of the Nigerian workforce. Unfortunately, I lack access to current or updated information. Kindly be aware that the figures might have been altered since the most recent data was given.

These trades are often defined by jobs that have historically been linked to masculinity or are viewed as physically challenging or needing technical abilities usually associated with males. Male-dominated trades in Nigeria include welding, carpentry, auto mechanics, plumbing, electrical work, building, and certain agricultural operations. Women in various domains may have obstacles to participation as a result of cultural, sociological, or institutional elements, resulting in their lower representation relative to males. Efforts

to advance gender equality and foster diversity in these industries often concentrate on tackling obstacles and generating avenues for women to engage and excel in areas previously dominated by males.

Despite the unwavering endeavours of feminist advocates, researchers, and unionists, the gender disparity in trades predominantly occupied by males continues to exist, and this occurrence is witnessed on a global scale. The lack of routine disaggregation and public reporting of vocational education and training (VET) enrolment and trade composition data by gender in Nigeria makes it difficult to accurately measure the degree of female involvement in VET and trades. Performing a thorough analysis of this data requires focused research endeavours (Akinkunle & Ajala, 2018). Despite the challenges in data reporting and gathering, current research and evidence consistently demonstrate significantly low level of female involvement in male-dominated trades across multiple countries.

The assertion is consistent with current global trends (Blau et al, 2013). Current research shows that VET courses, which are the main route to male-dominated trade apprenticeships and traineeships, have a notable gender disparity, with predominantly male enrolment (Wang, 2022). The incorporation of Vocational Education and Training (VET) in schools, which involves nationally accredited VET programs enabling students to meet their secondary school requirements, also demonstrates significant gender gaps in representation. In Nigeria, there has been a noticeable increase in the difference in the number of male and female students enrolling in vocational education and training (VET) programmes in schools over the past ten years. This tendency is supported by a significant disparity of 879,000 additional male students enrolled compared to their female counterparts (National Board for Technical Education, 2012). Per Ojelabi and Nnebue (2022), revealed that a significant proportion of students participating in vocational education and training (VET) courses in schools do not ultimately choose to follow trade vocations as their career paths. However, research has demonstrated that males are over six times more inclined than females to pursue careers in the trades.

There is a significant concern regarding the reduced social status, relatively low rates of participation and completion, and a general lack of understanding of trades and vocational education and training (VET) in Nigeria (Metu et al., 2022). Young individuals are often expected by society to pursue career options that are seen to have higher social standing, typically achieved through receiving a university education (Sikora & Pokropek, 2012). Broy (2017) noted that there is a high occurrence of misconceptions and a perceived inferior reputation linked to vocational education and training (VET) and trades. Moreover, there is a worrisome pattern of declining enrolments in European nations. Forsblom et al. (2016) reported a decrease in the involvement of upper secondary school students in vocational education and training (VET) systems in Switzerland, Germany, Austria, Denmark, and Norway. Historically, these countries have consistently upheld substantial levels of student engagement in vocational education and training (VET), spanning from 30 to 70 percent.

Struthers (2016) found that male-dominated occupations generally have greater earnings than female-dominated trades. These trades, which are predominantly occupied by men, have the potential to offer women more economic stability. Women are increasingly breaking through obstacles to enter sectors that have traditionally been dominated by men, such as law, medicine, accountancy, and managerial responsibilities (Blau et al., 2013). Nevertheless, this advancement is not evident in manual labour occupations,

especially in skilled trades (Blau et al., 2013). Current research regularly shows that long-standing gender stereotypes and other societal, industrial, and economic barriers hinder women's involvement in VET courses that primarily serve male students and result in trade-related certifications (Obinna & Muntaka, 2022). Unless young women themselves recognize the restricted participation of girls in male-dominated trades as a problem, it is unlikely that substantial improvements will take place. Ten years ago, a substantial research study done in the UK investigated the efficacy of measures targeting barriers to non-traditional apprenticeships. The study's findings revealed that these tactics had proven ineffective in surmounting these obstacles. Furthermore, it was revealed that young persons displayed no hesitation regarding the division of trades (Fuller, et al., 2005).

### **Statement of the Problem**

Despite recent notable progress in gender equality, women's participation in traditionally male-dominated trades remains significantly limited in Nigeria. Trades such as construction, car repair, electrical work, and other technical occupations remain mostly male, indicating the presence of entrenched cultural, social, and economic obstacles that impede women's participation and progress in these industries. This gender discrepancy not only hampers the economic capacity of women but also promotes gender stereotypes and perpetuates inequality in the workforce. The underrepresentation of women in various areas is a multifaceted problem. At first, it prevents the economy from taking advantage of a diverse workforce that may bring in different perspectives and skills, which are essential for promoting innovation and growth.

Furthermore, it restricts women's economic prospects and exacerbates the disparity in salaries between genders, since these professions often provide better remuneration in comparison to sectors mostly occupied by women. Moreover, the lack of female role models and mentors in these sectors perpetuates the pattern of limited female involvement. Several obstacles hinder efforts to promote women's involvement in trades predominantly controlled by men. Societal standards and cultural beliefs regarding gender roles sometimes discourage women from pursuing jobs in these fields. In addition, educational and training institutions may lack the necessary resources or motivation to provide assistance for women pursuing careers in these industries. Moreover, women who want to pursue careers in these professions often face workplace prejudice, a dearth of support, and insufficient prospects for professional progression.

Considering these obstacles, it is imperative to examine the root reasons and devise efficient tactics to foster the integration of women in trades that are mostly male-dominated. The aim of this research is to use a mixed-methods approach to investigate the obstacles and factors that enable women to engage in various trades in Nigeria. This study aims to gain a full understanding of the issues involved by integrating quantitative data to assess the extent and magnitude of the problem, along with qualitative insights into individual experiences and institutional practices. The results will provide insights for policy suggestions and activities aimed at improving gender diversity in the workforce, therefore promoting a fair and inclusive society.

This study is guided by three key objectives, which are addressed through three corresponding research questions that drive the investigation and analysis. These objectives and research questions serve as the foundation for the study, providing a clear direction and focus for the research.

### **Objectives**

The present study sought to investigate the following research objectives:

- I. To determine the level of gender segregation in Nigerian agricultural education, focusing on VET programs and male-dominated occupations.
- II. To identify the factors underlying low female participation in male-dominated agricultural trades.
- III. To develop strategies to increase female participation in traditionally male-dominated agricultural trades through enhanced education and training initiatives.

### **Research Questions**

- I. To what extent is agricultural education in Nigeria segregated along gender lines, particularly in vocational education and training (VET) programs and occupations traditionally dominated by men?
- II. What are the underlying reasons for the limited participation of female students in agricultural trades dominated by males?
- III. How can agricultural education and training initiatives be enhanced to promote greater participation of women in traditionally male-dominated trades within Nigeria's agricultural sector?

### **Methodology**

This study specifically examined two areas of exploration that have been developed from the research. It investigates the process of gathering quantitative data, which seeks to determine the extent of gender segregation in trades and vocational education and training (VET) courses. Furthermore, it employs a discerning approach to examine qualitative data in order to identify the most significant concerns related to the VET sector. The College of Education Hong, Human Research Ethics Committee approved the research as ethical. Professor Iliyasu Audu and the Student Research Project Panel of the vocational education department assisted in the creation of the survey.

#### ***Quantitative Data Collection***

An examination was carried out to determine the extent of gender segregation in the trades sector in Nigeria. This involved analyzing the data on the composition of the labour force in trades from 2015 to 2024, which was provided by the Nigerian Bureau of Statistics (NBS). Additionally, data sets on vocational education courses from the National Centre for Vocational Education Research (NCVER) were also examined. Because the data sources did not regularly separate enrollment and completion data based on variables like gender or cultural background, the gender data reporting had to be manually excluded. The selected sectors for examination were electro-technology, automotive, mining, manufacturing, and construction, which are primarily characterized

by a male-dominated workforce. The lack of thorough and frequent gender-specific breakdowns in trades and trade course data presents fundamental difficulties. The main purpose of this phenomenon is to obscure rather than expose the presence of inequalities in society.

### ***Qualitative Data Collection***

An array of focus group interviews, with a duration of one hour each, were conducted with a representative sample of 45 senior secondary school students aged 14 to 18. The interviews were conducted at four distinct schools situated in the North East Region of Nigeria. The professors sent invites to both female and male students to participate in the event. To provide supplementary viewpoints and contextual information, a set of individual interviews were carried out with 10 VET instructors from technical colleges in the research region. In addition, we interviewed six career advisers, each representing a different state in the region, to get their insights on the challenges and opportunities for women in male-dominated trades.

The interview schedules were designed to specifically gather participants' views on the factors contributing to the underrepresentation of female students in trade courses and occupations that have historically been male-dominated. In addition, the schedules were designed to investigate the attitudes of female students towards trades, their degree of apprehension over the limited female involvement, and possible strategies that might be used to increase female representation in trades that are predominantly male-dominated. The narrative data underwent thematic analysis to identify both common and distinct topics. This article is an examination of four topics that have been selected from the qualitative analysis. The criteria for selection are chosen based on their capacity to effectively tackle both the root reasons and possible remedies for the underrepresentation of women in male-dominated trades. Moreover, these elements are considered relevant to the VET industry.

## **Results**

### ***Quantitative Data***

Table 1 presents data on the number of women involved in certain trade vocations in Nigeria for two separate time periods: 2011-2015 and 2016-2021. The figures are shown as a ratio relative to the total workforce in each profession. Overall, there has been a significant increase in the proportion of women employed in all three selected trade professions between the prior period (2011-2015) and the succeeding period (2016-2021). Notably, there has been a significant increase in the representation of women in every trade profession within the total workforce in recent times.

**Table 1: Females Employed in Selected Trade Occupations**

Occupation	2013 - 2018		2019 - 2024	
	No. of Females	% of total employed persons	No. of Females	% of total employed persons
Building/Construction trade workers	611	1.1	520	2.7
Automotive and Engineering trade workers	1,207	1.3	900	2.9
Electrical/Electronic technology trade workers	400	1.0	377	2.6

In the Building/Construction Trade Workers category, the proportion of employed females increased from 611 (1.1% of the total employed persons) between 2011 and 2015 to 520 (2.7%) between 2016 and 2021. Within the Automotive and Engineering trade workers category, the percentage of employed women increased from 1,207 (1.3%) over the period from 2011 to 2015 to 900 (2.9%) between 2016 and 2021. From 2011 to 2015, there were 400 employed females (1.0%) in the area of Electrical/Electronic technology Trade Workers. However, this number decreased considerably to 377 females (2.6%) from 2016 to 2021. The findings suggest a positive tendency towards greater participation of women in professions that have traditionally been dominated by men in Nigeria. However, further analysis is necessary to understand the underlying factors that are producing these changes and to identify specific areas where targeted interventions may be done to promote greater gender diversity and inclusion in the labour market.

### ***Qualitative Data***

The survey found that most female participants expressed their concerns about enrolling in vocational courses that are largely controlled by males. A minority of participants said that their peers had ambitions to pursue vocational education and training (VET) programs or enter male-dominated trades. The combined viewpoint of the young women, together with the stakeholders from the VET sector, schools, and industry, exposes a prevalent social notion that trades are seen to be of lower status compared to obtaining a university degree. It is well acknowledged that the preference given to academic careers over vocational education and trades by schools, parents, and society might discourage young women from pursuing trades, hence decreasing their involvement in these industries. The interviews revealed four main themes that shed insight on the magnitude of the barriers hindering female involvement in VET trade courses and apprenticeships, which are mostly dominated by men. The future sections will go into the following subjects based on the sampled participants.

### ***Gender and Occupational Segregation in VET***

Participant - *Participants expressed that gender segregation in VET is pronounced, with women being significantly underrepresented in traditionally male-dominated courses.*

Participant - *Enrolment statistics indicated a stark disparity, with female participation rates in male-dominated VET courses remaining consistently low.*

Participant - *The study revealed a considerable gender divide in jobs traditionally dominated by men, such as construction, automotive, and engineering trades.*

Participant - *Employment data highlighted that women face substantial barriers in accessing and thriving within these male-dominated occupational spheres.*

The significant gender segregation seen in vocational education and training (VET) is consistent with the findings of previous studies on gender differences in occupations, suggesting a systemic problem (Connell, 2002; Ridgeway, 2011). The significant difference in enrolment figures highlight the ongoing difficulties that women have when trying to enter courses that are mostly male-dominated. This situation is indicative of the worldwide gender disparities seen in STEM disciplines (UNESCO, 2017).

### ***Gender Roles and Identity***

Participant - *Traditional gender roles and societal expectations emerged as key factors, discouraging women from pursuing careers in male-dominated trades.*

Participant - *Prevailing stereotypes associating certain trades with masculinity contribute to a reluctance among female students to break away from conventional gender norms.*

The prevalence of traditional gender roles and societal expectations create major impediments for women pursuing jobs in male-dominated fields, validating sociological theories that emphasise the importance of cultural norms on employment choices (Ramaci et al., 2017; Drupp et al., 2020). The hesitancy of female students to deviate from traditional gender standards highlights the need for societal changes that foster inclusiveness (Rudman & Glick, 2001).

### ***Attitudes towards VET***

Participant - *Negative perceptions surrounding vocational education and training (VET) were identified as a significant deterrent for female students.*

Participant - *The perception that VET is a secondary option compared to traditional academic paths hinders women from considering male-dominated trades.*

The recognition of unfavourable opinions about vocational education and training (VET) as a major impediment is consistent with research that emphasises the stigma attached to non-academic career options (Watts, 2019). The image of Vocational Education and Training (VET) as a secondary choice reflects cultural prejudices that underestimate other educational pathways (Cohen & Brawer, 2008).

### ***Intimidation and Harassment***

Participant - *Instances of intimidation and harassment within male-dominated trades were reported as significant barriers, creating hostile environments that deter female students.*

Participant - *Fear of discrimination and hostility from male peers and colleagues contributes to a reluctance among women to enter these fields.*

Reports of intimidation and harassment in industries dominated by males highlight the ongoing problem of workplace discrimination (Guttek et al., 2007). The presence of discrimination and hostility adds a subjective aspect to objective research that record gender-related difficulties in occupations historically dominated by males (Williams & Dempsey, 2019).

### ***Addressing Gender Roles and Identity***

Participant - *Initiatives to challenge traditional gender roles and stereotypes, emphasizing that certain trades are not exclusive to a particular gender.*

Participant - *Implementing educational campaigns to showcase successful women in male-dominated trades, providing visible role models for aspiring female students.*

The suggested measures to question conventional gender roles are in line with demands for gender inclusion in educational and professional environments (Breda et al., 2020). Highlighting accomplished women in traditionally male-dominated industries is consistent with efforts to challenge preconceptions and provide tangible examples for striving people (Diekman et al., 2010).



### ***Changing Attitudes towards VET***

Participant -*Developing comprehensive career guidance programs that highlight the benefits and opportunities within vocational education and training.*

Participant -*Promoting VET as a valuable and equally prestigious pathway, debunking misconceptions about its secondary status compared to traditional academic routes.*

The emphasis on developing comprehensive career counselling courses is in accordance with recommendations to reshape societal attitudes towards vocational education (Cerdeña-Navarro et al., 2017). The promotion of vocational education and training (VET) as a valued and prestigious option signifies the endeavour to redefine and elevate its status to be on par with other renowned educational pathways (OECD, 2014).

### ***Combating Intimidation and Harassment***

Participant -*Establishing support systems, including mentorship programs and peer networks, to address the issue of intimidation and harassment in male-dominated trades.*

Participant -*Implementing workplace policies and educational initiatives focused on creating inclusive and respectful environments that discourage discrimination.*

The request for assistance systems and workplace regulations is in line with wider efforts to establish inclusive and respectful work environments (Catalyst, 2019). Mentorship programmes and peer networks are acknowledged as effective tools for mitigating workplace prejudice and cultivating a nurturing environment (Ragins et al., 2016).

### ***Institutional and Policy Reforms***

Participant -*Advocating for institutional changes within educational institutions and vocational training centres to actively promote gender diversity in courses and trades.*

Participant -*Developing and implementing national industry strategies that emphasize the advantages of augmenting female participation in traditionally male-dominated trade courses and apprenticeships.*

Promoting institutional improvements and national industry policies supports wider initiatives aimed at tackling structural gender inequalities (World Economic Forum, 2020). The emphasis on advocating for gender diversity in courses and trades demonstrates the recognition of the institutional obligation to cultivate inclusion (AAUW, 2015).

### ***Collaboration and Awareness***

Participant - *Fostering collaboration between VET institutions, schools, and industry stakeholders to create awareness and promote female engagement in male-dominated trades.*

Participant - *Encouraging inclusive media representation and positive portrayals of women thriving in traditionally male-dominated occupations.*

The focus on cultivating cooperation across institutions, schools, and industry stakeholders reflects the significance of joint endeavours in advancing diversity (Ely & Meyerson, 2000). Promoting inclusive media portrayal is consistent with efforts to combat stereotypes and foster a more varied narrative (Dill-Shackleford & Morshead, 2004).

**Table 2:** Women into Trades: A Multi-Sector Strategy. The Social Ecological Model as applied to gender segregation of the trades.

<b>SEM level</b>	<b>Areas for analysis and action</b>
Individual	More non-gendered career information should be provided. Try-a-Trade and related experiences for female students. Begin in early years of education.
Interpersonal	Promote the establishment of a student peer support system that fosters and incentivizes female students in VET courses that are mostly male-oriented.
Community	Increased collaboration between VET institutions and schools is needed to effectively inform and promote female engagement in traditionally male-dominated VET trade courses. Advocate for the promotion of constructive role models, a favourable perception of VET, and equitable representation of both genders in male-dominated trades and inclusive media.
Organizational	Propose the implementation of a comprehensive national industry strategy across many sectors, characterized by effective leadership and accountability, aimed at advocating for the advantages associated with augmenting female participation in traditionally male-dominated trade courses and apprenticeships. The government aims to enhance awareness and accountability by implementing a regular practice of gathering and disclosing statistics on gender-segregated VET enrolment as well as trade composition.
Policy/Enabling Environment	This study examines the many laws, policies, and programmes implemented at the local, state, and national levels to foster gender equity, diversity, and inclusion within educational institutions, specifically focusing on schools, VET, and trades. The examination pertains to the implementation of female enrollment objectives within VET programmes and trade occupations that are predominantly male-dominated.

Addressing the low participation of women in male-dominated trades in Nigeria requires a multifaceted approach that challenges existing gender norms, transforms perceptions of VET, addresses instances of intimidation and harassment, implements institutional and policy reforms, and fosters collaboration and awareness at various levels of education and training.

Sikora and Pokropek (2012) conducted research that revealed the viewpoints of adult stakeholders align with the idea that gender stereotypes about employment are formed during senior secondary school three (SS3). Furthermore, their research demonstrated that opting for Mathematics as a field of study is essential for those who want to enter professions that are traditionally male-dominated. The adult stakeholders emphasized the significance of Science Technology Engineering Mathematics (STEM) as a prerequisite for vocational education and training (VET) programmes and trades that are predominantly male-dominated. Nevertheless, the pupils exhibited a restricted understanding of this specific need. Educators and career advisers within educational institutions have expressed their concerns about their limited capacity to counter the widespread influence of media and popular culture in shaping societal norms regarding acceptable gender roles, identities, and professional aspirations.

In addition, school staff have disclosed that most educational institutions lack an adequate number of career guidance personnel and specialized vocational education and training (VET) advisers. These individuals are responsible for organizing events like "try-a-trade" days, offering trade-related guidance, and creating opportunities for both male and female students. The staff members, who strive to encourage students to explore unconventional courses and career paths through events, industry mentors, and work experience opportunities, have stated that a considerable amount of their unpaid time is devoted to fulfilling these responsibilities. The industry representatives emphasized the need of a national industry strategy, early careers learning, advertising, and programmes that engage and inspire female students and women about the prospects available in male-dominated sectors. This was an insightful insight. The stakeholders exhibited engagement with, or familiarity with the benefits linked to systemic activities, characterized by efficient coordination and cooperation at an elevated level. It was proposed that achieving positive transformation would need collaboration among many stakeholders, such as the government, vocational education and training (VET) institutions, schools, and industry support.

## **Discussion**

This research has confirmed the presence of many barriers that deter female students from pursuing vocational education and training (VET) courses in skills that are generally male-dominated, as well as employment in such crafts. There were signs indicating that young women's better understanding of male-dominated trades, together with decreased fear induced by gender stereotypes, might possibly raise their interest in considering pursuing vocational education and training courses and positions in male-dominated crafts. The pervasiveness of gender stereotypes in career selection severely constrains the proportion of female students who demonstrate an inclination towards pursuing vocational education and training (VET) courses or seeking employment in industries that are mostly male-dominated. The existing lack of female presence in trade sectors that are mostly male, with women making up just around 3% of the workforce, along with the low number of women in training programs, indicates that there is a huge and unmet problem in increasing the number of trained female trade workers. The continued

prevalence of gender essentialist viewpoints, which classify certain occupations as predominantly male or female, hinders girls' inclination to pursue careers in fields such as electro-technology, automotive, construction, and other trades traditionally associated with masculinity (Sikora & Pokropek, 2012).

There is a chance to encourage greater partnerships between the VET sector, educational institutions, and industries in order to share information, generate enthusiasm, and ultimately involve more female students in secondary school and post-secondary VET programs that lead to certifications in trades that are typically dominated by men. Currently, there is no specific sector or organization that is taking responsibility for implementing efforts to reduce gender segregation in trades that are predominantly male-dominated. The VET sector, like any other sector, cannot attain maximum efficiency by working in a disorganized and isolated way. In order to generate momentum for change in this issue, it is imperative to use the agenda-building theory put forward by Cobb and Elder (as cited in Maddaleno & Beinhauer, 2005). This involves consistently presenting research that demonstrates the benefits of increased female presence in trades that are historically dominated by males, along by ongoing advocacy activities. The issue of enhancing chances for women to pursue careers in traditionally male-dominated occupations warrants extensive acknowledgment on a national scale. Within the framework of nation-wide efforts, priorities may involve a multitude of factors.

Multiple sources (economic Security 4 Women 2014; Shewring, 2009; Struthers, 2016; Wright, 2011, 2014) indicate the need of implementing comprehensive measures across many sectors such as industry, unions, VET, and schools. Furthermore, there is a need for enhanced career guidance and continuous governmental assistance, including both financial allocation and dedication. This plan aims to integrate industrial and vocational education and training (VET) approaches, with the goal of reaching ambitious targets. One such objective is to attain a 10 percent growth in female participation in VET courses and crafts that are historically dominated by males, over a span of ten years.

Further study is crucial for gaining insight into and improving the comprehension of the difficulties associated with gender segregation in vocational education and training (VET) trade courses and trade professions. Incorporating the perspectives and first-hand knowledge of young people is crucial in shaping policy development and facilitating impactful measures. A possible limitation of this research is the use of a small sample size of students, which hinders the capacity to apply the results to a larger population of young people. To acquire a more comprehensive and representative sample, as well as to encourage greater participation of young people in resolving the problem of low female representation in the trades, it would be beneficial to conduct youth surveys or interviews with a considerably larger population.

## **Conclusion**

The vocational education and training (VET) sector is vital in actively addressing and managing the issue of low female representation in male-dominated industries. Significant changes are unlikely to happen unless young women actively challenge prevailing notions about trades and see the potential for rewarding work in traditionally male-dominated fields, which might have a favourable effect on their financial stability. The objective is to provide fair and comprehensive possibilities for young people, irrespective of their socio-demographic, academic, cultural origins, and gender, to attain both financial stability and personal fulfilment in their chosen professions. To promote

more female participation in trades traditionally dominated by men it is necessary to establish collaborative programs including vocational education and training (VET) institutions, industry partners, schools, and trade unions. The formation of collaborative endeavours is crucial in supporting the progress and implementation of focused initiatives that aim to promote and broaden women's involvement in these creative endeavours. To guarantee the future achievement of young people it is vital to give them the chance to choose from a diverse array of work alternatives. It is crucial to avoid limiting individuals to a small and biased range of options, which has been reinforced via many means, including literature, media platforms, toys, and periodicals.

## **Recommendations**

The following recommendations are suggested to address the limited participation of women in male-dominated trades in Nigeria, based on the findings presented:

- I. Implement initiatives such as "Try-a-Trade" to acquaint young females in primary and secondary institutions with trade professions at an early age. Hands-on experiences can assist in demystifying these professions and increasing their appeal.
- II. Create exhaustive career guidance programmes that emphasise the advantages and prospects of VET. In order to guarantee that all students are exposed to VET pathways, it is imperative that these programmes be incorporated into the school curriculum.
- III. Establish workplace policies that prioritise the establishment of inclusive and respectful environments. Discrimination and harassment should be discouraged through educational initiatives that are directed at both male and female employees.
- IV. Promote gender diversity in courses and professions by advocating for institutional changes within educational institutions and vocational training centres. The establishment of female enrollment targets for VET programmes is a component of this.
- V. Encourage collaboration among VET institutions, schools, and industry stakeholders to increase awareness and encourage female participation in male-dominated vocations. Changing societal perceptions and promoting female participation can be more effectively achieved through collaborative initiatives.
- VI. Guarantee that educational institutions have an adequate number of career guidance personnel and specialised VET advisers. These professionals are capable of organising events, providing trade-related guidance, and establishing opportunities for both male and female students.
- VII. Offer non-gendered career information and hands-on experiences in trades from a young age.
- VIII. Foster mentorship programmes that encourage industry representatives to provide real-world insights and guidance to female students who are interested in trade professions.

The barriers to female participation in male-dominated trades can be effectively addressed by Nigeria through the implementation of these varied strategies, which will promote greater gender diversity and inclusion in the labour market.

## References

- Akinsiku, O. E., & Ajala, N. O. (2018). An Investigation of Barriers to Females' Involvement in the Nigeria Construction Industry. *Deleted Journal*, 2(2), 171-180. <https://doi.org/10.36263/nijest.2018.02.0075>
- Alessio, J. C. (2011). *Social Problems and Inequality*. Ashgate Publishing, Ltd.
- Bendl, R., Bleijenbergh, I., Henttonen, E., & Mills, A. J. (2015). *The Oxford Handbook of Diversity in Organizations*. Oxford University Press.
- Blau, F. D., Brummund, P., & Liu, A. Y. H. (2013). Erratum to: Trends in Occupational Segregation by Gender 1970–2009: Adjusting for the Impact of Changes in the Occupational Coding System. *Demography*, 50(2), 493–494. <https://doi.org/10.1007/s13524-013-0198-0>
- Blau, F. D., Brummund, P., & Liu, A. Y. H. (2012). Trends in Occupational Segregation by Gender 1970–2009: Adjusting for the Impact of Changes in the Occupational Coding System. *Demography*, 50(2), 471–492. <https://doi.org/10.1007/s13524-012-0151-7>
- Brandell, J. R. (2010). *Theory & Practice in Clinical Social Work*. SAGE.
- Breda, T., Jouini, E., Napp, C., & Thebault, G. (2020). Gender stereotypes can explain the gender-equality paradox. *Proceedings of the National Academy of Sciences*, 117(49), 31063-31069.
- Breinbauer, C. (2005). *Youth: choices and change: promoting healthy behaviors in adolescents*. <https://iris.paho.org/handle/10665.2/708>
- Bridges, D., Wulff, E., Bamberry, L., Krivokapic-Skoko, B., & Jenkins, S. (2020). Negotiating gender in the male-dominated skilled trades: a systematic literature review. *Construction Management and Economics*, 38(10), 894–916. <https://doi.org/10.1080/01446193.2020.1762906>
- Broy, D. (2017). European Union · The European Commission's Proposal for a Framework for the Free Flow of Non-Personal Data in the EU. *European Data Protection Law Review*, 3(3), 380–383. <https://doi.org/10.21552/edpl/2017/3/13>
- Charles, M., & Grusky, D. B. (2005). *Occupational ghettos: The worldwide segregation of women and men* (Vol. 200). Stanford, CA: Stanford University Press.
- Cerda-Navarro, A., Sureda-Negre, J., & Comas-Forgas, R. (2017). Recommendations for confronting vocational education dropout: a literature review. *Empirical Research in Vocational Education and Training*, 9(1). <https://doi.org/10.1186/s40461-017-0061-4>
- Drupp, M. A., Khadjavi, M., Riekhof, M. C., & Voss, R. (2020). Professional identity and the gender gap in risk-taking. Evidence from field experiments with scientists.

*Journal of Economic Behavior & Organization*, 170, 418-432.  
<https://doi.org/10.1016/j.jebo.2019.12.020>

- Forsblom, L., Negrini, L., Gurtner, J. L., & Schumann, S. (2016). Dropouts in Swiss vocational education and the effect of training companies' trainee selection methods. *Journal of Vocational Education & Training*, 68(4), 399-415. <https://doi.org/10.1080/13636820.2016.1222596>
- Fuller, A., Beck, V., & Unwin, L. (2005). The gendered nature of apprenticeship. *Education + Training*, 47(4/5), 298-311. <https://doi.org/10.1108/00400910510601887>
- Gadassi, R., & Gati, I. (2009). The Effect of Gender Stereotypes on Explicit and Implicit Career Preferences. *The Counseling Psychologist*, 37(6), 902-922. <https://doi.org/10.1177/0011000009334093>
- Jeanes, E., Knights, D., & Martin, P. Y. (2011). *Handbook of Gender, Work and Organization*. John Wiley & Sons.
- Jieyu, L. (2016). *Gender, Sexuality and Power in Chinese Companies*. Springer.
- Knights, D., & Omanović, V. (2016). (Mis) managing diversity: exploring the dangers of diversity management orthodoxy. *Equality, Diversity and Inclusion: An International Journal*, 35(1), 5-16. <https://doi.org/10.1108/edi-03-2014-0020>
- Metu, A. G., & Nwogwugwu, U. C. C. (2022). Challenging Factors Affecting Access to Finance by Female Micro Entrepreneurs in Anambra State, Nigeria. *Journal of African Business*, 1-13. <https://doi.org/10.1080/15228916.2022.2064677>
- National Board for Technical Education, (2012). Digest of Statistics on Polytechnics in Nigeria, 2011/2012. Kaduna: NBTE.
- Obinna, O. C., & Muntaka, F. (2022). *Nigeria: Strengthening Women's Participation in Trade*. Southern Voice. <http://southernvoice.org/nigeria-strengthening-womens-participation-in-trade/>
- Ramaci, T., Pellerone, M., Ledda, C., Presti, G., Squatrito, V., & Rapisarda, V. (2017). Gender stereotypes in occupational choice: a cross-sectional study on a group of Italian adolescents. *Psychology research and behavior management*, 109-117.
- Rogers, M. E., & Creed, P. A. (2010). A longitudinal examination of adolescent career planning and exploration using a social cognitive career theory framework. *Journal of Adolescence*, 34(1), 163-172. <https://doi.org/10.1016/j.adolescence.2009.12.010>
- Sikora, J., & Pokropek, A. (2012). Gender segregation of adolescent science career plans in 50 countries. *Science Education*, 96(2), 234-264. <https://doi.org/10.1002/sce.20479>
- Spearman, J., & Watt, H. M. (2013). Women's aspirations towards STEM careers: A motivational analysis. In *Conceptualising women's working lives* (pp. 175-191). Brill.

Struthers, K. (2016). *Paving the Way for Girls into Male-Dominated Trades: Reducing Gender Segregation in the Trades*. <https://doi.org/10.25904/1912/1515>

*The Role of Career Mentorship in Overcoming Challenges Facing Female Construction Professionals: A Nigerian Perspective* / *International Journal of Women in Technical Education and Employment*. (n.d.). <https://www.ajol.info/index.php/ijowited/article/view/235887>

Wang, Y. (2022). *Investigating employment in the nigerian offshore oil and gas industry: is gender a prerequisite?* <https://pearl.plymouth.ac.uk/handle/10026.1/18630>

Wright, T., & Conley, H. (2018). Advancing gender equality in the construction sector through public procurement: Making effective use of responsive regulation. *Economic and Industrial Democracy*, 41(4), 975-996. <https://doi.org/10.1177/0143831x17745979>



## ICT IMPACT ON STRUGGLING STUDENTS' ACQUISITION OF MATHEMATICS LEARNING SKILLS IN RIVERS STATE, NIGERIA

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### Abstract

*This study investigated ICT impact on struggling students' acquisition of Mathematics learning skills in Rivers State, Nigeria. The study adopted the correlational research design. Two research questions and two hypotheses guided the study. The population for the study consists of all the senior secondary two schools (SS2) in the public schools in Port Harcourt Local Government Area. The sample size of the study consists of 901 students drawn from 12 public schools. Two instruments were used by the researchers for the study. Social Media Questionnaire (SMQ), and Mathematics Quantitative Reasoning Test (MQRT). SMQ had a reliability index of 0.92 using Cronbach Alpha, while MQRT reliability index was 0.78 using Kuder Richarchard-20 Formula. The collected data was analyzed using the Pearson Product Moment Correlation Coefficient to test the null hypotheses at the 0.05 level of significance. Findings of the study revealed that there is no significant difference in the correlation between the use of YouTube, nor the use of WhatsApp and the acquisition of Mathematics learning skills of struggling students in Mathematics ( $p = .000 < .05$ ). In conclusion, the use of ICT packages such as YouTube and WhatsApp reduces Mathematics phobia and enhances the acquisition of Mathematics learning skills for struggling students' in Mathematics. The study recommended among others, that Mathematics teachers should expose students to ICT and the internet as a multi-purpose way of learning Mathematics and acquiring Mathematics learning skills among struggling students in Port Harcourt Local Government Area of Rivers State, Nigeria.*

**Keywords:** ICT, Learning Skills, Struggling Students and Mathematics

### Introduction

Mathematics is essential in developing students' reasoning skills and enhancing their cognitive ability to learn Mathematics. In Nigeria, Mathematics has been made a compulsory subject in the secondary school and an entry requirement into high institutions in courses such as science, social sciences and also management. Mathematics enables humans to understand and engage in their world. It enables the development of pupils' natural ability to think logically, solve puzzles and apply these skills to real-life problems. Shimizu and Vithal (2023) posits that Mathematics specifications provides

students with access to important mathematical ideas to develop mathematical learning skills and problem solving skills. Mathematical skills could include; the ability to think critically, analytically, creatively, problem-solving, managing time, quantitative reasoning skills, ability to choose the right mathematical method and formulas to solve a problem. According to Kolmar (2023) mathematical skills are time management, mental arithmetic, critical and abstract thinking, data analysis, research, visualization, creativity, forecasting and attention to details. Mathematics helps strengthen reasoning skills and critical thinking. It helps us think analytically about the world and reason logically.

Students are all equal to the situations in the classroom and at the school, though the students' learning experiences and their ability to solve problems are different, they need different challenges, which inclusive teaching and learning can provide for struggling students in Mathematics learning skills if possible. Students struggle in identifying the right steps to use in solving one Mathematics problem from the other, they also struggle with phobia in Mathematics. The use of communication technology within educational milieus could assist in sustaining the learning environment with a view of supporting students in attaining their learning goals (Yau et al. 2015). According to Drigas, et al (2014) Information and communications technology (ICT) is a useful phrase for summarizing the ways in which microchip technology has permeated many aspects of everyday life, in education, leisure, work and the home. They explained that the term "special educational needs" covers problems, related to particular impairments or related to learning and behavioral difficulties experienced by some learners compared with other similar learners. Struggling students in learning Mathematics skills could learn using ICT packages such as joining WhatsApp groups where students interact and learn from each other. Also watching Mathematics tutorials on YouTube to learn step-by-step how to solve Mathematics problems analytically and logically could enable struggling students to learn and discover knowledge which they can apply in their daily living.

Mathematics learning skills acquisition can be enhanced through the use of ICT Packages. Crompton and Burke's (2015) survey of mobile learning in Mathematics showed that there is a growing interest in mobile technology effectiveness, with 75% of 48 studies reporting positive learning outcomes. ICT could be seen as one of the main agents of development and socialization that affect learners in the 21st century. According to Basri et al (2018) ICT has become an important source of innovation and improvement of efficiency for many sectors across the globe. They asserted that in the education sector, particularly, the application of ICT packages has become a critical part of the learning process for students both outside and inside the classroom setting.

Information Communication and Technology (ICT) allows its users to have conversations, share information, and create web content. Crompton and Burke (2015) asserted that the introduction and advancement of ICT (information, communication, and technology) in education has brought a lot of innovative learning processes that cover the training of children from early childhood, cutting across pupils, in the lower and higher basic, students' in secondary schools, and undergraduates in higher institutions of learning. The International Telecommunication Union (2016) opined that four rationales inform the use of ICT in school teaching and learning: social, vocational, pedagogic, and catalytic. Students have to be aware of how ICT works, they should learn to operate ICT and develop vocational skills, ICT can be used to learn other subjects like Mathematics and computer programming; and ICT tools are able to change education for the better. The use of ICT could enable teachers to place more emphasis on important problem solving approaches rather than tedious rote learning and calculation.

ICT packages such as WhatsApp, and YouTube could enhance struggling students learning skills in Mathematics. The present generation has been exposed to ICT through social media packages such as Facebook, WhatsApp, YouTube, among others using mobile devices such as phones, and laptops. Most students are able to use the internet, phones, and other gadgets for the purposes of gaming, chatting, and other social networking purposes (International Telecommunication Union, 2016). There are numerous benefits to the use of technology in the classroom in the 21st century, which could enhance struggling students learning skills in Mathematics. Equipped with miniature computers, students could develop digital literacy and research skills earlier than previous generations also by the use of video games, smartphones, smart televisions, TV cables, iPads, and iPods.

The Media Richness Theory (MRT) presented by Daft and Lengel (1986) gives anchorage to this study. MRT Proposes that technology based channels of information are rich text sources than the other mediums. This theory by richness means the ability of the medium to transmit the information from sender to receiver. It can be described as; the use of telephone calls are less rich than video calling or the use of ICT packages such as WhatsApp and YouTube. This is because, while a person can also hear the tone at a telephone call and the video call; the video call on WhatsApp and YouTube videos are richer as they also show the gestures and expressions of the other person while saying those words. Media richness theory is about that “richness in communication” and that the communication process should involve a rich source for “effective communication, which could enhance struggling students” learning skills in Mathematics”.

The use of various technology devices in the classroom could yield benefits in mathematical skills such as the ability to think critically, analytically, creatively, problem-solving, managing time, and quantitative reasoning skills. This could also enable struggling students' ability to choose the right mathematical method and formulas to solve a problem as well as develop other skills such as self-sufficiency, digital literacy, and access to emergency services. ICT packages such as WhatsApp and YouTube could help expose students' to other people's views of solving problems, reasoning mathematically and could further enable struggling students' acquire Mathematics learning skills.

In teaching and learning, YouTube could be used as a video repository to help teachers and students in classroom learning as well as distant learning. This initiated distance learning according to the conditions of the students, for which social media packages such as YouTube were used by teachers to produce Mathematics distance learning designs during Covid 19 pandemic (Subhi & Kosasih, 2023). According to Nabayra (2022) with the abrupt shift of learning modalities from face-to-face to online learning; institutions, teachers, and students have to rethink and recalibrate their previous instructional approaches as a response to the educational limitations brought by the pandemic. YouTube, as a platform combining video, audio, and text, aligns seamlessly with this theory and it is a popular social media platform used globally including in Nigeria Incorporating YouTube videos into classroom instruction allows educators to tap into the cognitive benefits of multimedia learning (Maziriri et al., 2020). This approach could promote meaningful connections between concepts and enhances students' retention in Mathematics which is a result of acquisition of learning skills. A substantial 98% of students use YouTube as an information resource (Abbas & Qassim 2020). Gyeltshen and Dorji (2023) related the need for teachers to consider integrating YouTube videos into their teaching methods, as it seems to be well-received by students. Reporting that

children insist teachers use multimedia in their teaching the Mathematics class and in other disciplines too.

YouTube could be used to reduce student learning difficulties and help develop their learning skills. YouTube can be used for accessing and sharing videos with various internet quota-saving features and as a substitute for face-to-face learning, which students need the most for explanations (Subhi & Kosasih, 2023). These explanations could help struggling students develop learning skills in Mathematics. The use of social media packages could be helpful to the challenged (struggling) students in mastering the course content. The study of “Impact of YouTube tutorials for skill development by Iftikhar, et al (2019) revealed that YouTube tutorials do have a significant impact on students’ cognitive needs and in learning skills to develop understanding. Buzzetto (2014) and Duvenger (2012) declared YouTube has been found to capture the attention of students.

WhatsApp is a free download message application for smart phones. It uses the internet to send messages, images, audio or video. It is popular with teenagers because of features like group chatting, voice messages and location sharing (Ehibudu, & Sira, 2017). To use WhatsApp, you need a compatible smart phone tablet with SIM card, an internet connection and a phone number. Yeboah and Ewur (2014) collaborate this in their claim that the use of WhatsApp increases the provisions and access to learning materials, anywhere, anytime and in various formats. Though there are many advantages of using WhatsApp, Gaya, Bala, et al (2020) posits that WhatsApp can also affects students’ academic performance adversely.

### **Problem Statement**

Many scholars have now noted that social media packages are among the most interesting topic of research in academia. According to Crompton and Burke’s (2015) survey of mobile learning in Mathematics showed that there is a growing interest in mobile technology effectiveness. The use of ICT cuts across age, gender, race, religion and geographical location. It provides the fastest ways of communication and news sharing as opposed to traditional media. Several studies have tried to investigate what really motivates users to use YouTube and WhatsApp noting that those users take part in a wide range of activities to share information. Nabayra (2022) asserted that the abrupt shift of learning modalities from face-to-face to online learning as a result of the Covid-19 pandemic has motivated the use of ICT in learning after the pandemic.

However, some of the studies reviewed above neglected to handle the crucial inquiry of whether YouTube and WhatsApp can be utilized for legitimate academic purposes. These purposes are the gaps found in the works reviewed such as the acquisition of Mathematical learning skills which are; the ability to think critically, analytically, creatively, problem-solving, ability to choose the right mathematical method and formulas to solve a problem, ability to manage time, and acquisition of quantitative reasoning skills. Gyeltshen and Dorji’s (2023) research on YouTube though generally well-received and considered effective by many students, had the challenge of time management while using ICT packages to learn.

The trend of poor performance and Mathematics phobia as well as the desire to avoid Mathematics inclined courses in the higher institution by students, has left parents, teachers, educational bodies as well as students in a state of worry. Though Gaya, Bala, et al (2020) posits that the use of social media packages can adversely affect students’

academic performance, there is need to verify if the decline in academic performance is as a result of inadequate acquisition of Mathematics learning skills to solve Mathematics problems. Daft and Lengel (1986) theory on Media Richness emphasizes that richness in communication ensures effective comprehensive communication skills, which could enhance struggling students' learning skills in Mathematics but it does not elaborate on how this can be used. There is need to have more research carried out on how secondary school students' struggling with Mathematics can efficiently be able to learn Mathematics skills, which can help them solve Mathematics problems. It is on these premises that this research was based, to establish ICT impact on struggling students' acquisition of Mathematics learning skills in Rivers State, Nigeria.

### **Objectives of the Study**

The main purpose of this study is to investigate ICT impact on struggling students' acquisition of Mathematics learning skills in Port Harcourt Local Government Area of Rivers State, Nigeria. The objectives of this study are:

- I. Investigate the correlation between the use of YouTube and the acquisition of Mathematics learning skills of struggling students in Mathematics in Port Harcourt Local Government Area of Rivers State.
- II. Examine the correlation between the use of WhatsApp and the acquisition of Mathematics learning skills of struggling students in Mathematics in Port Harcourt Local Government Area of Rivers State.

### **Research Questions**

- I. What is the correlation between the use of YouTube and the acquisition of Mathematics learning skills of struggling students in Mathematics in Port Harcourt Local Government Area of Rivers State?
- II. What is the correlation between the use of WhatsApp and the acquisition of Mathematics learning skills of struggling students in Mathematics in Port Harcourt Local Government Area of Rivers State?

### **Hypotheses**

- I. There is no significant difference in the correlation between the use of YouTube and the acquisition of Mathematics learning skills of struggling students in Mathematics in Port Harcourt Local Government Area of Rivers State.
- II. There is no significant difference in the correlation between the use of WhatsApp and the acquisition of Mathematics learning skills of struggling students in Mathematics in Port Harcourt Local Government Area of Rivers State.

### **Methodology**

The study adopted the correlational research design in the work. According to Kpolovie (2010), correlational research design is that design where the researcher seeks for the relationship existing between two or more variables as well as ascertaining the direction, magnitude and the degree of such a relationship. The researchers used this design because they sought to find the relationship that exists between struggling students' use of

YouTube and WhatsApp and their acquisition of Mathematics learning skills. The population for the study consists of all the senior secondary two schools (SS2) in the public schools which are 12 schools in Port Harcourt Local Government Area. The sample size of the study consists of 901 students drawn from 12 public schools in Port Harcourt Local Government Area. This sample size was drawn using the simple random sampling technique as well as the non- proportionate sampling technique. The researchers used the simple random sampling by balloting to select the 12 schools.

Two instruments were used by the researchers for the study. The students’ questionnaire was titled “Social Media Questionnaire (SMQ) measuring the utilization of the various social media platforms by students. And Mathematics Quantitative Reasoning Test (MQRT) was composed, to collect the respondents’ scores in showing skills in solving Mathematics problems. SMQ had 15-items and four-point-Likert scale of Strongly Agree, Agree, Disagree and Strongly. While MQRT had 20 multiple choice test items adopted from past WAEC question papers from the 2022–2023 session, each correct answer was given 5 marks, and incorrect answers were given a zero mark.

The reliability of the two instruments was determined by using the Cronbach Alpha as well as Kuder Richardson formula 20 method of reliability. The reliability coefficient of 0.92 was realized for the Social Media Questionnaire, and the Mathematics Quantitative Reasoning Test was 0.78 indicating that the instruments were reliable enough to be used for this study. Both the SMQ and MQRT were converted to 100 % to ensure that they were on the same scale of measurement before data analysis was done. The collected data was analyzed using the Pearson Product Moment Correlation Coefficient to test the null hypotheses at the 0.05 level of significance.

**Results**

The results of the study are presented below.

*Research question one and hypothesis one are considered jointly. Data in Table 1 is used to answer research questions one and test hypothesis one.*

**Table 1.** The Correlation between the use of YouTube and the Acquisition of Mathematics Learning Skills of Struggling Students in Mathematics.

	Group	N	YouTube	Learning skills
YouTube	901	Pearson Correlation	1	.398**
		Sig. (2-tailed)		.000
Learning skills	901	Pearson Correlation	.398**	1
		Sig. (2-tailed)	.000	

\*Significant at  $p \leq 0.05$

Table 1 shows a computed r of .398, indicating that there is a low positive correlation between YouTube and the learning skills of struggling students in Mathematics. Hypothesis one is tested using the result in Table 1 which showed that p-value (observed) = 0.000 is less than p-value of 0.05. Since the observed p-value = 0.000 < 0.05 then the null hypothesis (HO1) which states that: there is no significant difference in the correlation between the use of YouTube and the acquisition of Mathematics learning

skills of struggling students in Mathematics in Port Harcourt Local Government Area of Rivers State is rejected. This implies that there exists a significant positive correlation between YouTube and the acquisition of Mathematics learning skills in Mathematics by students who struggle in Mathematics in Port Harcourt Local Government Area of Rivers State.

Research question two and hypothesis two are considered jointly. Data in Table 2 is used to answer research questions two and test hypothesis two.

**Table 2.** The Correlation between the use of WhatsApp and the acquisition of Mathematics Learning Skills of Struggling Students in Mathematics.

	<b>Group</b>	<b>N</b>	<b>WhatsApp</b>	<b>Learning skills</b>
WhatsApp	901	Pearson Correlation	1	.145**
		Sig. (2-tailed)		.000
Learning skills	901	Pearson Correlation	.145**	1
		Sig. (2-tailed)	.000	

\*Significant at  $p \leq 0.05$

Table 2 showed a computed r of .145, indicating that there is a low positive correlation between WhatsApp and the acquisition of learning skills in Mathematics of students who struggle in Mathematics. Hypothesis two is tested using the result in Table 2 which showed that p-value (observed) = 0.000 is less than p-value of 0.05. Since the observed p-value = 0.000 < 0.05 then the null hypothesis (HO2) which states that: there is no significant difference in the correlation between the use of WhatsApp and the acquisition of Mathematics learning skills of struggling students in Mathematics in Port Harcourt Local Government Area of Rivers State is rejected. This implies that there exists a significant positive correlation between WhatsApp and the acquisition of Mathematics learning skills in Mathematics by students who struggle in Mathematics in Port Harcourt Local Government Area of Rivers State.

### **Discussion**

Findings from this study reveals that there is a low positive correlation between YouTube and the acquisition of Mathematics learning skills of struggling students in Mathematics (r = .398, p = .000 < .05), and that there is a significant difference in the correlation between the use of YouTube and the acquisition of Mathematics learning skills of struggling students in Mathematics in the Port Harcourt Local Government Area of Rivers State.

The finding agrees with the Media Richness Theory (MRT) by Daft and Lengel (1986) which posits that richness in communication portrays a communication process with a rich source, having effective comprehensive communication skills, which could enhance struggling students' learning skills in Mathematics. This findings agree with Iftikhar, et al (2019) study results which revealed that YouTube tutorials do have a significant impact on students' cognitive needs and in learning skills to develop understanding.

This findings correlates with Buzzetto (2014) and Duvenger (2012) findings which revealed that YouTube captures the attention of students and it has the potential to captivate and motivate students in ways that traditional teaching methods may struggle to achieve. The dynamic visuals, enthusiastic educators, and interactive elements found in many YouTube math channels can increased struggling students' engagement in Mathematics and lead to improved Mathematics learning skills. The findings are also in line with Gyeltshen and Dorji's (2023) results which showed that the researchers realized the effectiveness of YouTube video strategy as one of the successful methods, which is helpful and constructive in learning Mathematics subject. Recommending that teachers should consider integrating YouTube videos into their teaching methods, as it seems to be well-received by students. And efforts should be made to address challenges such as time constraints (which is important to manage when solving Mathematics problems) and ensuring a stable internet connection to maximize the benefits of using YouTube in the classrooms. However, Gyeltshen and Dorji's (2023) results indicated that while YouTube is generally well-received and considered effective by many students, it's not without its challenges. The challenges mentioned include insufficient time and the need for a good internet connection if the strategy should be successful.

The findings also agree with Abbas and Qassim's (2020) report that 98% of students use YouTube as an information resource, with 86% acknowledging its positive impact on their learning skills. The present study is in agreement with Sharma's (2018) results, which revealed that the Mathematics achievement of the classes receiving consistent exposure to videos and real-life activities was greater than that of the classes receiving only some of the special instructional treatments.

However, the findings of this study disagrees with Gaya, Bala, et al (2020) research results, which have reported negative influences such as a decline in academic performance in Mathematics. These negative influences can be seen as inadequate acquisition of Mathematics learning skills to solve Mathematical problems by struggling students in Mathematics. Reporting that one of the major issues facing students' academic performance is as a result of their use of social media which lacks the ability to communicate Mathematics Learning skills effectively.

The present study findings reveals that there is a low positive correlation between WhatsApp and the acquisition of Mathematics learning skills of struggling students in Mathematics ( $r = .145$ ,  $p = .000 < .05$ ). Also, there is a significant difference in the correlation between the use of WhatsApp and the acquisition of Mathematics learning skills of struggling students in Mathematics in the Port Harcourt Local Government Area of Rivers State. The present study agrees with Yeboah and Ewur's (2014) results which claims that the use of WhatsApp has the potential to enhance students' capabilities. This mean WhatsApp can enable students' struggling in Mathematics to acquire Mathematics learning skills and can be seen in the way they reason, and solve mathematical problems. This study also agrees again with Gaya, et al (2020) result that the use of WhatsApp can also affects students' academic performance which means that there is a significant difference in the acquisition of Mathematics learning skills by struggling students' usage of WhatsApp.

## **Conclusion**

Based on the findings of this study, to establish the impact of ICT on struggling students' acquisition of Mathematics learning skills in Rivers State, Nigeria, it can be concluded



that; YouTube correlates with the acquisition of Mathematics learning skills of struggling students' in Mathematics. Also, WhatsApp correlates with the acquisition of Mathematics learning skills of struggling students' in Mathematics revealing a low positive improvement in struggling students' ability to acquire Mathematics learning skills using social media packages in the likeness of YouTube and WhatsApp. The use of YouTube and WhatsApp reveals significant difference in their correlation with the acquisition of Mathematics learning skills of struggling students in Mathematics in the Port Harcourt Local Government Area of Rivers State. The use of YouTube and WhatsApp reduces the phobia of struggling students and enables improvement in their acquisition of Mathematics learning skills and enhances academic performance.

### **Recommendations**

Based on the findings of this study, the researcher recommends that:

- I. Mathematics teachers should expose students to ICT and the internet as a multi-purpose way of learning Mathematics and acquiring Mathematics learning skills.
- II. Curriculum planners should incorporate the use of ICT in the curriculum to enable the teachers efficient use of ICT usage in the classroom during Mathematics lessons
- III. The Ministry of Education should consider undertaking programs to enhance students and Mathematics teachers' comprehension and use of ICT and social media packages. This will serve as an educational tool to create interactive learning outcomes which can aid in the acquisition of learning skills for struggling students in Mathematics.

### **References**

- Akinsiku, O. E., & Ajala, N. O. (2018). An Investigation of Barriers to Females' Involvement in the Nigeria Construction Industry. *Deleted Journal*, 2(2), 171-180. <https://doi.org/10.36263/nijest.2018.02.0075>
- Abbas, N. F. & Qassim, T. A. (2020). Investigating the Effectiveness of YouTube as a Learning Tool among EFL Students at Baghdad University. *Arab World English Journal (AWEJ)*, (6): 344 - 356.
- Basri, W. S., Alandejani, J. A., & Almadani, F. M. (2018). ICT Adoption Impact on Students' Academic Performance: Evidence from Saudi Universities. *Education Research International*, vol. 2018 Article ID 1240197. <https://doi.org/10.1155/2018/1240197>
- Buzzetto-More, N. (2014). An Examination of Undergraduate Student's Perceptions and Predilections of the Use of YouTube in the Teaching and Learning Process. *Interdisciplinary Journal of E-Learning and Learning Objects*, 10: 17-32.
- Crompton, H. & Burke, D. (2015). Research Trends in the Use of Mobile Learning in Mathematics. *Inter-national Journal of Mobile and Blended Learning*, 7(4): 1-15.
- Daft, R.L. & Lengel, R.H. (1986). Organizational Information Requirements, Media Richness and Structural Design. *Management Science*, 32 (5): 554-571.

- Drigas, A.S., & Ioannis, K. S. (2014). Online and Other ICT Application for Teaching Mathematics in Special Education. *Online Journals IJES*, **2** (4): 46-51.
- Duverger, P. & Steffes, E. M. (2012). Using YouTube Videos as a Primer to Affect Academic Content Retention. *Metropolitan Universities*, **23** (2): 51-66.
- Ehibudu, I. E. & Sira, T.V. (2017). Influence of Whatsapp and Facebook Social Media Usage on Academic Performance of Secondary School Students in Port Harcourt Local Government Area, Rivers State, Nigeria. *IOSR Journal of Humanities and Social Science (IOSR-JHSS)*, **22** (12): 7-13
- Gaya, S. I., Bala, T. Lawan, I. A. & Ishaq, U. (2020). Effect of Social Media on Academic Performance among University Mathematics Education Students in Kano State, Nigeria. *Journal of Mathematical Sciences and Computational Mathematics*, **2** (1): 181-193.
- Gyeltshen, G. & Dorji, C. (2023). Effectiveness of Using Youtube Videos in Mathematics Classes of Class VI Students. *International Journal of All Research Education & Scientific Methods*, **11** (10): 1679-1692.
- Kolmar, C. (2023). Mathematical Skills: What they are and Examples. Retrieved December 7, 2023 from <https://www.zippa.com>.
- Kpolovie, P.J. (2010). *Advanced Research Methods*. Springfield Publishers Ltd: Owerri
- Iftikhar, M. Riaz, S.T & Yousaf, Z. (2019). Impact of YouTube Tutorials in Skill Development among University Students. *Pakistan Journal of Distance and Online Learning*, **5** (2): 125-138
- Maziriri, E. T. Gapa, P. & Chuchu, T. (2020). Student Perceptions towards the Use of YouTube as an Educational Tool for Learning and Tutorials. *International Journal of Instruction*, **13** (2): 119- 138
- Nabayra, J. N. (2022). YouTube-Based Teacher-Created Videos for Online Mathematics Learning during the Pandemic and its Effect on Students' Mathematics Performance. *Webology*, **19** (2): 1380–1390.
- Sharma, K. (2018). Effects of Instructional Videos and Real-Life Mathematics Activity on Student Achievement and Attitude in a Community College Transitional Mathematics Course. Doctoral Dissertation, Teachers College, Columbia University. <https://doi.org/10.7916/D84474DB>
- Subhi, M. A. & Kosasih, U. (2023). Mathematics Distance Learning with the Utilization of WhatsApp and YouTube Application for Vocational High School Students, *AHSSEH* 9, 114–125, 2023.
- Yau, H. K., Cheng, A. L., and Ho W. M (2015). Identify the Motivational Factors to Affect the Higher Education Students to Learn Using Technology. *The Turkish Online Journal of Educational Technology*, **14**: 89-100.

Yeboah, J. & Ewur, G.D. (2014). The Impact of WhatsApp Messenger Usage on Students' Performance in Tertiary Institutions in Ghana.

## **INFLUENCE OF INSECURITY ON ADMINISTRATION OF PUBLIC SENIOR SECONDARY SCHOOLS IN NORTH CENTRAL ZONE, NIGERIA**

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### **Abstract**

*The study is on the extent of influence of insecurity on administration of Public Senior Secondary Schools in North Central Zone, Nigeria. Specifically, the study was guided by two objectives and two research questions were raised and answered in the study. Furthermore, two hypotheses were formulated and tested at 0.05 level of significance. The study utilized a Descriptive survey research design and covered six states; Benue, Kogi, Kwara, Nasarawa, Niger, Plateau and Federal Capital Territory (FCT); which make up North Central geo-political zone, Nigeria. Population of the study was 6,792 made up of senior administrative staffs in Public Senior Secondary Schools in North Central Nigeria from which a sample size of 378 respondents made up of principals, vice-principals administration, vice-principals academics, and Deans of studies of Public Senior Secondary Schools in North Central Zone, Nigeria; was drawn. A structured questionnaire which was validated by experts was used as instrument for data collection. Findings of the study revealed that Farmers-herders crisis and armed banditry to a high extent have negative significant influence on administration of Public Senior Secondary Schools in North Central Zone, Nigeria. Based on the findings of this study, it was concluded that Farmers-Herders crisis and armed banditry collectively exert a high level of negative influence on administration of Public Senior Secondary Schools in North Central Zone Nigeria, significantly influencing the safety, stability and effectiveness of the learning environment.*

**Keywords:** Insecurity, Administration of Public Senior Secondary Schools, Farmers-Herders Crisis, Banditry

### **Introduction**

Education is the cornerstone of economic growth, national development, and societal progress (Oni, 2019; Adesina, 2017). The Nigerian National Policy on Education (2013) highlights education as crucial for advancing scientific, technological, and social achievements. Nigeria's educational structure encompasses Basic Education, Post-Basic Education and Career Development (PBCD), and Tertiary Education, with Senior Secondary Education playing a pivotal role.

Senior Secondary Education in Nigeria builds on foundational knowledge, preparing students for higher education, employment, and societal participation. Its objectives include providing essential skills, fostering national unity, promoting moral values, and preparing students for the workforce (FRN; NPE, 2013). Effective administration of these schools is critical, particularly in the face of growing insecurity.

Insecurity in Nigeria, defined as exposure to terror, threats, and violence (Adebanjoko & Ugwoke, 2014; Oluyome & Grace, 2016; Hassan, 2014), severely impacts education. It manifests in forms such as armed banditry, kidnappings, and farmers-herders crises, undermining the stability and safety necessary for effective school administration. These security challenges have led to attacks on educational institutions, resulting in abductions, violence, and disruptions in the North Central Zone.

Armed banditry, characterized by criminal activities like kidnapping and village raids (Anka, 2017; Akpenpuun et al., 2022), and farmers-herders crises, involving violent conflicts over resources (Okwori & Gbough, 2019), are significant threats. These issues not only disrupt the educational environment but also create psychological and emotional distress among students and staff, hampering academic performance and effective school management.

Cultism in secondary schools, involving secret rituals and violence (Akpenpuun et al., 2022; Gbenga, 2000), further exacerbates these challenges. These internal and external security threats collectively hinder the administration of Public Senior Secondary Schools in the North Central Zone.

Given the substantial government investment in education, understanding the impact of these security issues is essential. This research aims to examine the influence of farmers-herders crises and armed banditry on the administration of Public Senior Secondary Schools in North Central Nigeria, seeking solutions to mitigate these challenges and ensure effective educational management.

### ***Concept of Insecurity***

Insecurity is defined variably by scholars but generally encompasses the absence of safety, protection, and stability, manifesting as danger, fear, anxiety, and threats to life. It significantly hinders national development, particularly in the education sector. Descriptions of insecurity range from feelings of uncertainty and threat (Oluyomi & Grace, 2016; Hassan, 2014) to severe violence and conflict, likened to being in a war zone (Owonikoko cited in Nweke, 2022; Best, 2016). It is often characterized by conflict, violence, and instability, undermining security measures (Paul, 2015; Blend cited in Ogunode & Ahaota, 2021).

High levels of insecurity, marked by crimes like insurgency, terrorism, armed banditry, and kidnapping, impede educational progress. The impact is particularly severe in Nigeria, where it has led to school closures and disrupted academic calendars, especially in the North Central zone (Iwundu & Thom-Otuya, 2013; Osat & Peter, 2021). Insecurity affects students' and teachers' psychological well-being, leading to poor academic performance and administrative challenges (Lehr, 2014; Akpenpuun et al., 2022).

Factors contributing to insecurity in schools include inadequate internal security measures and broader socio-political issues such as weak governance and economic instability

(Manga, 2019; Osat & Peter, 2021). The consequences are dire, including loss of life, reduced enrollment, and damaged infrastructure, severely impacting the administration of Public Senior Secondary Schools (Seyi, Ebule, & John, 2020).

Overall, insecurity in Nigeria, especially in the North Central zone, poses significant challenges to the education sector, necessitating comprehensive security measures and effective governance to ensure a safe learning environment.

### ***Concept of Administration of Senior Secondary School***

Administration is pivotal for the effective functioning of any organization, including educational institutions, involving systematic processes of planning, organizing, staffing, directing, and controlling efforts towards achieving objectives (Koontz & O'Donnell, 2014; Yukl, 2016). This concept is often used interchangeably with management, particularly in educational contexts where both involve organizing and supervising institutions to ensure efficient operation and improvement (Bua, 2020; Muhammed, 2014).

Educational administration focuses on the day-to-day management of schools, including curriculum development, staff management, budgeting, and maintaining a conducive learning environment. In contrast, educational management encompasses broader planning, policy formulation, resource allocation, and performance evaluation (Bua, 2020; Muhammed, 2014). Despite theoretical differences, in practice, administration and management roles overlap, sharing common functions encapsulated in the acronym POSDCORB: Planning, Organizing, Staffing, Directing, Coordinating, Reporting, and Budgeting (Tyokyaa, 2016).

Planning is a crucial function involving the selection of information and formulation of strategies to achieve educational goals. It involves setting objectives, allocating resources, and developing programs to support the institution's mission (NOUN, 2001; Tyokyaa, 2016). Organizing involves structuring tasks and assigning roles to staff, ensuring efficient operation and reducing conflicts (Enyi, 2014). Staffing includes recruiting, training, and maintaining a favorable work environment. Directing involves decision-making and delegating tasks, while coordinating synchronizes various work components (Bua, 2020).

Reporting involves updating progress to superiors and subordinates, and budgeting encompasses fiscal planning and control (Bua, 2020). Effective administration in schools integrates these functions to create a holistic and interrelated process, ensuring that each principle is in place and appropriately applied. This systematic approach enhances the overall effectiveness of the school administration, crucial for educational development (Kamal, 2020).

In conclusion, administration in senior secondary schools is a comprehensive system requiring the integration of various functions to achieve organizational objectives. Effective administration relies on the harmonious implementation of planning, organizing, staffing, directing, coordinating, reporting, and budgeting, ensuring a conducive environment for educational success. Armed Banditry and Administration of Public Senior Secondary Schools Armed banditry in Nigeria is a significant concern characterized by armed robbery, kidnapping, cattle rustling, and other violent crimes often committed by armed gangs hiding in forests and mountains (Anka, 2017; Abdulkabir, 2017). This criminal activity involves both local and international elements

and employs force or threats to achieve their aims (Sanchi et al., 2022). Initially prevalent in the North West, such as Jigawa and Kano, it has spread to North Central regions like Niger state (Anka, 2017).

The impact of armed banditry on education is profound. It disrupts school attendance and educational development (Adebanwi, 2018) and fosters absenteeism due to fear of attacks, directly affecting learning outcomes (Adeyemi, 2020). Teachers face significant challenges, balancing their educational duties with personal safety concerns, and educational infrastructure often suffers damage (Okeke, 2019; Ahmed, 2019). This insecurity compels parents to invest in private security and impacts transportation costs, placing additional financial burdens on families (Okoro, 2021).

Economic consequences extend to diverted family funds, often as ransom payments, affecting overall family well-being (Adekunle, 2019). Unemployment, lack of political will, and corruption further exacerbate armed banditry (Abdulkadir, 2017; Adeniyi, 2018; Balewa, 2020). The resulting security issues decrease school enrollment, particularly in rural areas, hindering equitable access to education and affecting socio-economic progress (Okonkwo, 2019).

Psychological effects on students and staff, including trauma and reduced academic performance, are significant (Afolabi, 2019). The destruction of school infrastructure leads to broader economic consequences and impacts the overall educational environment (Okafor, 2021). Government intervention and enhanced security measures are crucial for protecting schools and ensuring a safe learning environment, thereby reducing dropout rates and promoting educational continuity (Ademola, 2020).

Overall, armed banditry severely affects public senior secondary schools due to the intertwined nature of educational institutions and society. When society suffers from violence and insecurity, educational institutions inevitably experience similar adverse effects.

### ***Farmers-Herders Crisis and Administration of Public Senior Secondary Schools***

The farmers-herders crisis, also known as the pastoralist-farmer crisis, is a deeply entrenched issue in Nigeria, significantly impacting the socio-economic life of the people (Eze, 2018). This crisis involves violent confrontations between pastoralists (herders) and sedentary farmers, leading to widespread socio-economic and humanitarian challenges (Kukah, 2020). The displacement caused by these crises affects students and staff of educational institutions, particularly public secondary schools, resulting in school closures and irregular attendance, which hinder educational continuity and academic progress (Adesina, 2018).

The prolonged insecurity necessitates adjustments to academic calendars, such as extending academic years or rescheduling examinations, which disrupts the overall administration and educational planning of schools (Olonisakin, 2019). Displacement of teachers and non-teaching staff further compounds the challenges, leading to shortages of qualified personnel and educational resources, thereby hindering the delivery of quality education and affecting academic performance (Akomolafe, 2020). The crisis also causes population shifts, with some areas experiencing an influx of displaced persons, straining educational infrastructure and resulting in overcrowded schools (Gambari, 2018).

Conversely, schools in displaced zones face sharp declines in enrollment, leading to underutilization of resources (Alele-Williams, 2019).

To address these fluctuations, adaptive management strategies, such as flexible staffing arrangements and the use of digital technologies, are essential for accommodating shifting student demographics efficiently (Aliyu, 2020). Additionally, targeted policies and interventions, like establishing temporary learning centers, recruiting additional teachers, and providing learning materials tailored to displaced students, are crucial (Amobi, 2018). Alternative transportation options, such as providing bus services, are also necessary in zones with inadequate infrastructure and security concerns (Eze, 2020).

The displacement of teachers and school staff presents significant staffing challenges, disrupting educational continuity and straining schools' capacity to provide adequate support to students (Akinola, 2017). Schools in crisis-affected areas must engage with local communities to promote peace and tolerance, facilitating dialogue and crisis resolution (Nwosu, 2018; Ibrahim, 2019). This collaborative effort extends beyond traditional educational duties and requires additional administrative efforts.

The farmers-herders crisis has claimed thousands of lives and adversely affected both the Nigerian economy and the education sector (Gbaradi in Ajibo et al., 2018). It has led to the destruction of farm products and livestock, displacement of farmers, and subsequent food scarcity, which negatively impacts educational development (Agbo, 2020). Displaced learners often resort to internally displaced persons (IDP) camps for education, where conditions are inadequate, further threatening their quest for quality education (Agbo, 2020). The crisis has also affected tertiary institutions, with reports of harassment and destruction of properties by herdsmen (Oleyele & Adeyemo, 2018; Ejembi & Gyang, 2018).

In summary, the farmers-herders crisis has far-reaching consequences for the education sector, including school closures, irregular attendance, overcrowding, and declining enrollments. School administrators must address psychosocial trauma, provide safe transportation, and navigate staffing challenges caused by the displacement of educators. The crisis requires proactive and innovative approaches to maintain educational development amidst insecurity, as it exacerbates existing internal issues such as cultism and gangsterism within schools.

### ***Armed Banditry and Education***

Rosenje et al. (2022) conducted a study titled "Armed Banditry and the Collapse of Education in North West Nigeria." The researchers aimed to investigate the role of armed banditry in the collapse of education in the North West region. They used a descriptive survey research design and a self-designed questionnaire to collect data from respondents in three states prone to armed banditry: Kaduna, Katsina, and Zamfara. A sample of 250 was derived from a population of 3,458,854 using Gonzalez's (2008) sample size formula. The data was analyzed using Multiple Regression and ANOVA. The study found a significant positive relationship between armed banditry and factors such as border porosity, arms proliferation, and the presence of ungoverned spaces. The consequences of banditry significantly hindered education in the region, with the study concluding that the ineffectiveness of security agencies exacerbated the phenomenon.

Danbaki et al. (2023) conducted a study titled "Assessment of the Educational Implication of Armed Banditry in North Western Nigeria." The study aimed to assess the educational



implications of armed banditry in the North West, focusing on causes, impacts, and solutions. The study used a descriptive research design and purposive sampling to select 1,500 respondents from Kaduna, Katsina, and Zamfara. Data was collected using a 28-item Likert scale questionnaire and analyzed using Mean and Standard Deviation. The study identified unemployment, poor security systems, poverty, and arms proliferation as major causes of banditry. Educational impacts included the destruction of school facilities, killing and abduction of students, decline in school enrollment and attendance, and increasing dropout rates.

### ***Farmers-Herders Conflicts and Education***

Okwori and Agenyi (2019) reviewed the influence of Farmers/Pastoralist conflicts on the management of primary schools in Benue State, Nigeria. The study aimed to determine the extent to which these conflicts affect the utilization of infrastructural facilities and school enrollment. The descriptive survey design was used, with a sample of 400 respondents drawn from 120 primary schools using proportionate stratified random sampling. Data was collected using the "Farmers-Pastoralists Conflict and

School Management Questionnaire" (FPCSMQ) and analyzed using Mean and Standard Deviation and chi-square tests. The study found that Farmers/Pastoralists conflicts negatively influenced infrastructural facilities utilization and school enrollment to a high extent.

Agbo (2020) conducted a theoretical study on the effects of Farmers and Herdsmen conflicts on educational development in the North-Central geopolitical zone of Nigeria. The study used economic theories to analyze conflicts driven by competition for arable land due to factors like climate change, Boko Haram insurgency, and urbanization. The study found that these conflicts led to significant educational issues, including lack of food production (impacting parents' ability to pay school fees), acute humanitarian crises, and many children being out of school. The study highlighted the broader socio-economic impacts of the conflicts on educational development.

### ***Comparative Analysis***

The reviewed studies by Rosenje et al. (2022) and Danbaki et al. (2023) focused on the impact of armed banditry on education in the North West region of Nigeria. Both studies employed descriptive survey designs and identified significant disruptions to educational activities due to insecurity. Similarly, the studies by Okwori and Agenyi (2019) and Agbo (2020) examined the impact of Farmers/Pastoralist conflicts on education, specifically in primary schools and the broader educational development in North Central Nigeria. These studies highlighted the adverse effects on school infrastructure, enrollment, and overall educational outcomes.

While the studies reviewed focus on different regions and types of conflicts, they collectively underscore the significant negative impact of insecurity on education in Nigeria. The present study seeks to build on these findings by examining multiple indices of insecurity, including armed banditry, communal crises, farmer-herders conflicts, and cultism, to provide a comprehensive understanding of their influence on the administration of public senior secondary schools in North Central Nigeria. This broader scope aims to identify interrelated and independent factors contributing to educational disruptions and to propose sustainable solutions for improving educational outcomes amidst insecurity.

## **Statement of the Problem**

School administration serves as the backbone of quality education, providing the necessary support for both students and teachers to thrive. Effective school administration is paramount to achieving the objectives of any education system. The seamless administration of Public Secondary Schools is essential for the delivery of structured curricula, the maintenance of a safe and conducive learning environment, and the cultivation of an atmosphere conducive to academic excellence. Administration of Public Senior Secondary Schools in North central zone,

Nigeria however seems to be hampered by the continuous challenges of insecurity, which manifests in various complex forms, giving rise to a multitude of intricate issues. Over time, the researcher has observed that Farmer-herder crises and Banditry in North Central Nigeria have emerged as substantial barriers to the efficient administration of public senior secondary schools in the zone. These indicators of insecurity as observed by the researcher have disrupted the normal functioning of educational institutions in general and in particular Public Senior Secondary Schools, leading to administrative challenges that hinder the provision of quality education. The disruption and interference of the above identified indices of insecurity could be part of the challenges faced by Public Secondary School administrators. Such observed challenges may have resulted in damage to school infrastructure, and a palpable atmosphere of fear and instability. The consequences of these observations could be far-reaching and detrimental. They could lead to a decline in educational standards, disrupted academic calendars, and an increase in student dropouts. Moreover, the safety and psychological well-being of students, teachers, non-teaching staff and school administrators; could be jeopardized. The consequences are not only limited to academic underachievement, but could also extend to physical and emotional harm, limiting the potential for students to thrive in a secure educational environment.

It is evident that these issues as observed by the researcher are not isolated incidents but represent a systemic problem that extends to all the states throughout the zone.

These challenges are not limited to one school or a particular locality; they affect public senior secondary schools across North Central Nigeria. Therefore, it is imperative to conduct an in-depth exploration to gain a comprehensive understanding of the extent of insecurity influences on school administration of Public Senior Secondary School in North Central, Nigeria. By shedding light on the specific challenges posed by these various forms of insecurity, this study not only aims to inform the development of targeted strategies and policies to enhance school administration, improve the safety and quality of education, and create a conducive learning environment for students, teachers, non-teaching staff members and school administrators but also recommend for a democratic provision for public secondary school administrators to enable them take proactive steps in current challenging situations to ensure the achievement of objectives of Senior Secondary Education in Nigeria. This study therefore using the following indicators of Insecurity; Farmers-herders crisis and Armed Banditry sought to ascertain extent of influence of insecurity on administration of Public Senior Secondary Schools in North Central Nigeria.

## **Objectives of the Study**

The objective of the study was to ascertain the extent of influence of insecurity on administration of Public Senior Secondary Schools in North Central Zone, Nigeria. Specifically the study:

- I. investigated the extent of influence of farmers-herders crises on administration of Public Senior Secondary Schools in North Central Zone, Nigeria, and 9
- II. ascertained the extent of influence of armed banditry on administration of Public Senior Secondary Schools in North Central Zone, Nigeria

## **Research Questions**

The following questions guided the study.

- I. To what extent do Farmers-Herders crisis influence administration of Public Senior Secondary Schools in North central Zone, Nigeria?
- II. To what extent do Armed Banditry influence Administration of Public Senior Secondary Schools in North central Zone, Nigeria?

## **Hypotheses**

The following null hypotheses are formulated and were tested at 0.05 level of significance.

- I. Farmers-herders crises have no significant influence on Administration of Public Senior Secondary School.
- II. Armed Banditry activities have no significant influence on Administration of Public Senior Secondary Schools, in North central zone, Nigeria.

## **Methodology**

The study adopted descriptive survey research design. The study was conducted in North central zone, Nigeria which covers the following six states; Benue, Kogi, Kwara, Nasarawa, Niger, Plateau as well as Federal Capital Territory. Population for the study was 6,792 administrative of Public Senior Secondary Schools in the study Area; they included Principals, Vice Principals (Academic and Administration), and Deans of Studies; from which a sample of 378 was drawn using mixed sampling technique.

Data for the study was collected using a researcher-structured, 4 points likert-type questionnaire titled IIAPSSSQ. The questionnaire was validated by experts in Educational Administration and Planning, four from Joseph Sarwuan Tarka University, Makurdi and one from Benue State University, Makurdi, Benue State. The test-retest method to test for reliability of instrument was conducted and a reliability index of 0.87 reliability coefficient was obtained which indicated a high reliability. Direct delivery and retrieval method was used for administration of instrument and data collected was subjected to Frequency, Mean, and Standard Deviation to answer research questions while Chi-square ( $X^2$ ) goodness-of-fit test was utilized to test hypotheses.

## Results

**Research Question 1:** *To what extent does Banditry influence administration of Public Senior Secondary Schools in North central zone, Nigeria?*

To answer this research question, Mean and Standard Deviation of the responses were computed and presented on Table 1

**Table 1:** Frequency Counts, Mean and Standard Deviation of the Responses of Respondents on the Extent of Influence of Banditry on Administration of Public Senior Secondary Schools.

S/N	Items	N	Mean	SD	Remark
1	Banditry negatively affect students' enrolment in Public Senior Secondary Schools.	378	3.37	.75	Agree
2	Banditry negatively affect budget performance in Public Senior Secondary Schools.	378	3.36	.82	Agree
3	Banditry activities negatively influence planning in Administration of Public Senior Secondary Schools	378	3.18	.89	Agree
4	Banditry has negative influence on recruitment of qualified staff in Public Senior Secondary Schools	378	3.27	.83	Agree
5	Banditry interferes with school calendar of Public Senior Secondary Schools.	378	3.03	1.02	Agree
6.	Kidnapping which is one of the activities of armed bandits depletes the human resources and in turn hampers the effectiveness of Administration of Public Senior Secondary Schools.	378	2.90	.98	Agree
7	Banditry has negative influence on support from groups such as Parent Teachers Association (P.T.A), old students' Association, among others in administration of Public Senior Secondary Schools.	378	3.19	.99	Agree
	<b>Cluster Mean</b>		<b>3.19</b>		<b>High Extent</b>

Result presented in the table above showed that the Mean scores of item 1 to 7 were above the Mean bench mark of 2.50, which implies that the respondents agreed on all the items. The result also showed a cluster Mean of 3.19 which was above the Mean benchmark of 2.50. This is an indication that banditry to a high extent influence administration of Public Senior Secondary Schools in North Central Zone, Nigeria. The Standard Deviation as shown on Table 1 ranges from 0.5 to 1.02 which implied that the respondents were homogeneous in their responses.

**Research Question 2:**

To what extent does Farmers-Herders crises influence administration of Public Senior Secondary Schools in North central zone, Nigeria?

To answer this research question, Mean and Standard Deviation of the responses were computed and presented on the table 2 below.

**Table 2:** Frequency Counts, Mean and Standard Deviation of the Responses of Respondents on the Extent of Influence of Farmers-Herders Crises on Administration of Public Senior Secondary Schools in North Central Zone, Nigeria.

S/N	Items	N	Mean	SD	Remark
8	Farmers-Herder's crises disrupt school activities which makes it difficult to complete curriculum in Public Senior Secondary Schools thereby leading to poor student's performance.	378	3.20	.79	Agree
9	Farmers-herders crises affect schools' infrastructural facilities which hamper smooth administration of Public Senior Secondary Schools.	378	2.96	.97	Agree
10	Farmers-Herder's crises promote high drop-out rate in Public Senior Secondary Schools.	378	3.22	.87	Agree
11	Farmers-Herder's crises affect intra-personal relationships which interfere with coordination in Administration of Public Senior Secondary Schools. Farmers-	378	3.22	.87	Agree
12	Herder's crises influence supervision of teachers in Public Senior Secondary Schools.	378	3.09	.83	Agree
13	Farmers-Herder's crises negatively influence effective planning in public senior secondary Schools.	378	3.22	.99	Agree
14	Farmers-Herder's crises influence school host community relationships in Public Senior Secondary School Administration	378	3.22	.89	Agree
<b>Cluster Mean</b>			<b>3.16</b>		<b>High Extent</b>

Results presented in the table above showed that the Mean scores of items 8 to 14 are above the Mean benchmark of 2.50, which implied that the respondents agreed on all the items. The result also showed a cluster Mean of 3.16 which was above the Mean benchmark of 2.50 which was an indication that farmers-herder's crises to a high extent negatively influence administration of Public Senior Secondary schools in North Central Nigeria. The Standard Deviation as shown on Table 1 ranged from 0.79 to 0.99 which implied that the respondents were homogeneous in their responses.

### Hypotheses

Banditry does not significantly influence Administration of Public Senior Secondary Schools, in North central zone, Nigeria. (Null Hypothesis 1)

**Table 3:** Chi-square goodness of fit on the influence of Banditry on Administration of Public Senior Secondary Schools, in North central zone, Nigeria

	Observed N	Expected N	Df	Asymp. Sig	Chi- square	Sig. Value	Remark
<b>SD</b>	26	94.5	3	0.00	144.603 <sup>a</sup>	0.05	S, Reject H <sub>04</sub>
<b>D</b>	53	94.5					
<b>A</b>	125	94.5					
<b>SA</b>	174	94.5					
<b>Total</b>	378						

df= degree of freedom, S= significant

The result presented in the table above shows that the Asymp. Sig value of 0.00 is less than the set significant value of 0.05 and this shows that the test of hypothesis is significant. This implies that banditry has significant influence on Administration of

Public Senior Secondary Schools in North central zone, Nigeria. Therefore, the hypothesis is rejected.

### Hypothesis Two

Table 4: Farmers-herders crises have no significant influence on Administration of Public Senior Secondary Schools. (Null Hypothesis 2)<sup>36</sup> Chi-square goodness of fit on the influence of Farmers-herders crises on Administration of Public Senior Secondary Schools, in North central zone, Nigeria.

	Observed N	Expected N	Df	Asymp. Sig	Chi- square	Sig. Value	Remark
<b>SD</b>	26	94.5	3	0.00	136.074 <sup>a</sup>	0.05	S, Reject H <sub>01</sub>
<b>D</b>	52	94.5					
<b>A</b>	140	94.5					
<b>SA</b>	160	94.5					
<b>Total</b>	378						

df= degree of freedom, S= significant

The result presented in table above shows that the Asymp. Sig value of 0.00 is less than the set significant value of 0.05 and this shows that the test of hypothesis is significant. This implies that farmers-herder's crises have significant influence on Administration of Public Senior Secondary Schools in North central zone, Nigeria. Therefore, the null hypothesis is rejected.

## **Discussion**

The study revealed that armed banditry significantly and negatively influences the administration of Public Senior Secondary Schools in Nigeria's North Central Zone. Key impacts include decreased student enrollment, disrupted budget performance, planning issues, difficulties in recruiting qualified staff, and disruptions to the school calendar. Additionally, kidnapping depletes human resources and reduces support from groups like the PTA and alumni associations. These findings align with previous studies by Akpenpuun et al. (2022), Danbaki et al. (2023), Oladunjoye et al. (2014), and Ukpo (2014), which similarly noted the detrimental effects of banditry on education.

The study also found that farmers-herders crises have a significantly negative impact on school administration. These crises disrupt school activities, damage infrastructure, increase dropout rates, strain interpersonal relationships, and complicate the supervision of teachers and planning efforts. They also negatively affect school- community relationships. These findings are supported by studies from Ibrahim and Adebayo (2021), Okwori and Angenyi (2019), and Agbo (2020), which reported similar adverse effects on school enrollment and infrastructure.

Overall, the study confirms that both armed banditry and farmers-herders crises significantly hinder the administration of Public Senior Secondary Schools in the North Central Zone of Nigeria.

## **References**

- Abdulkabir, O.S. (2017) Causes and Incisive Solution to the Widespread Kidnapping in Nigeria. *Current Administration: Under Scholastic Scrutiny. Journal of Political Sciences and Public Affairs* 5(2), 23320761.
- Abdulkabir, O.S. (2017) Causes and Incisive Solution to the Widespread Kidnapping in Nigeria. *Current Administration: Under Scholastic Scrutiny. Journal of Political Sciences and Public Affairs* 5(2), 23320761.
- Abdullahi, A., & Orukpe, P. E. (2016). Developing of an integrated campus security alerting system. *Nigerian Journal of Technology*, 35(4), 895-903.
- Abdullahi, A., & Orukpe, P. E. (2016). Developing of an integrated campus security alerting system. *Nigerian Journal of Technology*, 35(4), 895-903.
- Abimbola, J.O, & Adesote, S.A. (2012). Domestic terrorism and Boko Haram insurgency in Nigeria, issues and trends: A historical discourse. *Journal of Arts and Contemporary Society*, (4), 11-28.
- Abimbola, J.O, & Adesote, S.A. (2012). Domestic terrorism and Boko Haram insurgency in Nigeria, issues and trends: A historical discourse. *Journal of Arts and Contemporary Society*, (4), 11-28.
- Abraham, U. E. (2010). The Social Problem of Kidnapping and its Implication on the Socio- economic Development: A Case Study of Uyo Metropolis. A Masters Degree Thesis, Department of Sociology and Anthropology, University of Uyo, Nigeria. *Mediterranean Journal of Social sciences*. 4(6) Retrieved from 012038.

- Achumba, I. C., Ighomereho, O. S. & Akpor-Robaro, M. O. M. (2013). "Security Challenges in Nigeria and the Implications for Business Activities and Sustainable Development." *Journal of Economics and Sustainable Development*, 4(2), 79-99. Retrieved from <https://www.semanticsholar.org>.
- Adams, O. T., Adedeji, M. S., Majekodun, O. A., Kehinde, B. R. & Adams, T. A. (2021). The Effects of Insecurity on School System (Secondary Schools) in Nigeria. In Ochigbo, Beetseh, and Abubakar ed., *Global Insecurities: Challenges and the ways forward*. 1st ed. Akure: Science and Education Development Inst., Nigeria, pp. 126-136.
- Adeniyi, O. (2008). Beyond the banditry in Zamfara. Retrieved from <https://www.thidaylive.com/index>.
- Adeniyi, O. (2008). Beyond the banditry in Zamfara. Retrieved from <https://www.thidaylive.com/index>.
- Adeniyi, O. R., & Olagoke, S. O. (2017). Insecurity and educational performance in Nigeria: Evidence from North Central Nigeria. *Journal of Education and Practice*, 8(21), 51-60.
- Adeniyi, O. R., & Olagoke, S. O. (2017). Insecurity and educational performance in Nigeria: Evidence from North Central Nigeria. *Journal of Education and Practice*, 8(21), 51-60.
- Adeniyi, T. (2015). Why Incoming FCT Minister must act fast on cattle rustling. *Daily Trust*. July, 1st .
- Babalola, J. B. & Ayemi, O. (2009). *Educational management. Theories and Tasks*. Yaba. Macmillan, Nigeria publishers Limited. Retrieved from <https://researchgate.net>
- Bagaj, (2012) Boko Haram and the recurring Bomb attacks in Nigeria. Attempt to impose Religious Ideology through Terrorism. Retrieved from <https://www.researchgate.net>
- Baywood, N., Fagbamigbe, T., Igbokwe, E. & Udo, E. (2020). Boundary Dispute Resolution and National Security, Prospect and Challenges. FIG Working Week 2020 Smart surveyors for land and water management Amsterdam, the Netherlands. Retrieved from <https://www.fig.net>
- BBC (2020) Nigeria States Close Schools after Students Kidnapped in Katsina; <http://www.bbc.com/news-worl-africa-553338785>
- Beavers, L. (2019). Boko Haram and Frustration-Aggression Theory: A Potential Explanation, Modern Diplomacy. Retrieved from <https://moderndiplomacy.eu/2019>
- Beland, D. (2005). The Political Construction of Collective Insecurity: From Moral Panic to Blame Avoidance and Organizational Irresponsibility. Centre for European Studies. Working Paper Series 126. Retrieved from <https://ces.fas.harvard.edu>



- Bello, M, Abdullahi, S. & Hassan, T. (2015). International Terrorism and its implication for National Security in Nigeria. *International Journal of Humanities, Social Sciences and Education*, 2(10), 27-33. Retrieved from <https://www.arcjournals.org>
- Best, S. (2005). *The Method of Conflict Resolution and Transformation in Shedrack Gaya Best (ed.) Introduction to Peace and Conflict Studies in West Africa.* Spectrum Book Ltd. Ibadan
- Biam, S. (October 27, 2016). News comments from Inspector-General of Police (I-G), Mr Ibrahim Idris on the incessant clashes between herdsmen and farmers in Nigeria. Retrieved on 27/10/2019 from [salomebiam@gmail.com](mailto:salomebiam@gmail.com) [ ATE-U-Tiv]
- Blench, R. & Dendo, M. (2005). *Natural resource conflicts in North-Central Nigeria: A Handbook and Case Studies.* London: DFID.
- Breuer, J. & Elson M. (2017) *Frustration-Aggression Theory.* John Wileyand Sons [https://Doi:10.1002/9781119057574;whbua040](https://doi.org/10.1002/9781119057574;whbua040).
- Collier, P., & Hoeffler, A. (2015). The lasting effects of civil conflict on economic development and inequality in Africa. *World Bank Policy Research Working Paper*, (WPS 7529). Retrieved from <https://documents.worldbank.org/curated/en/851891468003732070/The-lasting-effects-of-civil-conflict-on-economic-development-and-inequality-in-Africa>
- Danbaki, J. B.; Abdulrazak, A.; Bilyaminu, M.; Goje, V. (2023). Assessment of the Educational Implication of Armed Banditry in the North Western Nigeria. *International Journal of Research Public and Reviews*. Vol.4 no.1, pp 480-486. Retrieved from <https://www.ijrpr.com>
- Rosenje, M; Soluade, Z.O; Olatoye, O.A; Peju-Rosenje, T. O; & Adeniyi, O.P. (2022). "Armed Banditry and the Collapse of Education in North West Nigeria". *Journal of Lexico graphy and Terminology*, Volume. 6, Issue 2, (Pp 94-115). Print ISSN: 2517-9306; Online ISSN:2664-0899.
- Sanchi, I.D., Alhassan, Y. J, Ajibade, O.V, and Sabo, Y.A. (2022). *Direct Research Journal of Social Science and Educational Studies*. Vol. 10(5) Pp 77-87 ISBN. 2449-0806. Doi <https://doi.org/10-26765/DRJSSE01175934>

## THE IMPERATIVE OF GUIDANCE AND COUNSELLING IN NIGERIAN SECONDARY SCHOOLS: THE CHALLENGES AND IMPLICATIONS

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### Abstract

*Guidance and counselling are essential components of a comprehensive education system, yet they are often overlooked in Nigerian schools. This paper highlights the significance of guidance and counselling in promoting academic achievement, personal growth, and social development among Nigerian students. It discusses the challenges faced by students, the benefits of guidance and counselling, and best practices for effective implementation. The paper concludes by emphasizing the need for increased investment in guidance and counselling programs to support the well-being and success of Nigerian students. Guidance and counselling in Nigerian secondary schools have significant implications for students, teachers, and the education system as a whole. Some of these implications include: Improved Academic Performance, reduced dropout rates, the study suggest that the Nigerian government should prioritize funding for guidance and counselling programs in schools and schools should employ qualified guidance counsellors and provide on-going training and development.*

**Keywords:** Guidance, Counselling, Implication, Challenges, Secondary Schools

### Introduction

Education is a critical factor in the development of any nation, and Nigeria is no exception. However, the country's education system faces numerous challenges, including inadequate infrastructure, insufficient resources, and a shortage of qualified teachers. Amidst these challenges, guidance and counselling services are often neglected, leaving students without the support they need to navigate academic and personal issues. This paper argues that guidance and counselling are vital components of Nigerian schools, essential for promoting academic success, personal growth, and social development.

In the school system, the vital aim of guidance and counselling is to guide and prepare students for a better future. Though guidance and counselling may not be a time-tabled activity as teaching, McLaughlin (1999) asserts that it carries an educational function. This means its place in the school system is no less important.

The activities of counsellors appear to be unclear within the education sector in most African countries, including Nigeria. This lack of clarity can be attributed to the fact that counselling is a relatively new profession in African education systems. Opinions differ on counsellors' roles and responsibilities owing to the fact that counsellors perform a wide range of different activities. In Nigeria, counsellors often perform the regular classroom teachers' work and are assigned administrative functions in addition to guiding students to resolve their personal-social problems.

Walker, Alloway, Dalley-Trim, & Patterson (2006); Agi, (2014) equally discovered that prompt counsellor response to student inquiries created positive perceptions about the counsellor in the mind of the student. Egbo (2015) contend that respect for and recognition of the individual differences of students is central to the guidance and counselling process. Thus, students perceive counsellors to be impactful in their choices in life if those counsellors recognize the individual differences of each student and strive to meet the needs shown by these differences as appropriately as possible. The American Personnel and Guidance Association Statement of Policy on the characteristics of a good counsellor buttress this by saying that a good counsellor is one who belief in each individual. The counsellor believes in the personal worth of each person, in his capacity for growth and change, and in his ability to cope with life situation

The scope of school counsellors according to the American School Counselling Association (ASCA) includes assisting students to develop their educational, social, career, and personal strengths; to help them develop healthy habits, values and positive attitudes; to encourage them to understand themselves and their abilities; to evaluate their academic progress; to assist them to adjust to school; and increase personal satisfaction (Willys, 2017). Counsellors' functions are crucial as they help to facilitate the holistic development of students and ensure the achievement of educational goals. Different stakeholders (school administrators, teachers, parents, students, and other interested groups) may have different opinions about the appropriate work of counsellors. Teachers perceive counsellors' roles within the education system based on their encounters with counsellors. Joy, Hesson, and Harris (2011) asserted that teachers were generally satisfied with counselling services, although their level of satisfaction varied across grade levels and depended on the specific area provided by the school counsellors.

### **Challenges Faced by Nigerian Students**

Lawal, Khan and Bin Ramli, (2021) opined that Nigerian students face numerous challenges that can impact their academic performance and personal well-being. Some of these challenges include:

- I. Limited access to resources and infrastructure.
- II. Large class sizes and inadequate teacher training.
- III. Societal pressure and expectations.
- IV. Limited access to mental health services
- V. Lack of proper guidance on career choice

Nigerian secondary school students faced the above challenges and they find it difficult to go for counselling, (Lawal, Khan Bin Ramli, 2021). This attitude has been perpetuated due to the rumour and gossip many hold through years of observation in school that guidance and counselling is for those who are academically weak or excessively truants, (Ogunlade and Akeredolu 2012) another discovery is that most counsellors in the school system are untrained and this can affect efficiency and the ability to bring more clients (students) for counselling.

Fox and Butler (2007); Patrick et al., (2013) found that some student's problem with school guidance and counselling services was that it was not widely known. While, Chan and Quinn (2012) opined the students desist from counselling for fear of being stigmatized by teachers and peers in the school. However, as much possible, makes the students to avoid the counsellors and their office. Majority of students made career choices without much information because the students do not have proper knowledge of counselling services, availability of guidance and counselling services in the school, absence of professionally trained counsellors with the requisite knowledge were either absent or large influence by their peers and parents' preference for certain careers. School counsellors are not significant in the decision making process because students may have some perception about these counsellors which prevents them from seeking guidance and counselling on career choices.

However, the greater the professional knowledge and expertise of the counsellor, the more likely students are to seek counselling service help in periods of need. Again, some students doubt the degree of confidentiality assured by counsellors and that serve as a hindrance to their seeking guidance or counselling services (Jenkins & Palmer, 2011; Mushaandja, Haihambo, Vergnani, and Frank, 2015). Thus, this hinders, the natural human conversation process, between both parties (Fox & Butler, 2007). Without such a conversation, better guidance and counselling which is a product of the conversational process will not be possible. In Nigeria, guidance and counselling in secondary schools are crucial to address the above-mentioned challenges by:

- I. Providing academic and career guidance.
- II. Offering emotional support and counselling.
- III. Fostering a supportive school environment.
- IV. Encouraging student engagement and participation

Awingsong, Dawson, & Gidiglo, (2015); and Willys (2017) described counsellors' roles as including academic, career, personal, and social development of students. It is within this context that this paper considers Nigerian counsellors' perceptions of the importance of the five dimensions of school-based counselling practice, using the International Survey of School Counsellors' Activities Awingsong, Dawson, and Gidiglo, (2015). It is meant to assist students to cope with challenges pertaining to their psychological development, personal concerns and to facilitate the learning process (Willys, 2017). Willys' (2017) added that school counsellor's work as designers of appropriate intervention programs which address students' problems of bullying, social exclusion, scholastic underachievement, and substance abuse.

The study of Ibrahim, Aloka, Wambiya, and Raburu (2014) revealed that counselling services assist to attain spiritual growth, health. Joy et al. (2011) revealed that 72.9% and 56% of their respondents (students) respectively perceived counselling services(individual counselling) to be very effective in assisting students to resolve and cope with problems of a personal nature, such as, traumatic events, academic stress/anxiety, financial struggle, problems at home and bullying. Similarly, Willys (2017) and Lasode, Lawal, and Ofodile (2017) revealed that group counselling is effective in assisting students to develop competencies that help them adjust to different situations and make appropriate decisions in life. Thus, counselling services (group and individual) afford students opportunities to enhance personal growth and improve decision-making regarding values, interpersonal relationships, and other goals within a stressful student academic environment.

### **Importance of Guidance and Counselling in Nigerian Schools**

Guidance and counselling services can help address these challenges by:

- I. Providing academic and career guidance.
- II. Offering emotional support and counselling.
- III. Fostering a supportive school environment.
- IV. Encouraging student engagement and participation

High school drop-out rates result in unemployment, poverty, low quality of life, high dependency ratio and many other social problems which call for an effective career guidance programme in schools, (Awingsong, Dawson and Gidiglo 2015). But, getting students to talk to counsellors remain unrealistic given the varying perceptions students hold about counsellors which hinder the natural human conversation process between both parties (Fox & Butler, 2007). Without such a conversation, good career decisions, which are a product of the conversational process, will not be possible. And since counsellors hold great secrets and information in store, these treasures are lost forever to these students Lack of enthusiasm in a chosen field, low productivity at work, emotional depression, and lack of focus in life are some of the consequences of bad career decisions made by students (Fox & Butler, 2007).

Another problem faced by secondary school students is high school drop-out rates which result in unemployment, poverty, low quality of life, high dependency ratio and many other social problems which call for an effective career guidance programme in schools. The secondary school counsellors can use cognitive behavioural therapy and social cognitive therapy, to assist students on issues of drug abuse, bullying, vandalism, cultism, stealing and other social vices that lead to school drop-out. The school counsellors can make use of different psychological test instruments such as study habit inventory(SHI), career interest inventory(CII) , to assess the students.

The Advocacy and Systemic Improvement dimension reflects activities relating to advocacy for students, effective school policies and practices along with program evaluation and improvement. The counsellors play an advocacy role as they show concern on issues or factors that will enhance the welfare of students and collaborate with

school officials to ensure a very conducive school climate appropriate for students to learn.

They equally conduct evaluation procedures on the different educational programs and offer suggestions with the intent of improving the school system. Thus, promoting and initiating policies which guarantee a safe and positive environment for students. Counsellors in Nigeria may volunteer to work as a school liaison to help ensure “student friendly” policies. Lasode et al. (2017) noted that counsellors act as liaison officers for schools and are responsible for contacting appropriate agencies as needed and become the link between the school, parents and other institutions. Joy et al. (2011) found that secondary school students perceived school counsellors' responsibilities to include mediation and conflict resolution.

The studies mentioned above were intended to draw awareness to the importance of the school counsellor in the education sector and to enhance a better service delivery. But, none of them has comprehensively examined implications of counsellors' activities from a nation-wide perspective. The current effort is to examine Imperatives, challenges and implications of counselling in Nigerian secondary schools. To that effect, the study assessed the following concerns: challenges faced by Nigerian secondary students, challenges faced by secondary school counsellors, importance's of guidance and counselling and implication of guidance and counselling in Nigerian secondary schools.

Previous studies such as Mweemba (2016) found that school counsellors assist students to adapt to the school routine and overcome life challenges. Similarly, Mikaye (2012) revealed that counsellors assist in the maintenance of discipline among students for academic gains. Principals' Perceptions of Guidance and Counselling Services in Kwara State Secondary Schools, Nigeria: Implication for Stakeholders. The findings of the study revealed that principals believe the provision of counselling services had a significant impact on student's academic achievement, even though most of the secondary schools do not have a good counselling unit, qualified counsellors, and counselling facilities.

Modo, Sanni, Uwah and Mogbo (2013) conducted a study on guidance and counselling services as the coping measures for the academic achievement of students in secondary schools in Nigeria. The purpose of the research was to determine the influence of counselling services on students' academic achievement. The outcome of the study found a significant relationship between guidance and counselling services and academic performance in Nigerian secondary schools. Likewise, Peter, et. al., (2018) investigated the effect of guidance services on student attitudes, study habits and academic performance in secondary schools. The researcher found that the presence of guidance services in secondary schools has a positive correlation with study habits, attitudes and academic achievement. The study observed that the scope of future studies should be widened.

Agbajor And Alordiah. 2014 Attitude Of Principals To Quality Guidance And Counselling Services: Implication For Attitudinal Change. The findings showed that factors such as sex, type of school and principal's counselling background have great influence on attitude of principal to quality guidance and counselling services provision. Others studied the factors affecting students' perception of school counsellors' roles (Aluede & Imonikhe 2002; Awinsong, et al., 2015; Uju, 2018 Willys, 2017).

### **Benefits of Guidance and Counselling:**

Guidance and counselling services offer numerous benefits, including:

- I. Improved academic achievement and career development
- II. Enhanced personal and social growth and self-awareness.
- III. Better social skills and relationships.
- IV. Building self-esteem and confidence.
- V. Improved mental health and emotional well-being
- VI. Improving student-teacher relationships
- VII. Enhancing overall school experience

### **Challenges Faced by Secondary School Counsellors**

The need to maximize the benefits of school-based services like guidance and counselling therefore cannot be over emphasized. Counselling services in schools have been found to be lacking (Adejimola & Tayo-Olajubu, 2009). This subsequently affects students' access to information about, orientation, subject combination, and guidance and career choices at the secondary school level. Fia (2011) undertook a study of guidance and counselling services in schools, he reported that educational, vocational, and person-social counselling were lacking in schools. T

he absence of group school counselling of students by any counsellor in the school was noted to have created ignorance among students about counselling. Nwokolo, et al., (2010) in a Nigerian study discovered that services for academic guidance and counselling were not available in schools. Of five states that were studied, two states- Ebonyi and Enugu- had no guidance and counselling centres in most of their schools. This was attributed to the lack of deepened awareness of the relevance of counselling. They report that group counselling, which can be effective in large schools or school districts, was not carried out.

Over the years, school counsellors in several schools in Nigeria have been made to perform additional responsibilities, especially serving as subject teachers at the detriment of directing and coordinating counselling activities in their schools. Menon (2010) found that the dual responsibilities of teacher and counsellor adversely affected access to counselling programmes by most students. Many counsellors in this study complained about the lack of a defined role for the counsellor in the school which results in most counsellors becoming engaged in non-counselling related work.

This development was possible because of a lack of documentation of the specified roles of school counsellors in Nigeria, which also in many instances resulted in uncertainty and related ambiguities about the actual duties and involvements of school counsellors in Nigerian schools (Aluede, et al., 2019). It is important, however, to observe that the Federal Ministry of Education in recognition of this concern and in the effort to stem it has recently offered clear specifications and deliberate prescriptions on the roles of school counsellors in Nigeria's schools (Federal Ministry of Education, 2018).

Ogunlade and Akeredolu (2012) learnt from their study that most students made wrong career decisions because of they had no informed counsellors to support them in their decision-making process. Many students therefore held counsellors to be impactful in their career choice making if these counsellors are well informed, intelligent, and well researched. Counsellors armed with a wide repertoire of knowledge are deemed important and impactful in students' choice making (Eliamani, Richard, & Peter, 2014).

One-on-one counselling interactions; between the counsellors and the students was found to be lacking and thus entrenched the belief of counselling unavailability. Offor (2008) concurs that counselling services in most Nigerian schools were non-existent though they are supposed to be. It was realized that though policy makers design policies on counselling and guidance for schools, the lack of certain fundamentals like resources, administrative commitment, and expertise mitigate the realization of the aims envisaged in such policy documentation. Okeke and Okorie (2006) reported from a study in south-east Nigeria that there was a lack of counselling centres in schools. Failure to offer or effectively provide guidance services has often led to wrong career path decisions that have adversely affected the victims and the nation.

This absence of professionally trained counsellors discouraged students from seeking guidance and counselling. Eliamani, Richard, and Peter, (2014) also found non-professional counselling greatly affected access to counselling services. The lack of trained counsellors in Tanzanian schools, they found, denied and discouraged many students accessing professional services. Anagbogu (2008) reported that many school counsellors do not have access to the requisite professional training that empower them to be impactful in schools. Ogunlade and Akeredolu (2012) advise that counsellors should be given more training to prepare them for work.

Across these countries, establishing the role and activities of school counsellors is an important professional and policy research issue. Recent research on the role and activities of school counsellors has been conducted, for example, in China (Shi & Leuwerke, 2010), India Results of the lead article (Carey et al., 2020) indicated that there are at least five important dimensions along which school-based counselling practice differs across countries. Countries differ on the salience accorded to: Counselling Services, Advocacy and Systemic Improvement, Prevention Programs, Administrator Role, and Educational and Career Planning. These five dimensions can provide a useful way to describe differences in modes of practice and can consequently be very worthwhile in cross-national comparative research on school-based counselling.

### ***Best counselling practices for effective implementation***

To ensure the effective implementation of guidance and counselling services in Nigerian Schools, government, schools, PTA and stakeholders should consider the following best practices:

- I. Training and development for guidance counsellors.
- II. Collaboration with parents and teachers.
- III. Individual and group counselling sessions.
- IV. Peer mentoring and support groups.
- V. Referrals to external resources and services



## **Implications of Guidance and Counselling in Nigerian Secondary Schools**

Guidance and counselling in education have numerous implications that impact students, teachers, and the wider educational community. Some of these implications include:

- I. **Improved Academic Performance:** Guidance and counselling help students achieve academic success, leading to better grades and higher graduation rates.
- II. **Career Development:** Guidance and counselling assist students in exploring career options, making informed decisions, and developing employability skills.
- III. **Personal and Social Development:** Guidance and counselling foster personal growth, self-awareness, and social skills, enabling students to navigate complex relationships and challenges.
- IV. **Reduced Dropout Rates:** Guidance and counselling help identify and address factors contributing to dropout, ensuring students remain in education.
- V. **Better Teacher-Student Relationships:** Guidance and counselling facilitate collaboration between teachers and students, promoting a supportive and inclusive learning environment.
- VI. **Increased Student Engagement:** Guidance and counselling encourage student participation, motivation, and engagement in the learning process.
- VII. **Improved Mental Health:** Guidance and counselling provide emotional support, helping students manage stress, anxiety, and other mental health concerns.
- VIII. **Conflict Resolution:** Guidance and counselling help resolve conflicts and address social issues, promoting a peaceful and inclusive school environment.
- IX. **Parental Involvement:** Guidance and counselling encourage parental engagement, fostering a collaborative approach to student support and development.
- X. **Teacher Professional Development:** Guidance and counselling enable teachers to develop their skills and knowledge, enhancing overall teaching quality.
- XI. **Curriculum Development:** Guidance and counselling inform curriculum development, ensuring it meets the needs of students and prepares them for future challenges.
- XII. **Community Partnerships:** Guidance and counselling facilitate partnerships with local organizations, providing resources and support for students and families.

By acknowledging and addressing the above-said and implications of guidance and counselling in secondary schools and Nigerian education as a whole, we can create a comprehensive and supportive learning environment that fosters student success and well-being.

There is no study without limitations. This studies limitations was that it was a general studies on Nigerian secondary school counsellors. It did not examine primary schools, tertiary institutions. The study did not examine Nigerian secondary school counsellors based on states and schools in particular.

## Recommendations

- I. The idea of teacher-counsellor should be reconsidered in secondary schools.
- II. Schools should employ qualified guidance counsellors and provide on-going training and development.
- III. Parents and teachers should be encouraged to collaborate with guidance counsellors to support student well-being.
- IV. By prioritizing guidance and counselling in Nigerian schools, we can support the academic and personal success of our students, fostering a brighter future for Nigeria.
- V. Since the implementation of guidance and counselling programmes is needed to achieve the goals of secondary education, the government should provide guidance and counselling unit in all public secondary schools and should mandate owners of private schools to do so.
- VI. The counselling unit should be equipped with modern guidance and counselling facilities, which include television, radio, computer (desktop and laptop), cassette, CDs, printer, projector, journals, magazines, notice board, suggestion board, tables and chairs, shelving for keeping and retrieving of students' folders.
- VII. Counselling services such as referral, vocational, information, career and placement, and evaluation should be provided for students in school.

## References

- Agbajor. T. Helena and Alordiah, C. O. (2014) Attitude Of Principals To Quality Guidance And Counselling Services: Implication For Attitudinal practices. *Continental J. Education Research* 7 (1) 1 – 8.
- Arhedo, P. A., Adomeh, I. O., & Aluede, O. (2009). School counsellors' roles in the implementation of universal basic education [UBE] scheme in Nigeria. *Edo Journal of Counselling*, 2(1), 58-65.
- Aluede, O., and Adubale, A. A. (2020). School-based Counsellors' Role as Perceived by Nigerian Counsellors. *Journal of School-Based Counselling Policy and Evaluation*, 2(1), 56-62.
- Awingsong, M., Dawson. O., and Gidiglo. B. E. (2015). Students' Perception of the Role of Counsellors in the Choice of a Career: a study of the Mfantseman Municipality in Ghana *International Journal of Learning, Teaching and Educational Research*. 13(3). 79-99.
- Adejimola, S.A & Tayo-Olajubutu, O. (2009): Spining off an entrepreneurship culture among Nigerian University: Prospects and Challenges. *African Journal of Business Management*, 3131 80-88.
- Agi, C.W. (2014). Evaluation of students' perception of school counselling and their attitudes towards its programme. *Arabian Journal of Business and Management*

*Review (Nigerian Chapter), 2, 5.*

- Alice, S., Alice, Y., & Patrick, M. (2013). Factors that militate against effective guidance and counselling on students' sexual awareness, attitudes and behaviours in schools. *American Journal of Social Sciences*, 2 (8).
- Alloway, N., Dalley, L., Patterson, A., Lenoy, M., & Walker, K (2004). School students making education and career decisions: aspirations, attitudes and influences. Canberra: DEST.
- Carey, J. C., Fan, K. Y., He, L., & Jin, Y. Y. (2020). Five Dimensions of School-Based Counseling Practice: Factor Analysis Identification Using the International Survey of School Counselors' Activities. *Journal of School-based Counseling Policy and Evaluation*, 2(1), 4-21.
- Chan, S., & Quinn, P. (2012). Secondary school students' views of inhibiting factors in seeking counselling. *British Journal of Guidance & Counselling*, 40(5), 527-543.
- Egbo, J.O.E. (2015). Guidance and counselling: a creativity for promoting sustainable well-being and adjustment of secondary school students in Nigeria. *British Journal of Education*, 3 (10), 49-57.
- Eliamani, M.P., Richard, M.L., & Peter, B. (2014). Access to guidance and counselling services and its influence on Students' school life and career choice. *African Journal of Guidance and Counselling*, 1 (1), 007-015.
- Fia, S. D. (2018). An Evaluation of the Guidance Services Offered by Counselling Centre of University of Cape Coast: Implications for Counselling. *Journal of Education and Practice*, 9(5), 49-54.
- Fox, C.L., & Butler, I. (2007): „If you don't want to tell anyone else you can tell her“: young people's views on school counselling.“ *British Journal of Guidance & Counselling*, 35(1), 97-114.
- Ibrahim, Racho, Peter JO Aloka, Pascal Wambiya, and Pamela A. Raburu. (2014) "Perceptions on the role of guidance and counselling programme on Kenyan secondary school students' career decision making."
- Jenkins, P. & Palmer P. (2012). „At risk of harm“? An exploratory survey of school counsellors in the UK, their perceptions of confidentiality, information sharing and risk .
- Joy, R. M., Hesson, J., & Harris, G. (2011). Pre-service teacher perceptions of school counsellor responsibilities. *Canadian Journal of Counselling and Psychotherapy*, 45(4).
- Lasode, A. O., Lawal, O. O., & Ofodile, M. C. (2017). Students' need for, awareness, perception and use of guidance and counselling services in federal university of agriculture, Abeokuta, Nigeria. *Problems of Education in the 21st Century*, 75(2), 170.

- Lawal, Z. I., Khan, A., & Bin Ramli, J. (2021). Cultural and socio-economic status factors affecting Female Education in Sokoto State, Northern Nigeria: Implication for Counselling. *Universal Journal of Educational Research*, 8(11C), 124-128.
- Mikaye, O. D. (2012). Influence of guidance and counselling on students' discipline in public secondary schools in Kabondo Division, Kenya. *A Research Project Report submitted in partial fulfilment of the requirements for the Degree of Masters of Education at the University of Nairobi, Kenya. Available online also at: <http://cees.uonbi.ac.ke/sites/default/files/cees/INFLUENCE> [accessed in Manila, the Philippines: July 27, 2018].*
- Modo, F., Sanni, K., Uwah, C., & Mogbo, I. (2013). Guidance and counseling services in secondary school as coping strategy for improved academic performance of students in Akwalbom State, Nigeria. *Journal of Research on Humanities and Social Sciences*, 3 (4), 43-47.
- Mclaughlin, c. (1999). Counselling in schools: looking back and looking forward. *British Journal of Guidance and Counselling*, 27 (1), 13-22.
- Menon, M.E. (2010). The effect of career counsellors on the decision to pursue higher education: a mixed-methods investigation. *Journal of Further and Higher Education*, 34, (4), 519–536.
- Mushaandja, Haihambo, Vergnani, and Frank (2013). Major Challenges Facing Teacher Counsellors in Schools in Namibia. *Education Journal*. 2 (3), 77-84.
- Nwokolo, Anyamene, Oraegbunam, Anyachebelu, Okoye, & Obineli (2010). *Literacy Information and Computer Education Journal (LICEJ)*, 1 ( 2), 131-134.
- Offor, T. C. (2008). *Counselling access to primary education*. Owerri: Totan Press.
- Ogunlade, J.O & Akeredolu, S.A. (2012). Influence of Counselling on Career Preference among Secondary School Students in Ekiti State, Nigeria. *Journal of Sociology, Psychology and Anthropology in Practice*, 4, 3
- Okeke, B. O. & Okorie, A (2006). *Fostering educational resilience and academic achievement in Nigeria*. Enugu: Fourth Dimension Publishers.
- Ogunlade, J. O., & Akeredolu, S. A. (2012). Influence of counselling on career preference among secondary school students in Ekiti State, Nigeria. *Journal of Sociology, Psychology and anthropology in Practice*, 4(3), 26-30.
- Peters, H. C., Luke, M., & Kozak, K. T. (2018). Adapting Chi Sigma Iota Principles and Practices of Leadership Excellence to a School Counseling Leadership Context. *Journal of Counselor Leadership and Advocacy*, 5(2), 95–108.
- Suleiman, Y., Bosede, F. F., Lasisi, A. K., Ishola, M. A. (2021). Principals' Perception of Guidance and Counselling Services in Kwara State Secondary Schools, Nigeria: Implication for Stakeholders. *JOMSIGN: Journal of Multicultural Studies in Guidance and Counselling*, 5(1), 58-83

US Department of Education, National Centre for Education Statistic (2003). High school guidance counselling. Washington: Government Printing Press.

Walker, Alloway, Dalley-Trim, & Patterson (2006). Counsellor practices and student perspectives: perceptions of career counselling in Australian secondary schools. *Australian Journal of Career Development*, 15.

Willys, W. I. L. L. I. A. M. (2017). Factors that influence students' perception of counsellors' roles and functions in institutions of higher learning: A case of universities and colleges in Mount Kenya East region. *Unpublished master's thesis*). University of Nairobi, Nairobi, Kenya.

## **BOOSTING THE TECHNOLOGICAL DEVELOPMENT CAPABILITIES OF TRAINEE PHYSICISTS IN COLLEGES OF EDUCATION IN NIGERIA THROUGH STUDENTS' INDUSTRIAL WORK SCHEME (SIWES)**

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### **Abstract**

*Students' Industrial Work Experience Scheme (SIWES) is a skill acquisition program meant for Nigerian Students studying occupationally-related courses in Nigerian higher institutions to give them the experience that would supplement their theoretical learning. It is also designed to cater to the difficulties faced by Nigerian graduates after graduation, making the transition phase from school to the world of working experience easier. Trainee Physicists in Colleges of Education are excluded from this vital skill developmental and acquisition program even though Physics is a physical science that involves theory, laboratory practice, excursion, and industrial application/practice for meaningful learning on the part of the learner to take place. This paper, therefore, focuses on SIWES, the philosophy and objectives of Physics education in Nigerian Colleges of Education, and the need for the inclusion of trainee Physicists in the scheme to make them more productive, maximize their potential, and expedite the aspiration of Nigeria towards the much desire Technological advancement like all developed nations. This will, no doubt be a step forward in the right direction in improving the quality of physics graduates from Colleges of Education, on one hand, and moving our nation into committees of Developed nations, on the other hand.*

**Keywords:** SIWES, Physics, Trainee Physicists, Colleges of Education

### **Introduction**

SIWES is an acronym for Students' Industrial Work Experience Scheme. SIWES was designed by Industrial Training Fund (ITF) which was established by Federal Government of Nigeria (FGN) in 1973. It is designed for Nigerian students studying occupationally-related courses in higher institutions (to give them the experience that would supplement their theoretical learning). Prior to its establishment, there was a general feeling, by Industrialists and other employers of labor, that:

- Graduates of Nigerian tertiary institutions were deficit in practical background studies preparatory for employment in industries and other organizations; and also that,
- The theoretical education being received in our higher institutions was not responsive to the needs of employers of labor.

This led to the establishment of ITF and, hence, the directive by FGN that ITF should come up with a solution to bridge the gap identified by the Industrialists and employers of labor. Some of the objectives of SIWES, according to Aderonke (2012), include:

- I. To provide an avenue for students in the Nigerian tertiary institutions to acquire industrial skills and experience during their course of study;
- II. To prepare students for the work situation they are likely to meet after graduation;
- III. To expose the students to work methods and techniques in handling equipment and machinery that may not be available in their respective institutions;
- IV. To allow the transition phase from school to the world of working experience easier and facilitate students' contact for later job placements;
- V. To provide students with an opportunity to apply their theoretical knowledge in real work situation thereby bridging the gap between theory and practice.

According to the Industrial Training Fund, SIWES is "a skill training program designed to expose and prepare students of universities, polytechnics, and colleges of education for the industrial work situation they are likely to meet after graduation" (ITF, 2019).

Each of these Organizations and agencies has specific roles to play in the management of SIWES. The Courses in Universities, Polytechnics, Colleges of Technology and Agriculture, and Colleges of Education in which Industrial Attachment is compulsory and centrally funded are restricted to Engineering and Technology, including Environmental Studies and other courses that may be approved. In Colleges of Education as at the moment, all NCE II students in School of Secondary Education (Technical), all NCE II students in School of Secondary Education (Business), all NCE II students in School of Secondary Education (Vocation) and only NCE II Computer Science students in School of Secondary Education (Science) are allowed to go for SIWES while students in Physics department are left out of the Scheme.

### **Physics Education in Nigerian Colleges of Education**

Physics education is an important sub-field within science education, with foci on the teaching and learning of physics both at school, colleges and university level, as well as physics teacher preparation and development and public understanding of physics (Taber, 2012).

Physics education provides a person with the knowledge and understanding about how physical world works (NAP, 2013). Through training in physics one develops within himself/herself the analytical skills required for problem solving and problem management. Physics is crucial to understanding the world around us, the world within us

and the world beyond us (Olabimtan et.al., 2019). Physics education must meet the needs of several diverse groups. The general public must have the background they need to understand and foster the progress of science. Industry requires a workforce trained in a wide variety of engineering and science disciplines, all of which are founded on physics principles. According to Udoh (2012), the National Policy on Education (NPE) of the Federal Republic of Nigeria (1981 and 2004) stipulated the following major national educational goals:

- The training of mind in the understanding of the world around us;
- The acquisition of appropriate skills and the development of mental, physical and social abilities and competences as equipment for the individual to live in and continue in the development of the society; and,
- The inculcation of the right type of values and attitudes for the survival of individual and the Nigerian society.

To achieve all these stated national goals it is expressly stipulated in the NPE of FRN that “Government shall establish efficient inspectorate services at federal, state and local government levels for monitoring and maintaining minimum standards at all levels of education (FRN, 1981 and 2004).

### **Philosophy of Nigerian Certificate Education (NCE) in Physics**

The philosophy of the N.C.E Physics is inspired by the desire to help students become intellectually informed in physics, the need to produce competent and effective teachers with good mastery of content and method; and knowledge of the development of the learners, on one part, and the society, on the other part, (NCCE Minimum Standard, 2012).

The philosophy of the N.C.E Physics program, as outlined by the NCCE Minimum Standard (2012), reflects a holistic approach to education that combines intellectual rigor with practical teaching skills and societal awareness. By focusing on these three core areas, the program aims to develop well-rounded physics educators who are capable of making significant contributions to both the academic and societal spheres. This comprehensive educational strategy ensures that graduates are not only effective teachers but also informed citizens who can contribute to the development and well-being of their communities and the nation at large.

### **Objectives of Physics Education in Colleges of Education**

The objectives of Physics Education, as stated in the Minimum Standard for Colleges of Education (2012), in Nigeria include the following:

- I. To have basic knowledge of the organizational concepts and techniques in practical and laboratory management;
- II. To have sound and basic knowledge of physics concepts and principles to equip them for further studies in physics and physics related courses;
- III. To demonstrate the understanding of concepts of physics, reflect upon them and revise them when necessary;



- IV. To explain the nature of science;
- V. To use science resources effectively;
- VI. To be aware of the fact that fundamental ideas of physics evolved from a process of inquiry, which will enable them to develop scientific attitudes which are transferrable to other life situations;
- VII. To plan and effectively execute physics-based lessons Basic 1 to Basic 9 classes in accordance with the Universal Basic Education (UBE) Policy;
- VIII. To use Information Technology (IT) effectively to support pupils/students learning physics;
- IX. To organize physics lessons for the whole class, groups, and individuals effectively;
- X. To organize the difficulties students face with their physical learning;
- XI. To remedy students misconception in physics;
- XII. To develop pupil's use of physics language; and
- XIII. To carry out formative, diagnosis and summative assessment of student's work (both theory and practical) in physics very successfully.

Olabimtan (2012) opined that the objectives of physics education listed above are drawn from three basic expectations:

- I. The applicability of the knowledge of physics to the immediate and global environment by both teacher and the students;
- II. A good mastery of laws, principles and concepts of physics and/or curriculum content of the subject; and
- III. The effective dissemination or transfer of this knowledge to learners by the use of appropriate method(s), skills, instructional materials and incentives/reinforcements.

The objectives of Physics Education outlined above encapsulate a well-rounded and forward-thinking framework essential for the intellectual and practical development of students in the field. The objectives emphasize not only the acquisition of fundamental knowledge in physics but also the application of this knowledge to real-world situations, fostering critical thinking, problem-solving skills, and innovation. Here are several reasons why these objectives are commendable and vital:

- I. The primary goal of physics education, as outlined, is to provide students with a comprehensive understanding of the principles and concepts of physics. This foundation is crucial because it prepares students to grasp more advanced topics and theories as they progress in their studies. A strong grounding in the basics of physics also enhances students' ability to integrate knowledge from other scientific disciplines, promoting a more interconnected and interdisciplinary approach to science education.

- II. One of the key objectives is to cultivate students' ability to think critically and solve complex problems. Physics, by its very nature, challenges students to analyze situations, formulate hypotheses, and test these hypotheses through experiments and calculations. This rigorous approach to learning hones analytical skills that are not only applicable in scientific careers but are also invaluable in everyday decision-making processes and in various professional fields.
- III. The emphasis on applying physics knowledge to solve practical problems is a particularly commendable objective. It bridges the gap between theoretical learning and practical application, ensuring that students can see the relevance of their studies in everyday life. This application-driven approach can inspire students to pursue careers in engineering, technology, and other fields where physics plays a critical role. Furthermore, it helps in nurturing a generation of problem-solvers who can tackle global challenges, such as energy sustainability, environmental conservation, and technological innovation.
- IV. The objectives also aim to prepare students for further education and careers in science and technology. By instilling a deep understanding of physics and its applications, students are well-equipped to excel in higher education and contribute to advancements in various scientific and technological fields. This preparation is crucial for maintaining a competitive edge in a rapidly evolving global economy that increasingly relies on scientific and technological innovation.
- V. Encouraging a lifelong interest in learning and curiosity about the natural world is another admirable objective. Physics education, with its vast array of phenomena and principles, naturally stimulates curiosity and a desire to explore. By fostering this mindset, students are likely to remain engaged with science throughout their lives, continually seeking knowledge and contributing to the scientific community.
- VI. The objectives of Physics Education are comprehensive and forward-thinking. They not only aim to provide students with a robust foundation in physics but also prepare them for real-world applications and future scientific endeavors. By supporting these objectives, we invest in the development of knowledgeable, skilled, and innovative individuals who can drive scientific progress and address the challenges of the future.

### **Workshop Practice and Industrial Work Experience: As Vital Components of Physics Education**

Physics, being a physical science, requires more than classroom interactions between the teacher and the taught for meaningful learning to take place in learners. Without laboratory practice and practical experience, students assimilate less than 20% of physics concepts taught in class (Ojediran et.al; 2014). This indicates a significant gap in understanding theoretical knowledge without practical application. Without practice through practical experience, students learn by rote, memorization of facts and recipes for problem-solving. They are not having a true and deeper understanding of the concepts taught and this has become a major clog on the technological development and advancement of our nation. This is due to the fact that the relevance of Physics in the society cannot be visualized by learners through classroom experience alone. For purposeful and meaningful knowledge transmission and transfer in physics, classroom

experience must be complemented with school laboratory practical, excursion and workshop practice both within and outside the walls of a school.

### **Workshop Practice and Industrial Work Experience by Physics Pre-Service Teachers in Colleges of Education in Nigeria**

A workshop is usually a brief intensive educational program for a relatively small group of people that focuses especially on techniques and skills in a particular field (Merriam-Webster, 2024). A workshop can also be seen as an arrangement whereby a group of people learn, acquire new knowledge, perform creative problem-solving, or innovate in relation to a domain-specific issue (Ørngreen et.al;2017). The synergy between these two definitions illustrates the multifaceted value of workshops. They are not only avenues for intensive skill-building but also for collaborative innovation. In today's rapidly evolving world, where the ability to adapt and innovate is crucial, workshops serve as vital platforms for continuous learning and development. They provide a structured yet flexible environment where participants can update their skills, stay abreast of the latest developments in their field, and collaboratively tackle emerging challenges.

A Workshop practice involves putting into practice theoretical activity(ies) learnt in an informal and/or a formal environment with the aim of inculcating into the learner(apprentice) maintenance, manufacturing and problem-solving skills so as to reinforce his/her theoretical knowledge, earn a living and appreciate the applicability and relevance of acquired knowledge in the resolution of societal contemporary problems (Olabimtan, 2015). This is to say that a Workshop practice helps the learner to see the relevance and applications of what he has been taught, in an informal or a formal environment, to his immediate and global society in which he/she found him/herself. Workshop practice and practical laboratory activities emphasize “I do, I understand” of the popular Chinese statement “I hear, I forget; I see, I remember and I do, I understand” (Biggs et.al; 2011).

According to Olabimtan (2015), putting theoretical knowledge into practice in a workshop setting, either in tertiary institutions or in various relevant industries, exposes or makes a learner to gain the following skills:

- a) Operation, usage, and maintenance (and in some cases, knowledge of basic repairs) of different machines and/or equipment;
- b) Usage and maintenance of various kind of tools;
- c) Repairs of different damaged and malfunctioning parts/components of different industrial machines and equipment;
- d) Redesigning or reconstruction of existing parts for better performance and improved efficiency;
- e) Manufacturing of entirely new parts or components and/or equipment/machine for better output;
- f) Problem identification and problem-solving skills; and,
- g) Safety precaution measures skills.

Physics is one of the most relevant subjects in our present world because of its direct influence and applicability to everyday concerns and activities in our society. Physics has been very successful in revealing many of nature's profound secrets and has play key roles in the development of many disciplines such as Chemistry, Biology, Medicine and Engineering (Hussain, 2008). However, students and society, at large have contrary views. People see Physics as being abstract and having no relevance or linkage to both the immediate and global society they live because there is no physical 'Physics Industry' like as in the case of 'Biotechnology Industry' and other discipline. Through practice in a workshop and relevant industries in the society, this erroneous view and misconception of physics can be remedied for good.

### **Applications and Relevance of Physics to the Society**

Physics-the study of matter, energy and their interactions-is an international enterprise, plays a key role in the future progress of humankind. Physics plays a crucial role in the advancement of society by contributing to various fields and improving our understanding of the natural world. The importance of physics to society according to Khan (2020) can be highlighted through its applications in technology, healthcare, energy, environment, and education.

#### **1. Technological Advancements**

Physics is at the core of technological innovations. It provides the principles and concepts that drive the development of new technologies, which in turn fuel economic growth and improve quality of life.

- **Transistors and Semiconductors:** The development of transistors, which are the building blocks of modern electronics, including computers, smartphones, and other digital devices, is a direct result of research in quantum mechanics.
- **Lasers and Fiber Optics:** Physics research led to the invention of lasers and the development of fiber optics, which are critical for high-speed internet and telecommunications.
- **Medical Imaging and Treatment:** Technologies such as X-rays, MRI, PET scans, and radiation therapy are based on principles of physics and have revolutionized medical diagnostics and treatment.

#### **2. Economic Development**

Physics contributes significantly to the economy by driving innovation and creating new industries. The knowledge generated by physics research leads to the development of new products and processes that enhance productivity and economic competitiveness. For instance:

- **Consumer Electronics:** Advances in physics have made possible the development of electronic devices such as smartphones, televisions, and computers, which are integral to modern life and commerce.
- **Energy Solutions:** Physics research is crucial in the development of sustainable energy solutions, including solar panels, wind turbines, and nuclear energy, helping to address global energy needs and environmental challenges.

### ***3. Improvement of Quality of Life***

Physics improves everyday life through practical applications that enhance comfort, safety, and convenience. Examples include:

- **Household Appliances:** Many household devices, from microwaves to washing machines, are based on principles of physics, making daily tasks easier and more efficient.
- **Health and Medicine:** Advances in medical physics have led to better diagnostic tools and treatments, improving healthcare outcomes and increasing life expectancy.

### ***4. Scientific Understanding and Education***

Physics forms the foundation of other natural sciences such as chemistry, biology, and earth sciences. It helps us understand fundamental natural phenomena and the universe. Physics education fosters critical thinking, problem-solving skills, and a deeper appreciation of the natural world. This education is vital for training scientists, engineers, and technologists who drive further innovation and research.

### ***5. Environmental Protection***

Physics plays a critical role in environmental science by providing tools and methods to monitor and mitigate environmental issues. For example:

- **Climate Change Research:** Physics-based models and technologies are essential for understanding and addressing climate change. This includes the development of renewable energy sources and efficient energy storage systems.
- **Pollution Control:** Techniques derived from physics are used to detect and reduce pollution, such as the use of filters and catalytic converters to reduce emissions from industrial processes and vehicles.

### ***6. Global Connectivity and Communication***

The principles of physics underpin the technologies that enable global communication and connectivity, such as satellites, GPS, and the internet. These technologies have transformed how we communicate, conduct business, and access information, making the world more interconnected.

Physics is integral to the progress of society, driving technological advancements, economic development, and improving quality of life. It enhances our understanding of the universe and provides the tools necessary to address global challenges such as energy sustainability, environmental protection, and health. The continuous support and investment in physics education and research are essential for fostering innovation and ensuring a better future for all.

### **Probable Establishments for Industrial Work Experience Exercise for Trainee Physicists**

Without the laws of physics, our world would be without spaceships, computers, advanced medical technology, and even large buildings. Scientific investigation and problem solving is at the heart of what a physicist does. Physics serves as a broad

foundation for careers in astronomy, medicine, engineering, computer science and education (Kelly, 2018). The followings are some of the possible establishment where trainee physicists in Colleges of Education in Nigeria can be posted for their Industrial Work Experience Scheme:

- a) Medical and Science Laboratories;
- b) Energy Generation Industries;
- c) Manufacturing Industries;
- d) Aerospace and Airports;
- e) Defense Industries ;
- f) Telecommunication Companies;
- g) Research Centers;
- h) Information and Computer Technology Industries; and,
- i) Health Care and Medical Facility.

### **Reasons for Inclusion of Students in Physics Department in Colleges of Education in SIWES**

From the aforementioned possible places where physics graduate can work it is obvious that:

- I. Through active participation in SIWES, Physics trainees in Colleges of Education will have a deeper understanding of physics concepts and its applicability in their immediate environment;
- II. Physics graduates will be in a better position to work effectively and efficiently in relevant industries and compete effectively with graduates from other disciplines;
- III. The misconception of Physics by students and society about non-relevance of Physics to their immediate environment will be remedied;
- IV. The knowledge of career opportunities and possibilities enabled by education in physics will be broadened and this might boost the interest and consequently, enrolment of students in physics education;
- V. This will also boost the chances of the country in the attainment of the much desired advancement in technology and hasten our transition from developing nation to developed nation; and,
- VI. This will increase the chances of attainment of the objectives of establishment of Physics education program in Colleges of Education in Nigeria.

### **Conclusion**

It is pertinent to note that inclusion of physics trainees from colleges of education into SIWES will make them more productive, maximize their potentials and expedite the

aspiration of Nigeria towards the much desire Technological advancement like all developed nations. This will, no doubt be a step forward in the right direction in improving the quality of physics graduates from Colleges of Education, on one hand, and moving our nation into committees of Developed nations on the other hand.

### **Recommendations**

The following recommendations focused on practical steps that stakeholders can take to implement the inclusion of trainee physicists in SIWES.

- I. Engagement with educational policymakers and relevant government bodies to revise the SIWES policy to include physics education students from Colleges of Education.
- II. Partnership with professional organizations such as the Nigerian Institute of Physics (NIP) and other educational bodies to lobby for the inclusion of physics education students in SIWES.
- III. Integration of practical industrial training modules into the existing physics curriculum to align with SIWES objectives.
- IV. Colleges of Education should work with National Commission for Colleges of Education (NCCE) to update the minimum standards for physics education to include mandatory industrial work experience.
- V. Create partnerships between educational institutions and relevant industries such as energy, telecommunications, healthcare, and research centers to provide placement opportunities for physics students.
- VI. Government should invest in modernizing laboratory facilities and workshops to ensure they meet the standards for effective industrial training.
- VII. Colleges should provide training and professional development for physics educators to equip them with the skills necessary to oversee industrial training components.
- VIII. Physics educators should be encouraged to participate in short-term industry placements to keep them abreast of current industry practices and technologies.
- IX. Career counseling services should be offered to help students understand the various career opportunities available to them through industrial training.
- X. Mentorship programs should be developed where students can receive guidance from industry professionals during their training period.
- XI. Feedback mechanisms should be established where students and industry partners can provide insights and suggestions for continuous improvement of the training program.
- XII. Incentives for both trainee physicists and industry partners should be provided to encourage participation in the industrial training program, such as stipends for students and tax breaks for participating companies.

## References

- Aderonke, A.O. (2012). Student's Industrial Work Experience Scheme (SIWES) and the Incidence of Occupational Misfit in Nigeria. Industrial Training Fund (ITF) Ibadan, Nigeria.
- Biggs, J., & Tang, C. (2011). *Teaching for Quality Learning at University*. McGraw-Hill Education.
- Federal Republic of Nigeria, (2004). National Policy on Education. Lagos: NERC Press.
- Hussain, L. A. (2008). *Relevance of Physics to National Development*. A public Lecture Delivered at National Association of Physics Students Day. University of Ibadan.
- Industrial Training Fund (ITF). (2019). *SIWES Handbook*. Retrieved from <http://www.itf.gov.ng/>
- Khan Shahid, M. A. (2020). The importance of Physics to Man and the Society. Retrieved from [\(14\) THE IMPORTANCE OF PHYSICS TO MAN AND THE SOCIETY: | LinkedIn](#)
- Kelly S.M (2018). List of Jobs in Physics: A newsletter published on 13/09/2018 by [List of Jobs in Physics \(chron.com\)](#) Retrieved on 12/06/2023
- Merriam-Webster. (2024). *Workshop*. Retrieved from <https://www.merriam-webster.com/dictionary/workshop>
- National Commission for Colleges of Education, (2012). Certificate in Education Minimum Standard for Sciences, 4<sup>th</sup> Edition: National Commission for Colleges of Education (NCCE), Abuja. Nigeria Tertiary Education Trust Fund (TETFUND) sponsored. Bifocal Communications Ltd.
- Ojediran, I. A., Oludipe, D. I., & Ehindero, O. J. (2014). Impact of Laboratory-Based Instructional Intervention on the Learning Outcomes of Low Performing Senior Secondary Students in Physics. *Creative Education*, 5, 197-206. <http://dx.doi.org/10.4236/ce.2014.54029>
- Olabimtan, S.O. (2012). Innovative Methods of Teaching and Learning Physics for Quality Education. *Katsina Journal of Science*, 1(3): 105-111. A Publication of Federal College of Education, Katsina.
- Olabimtan, S. O. (2015). Workshop Practice: A Module for Reinforcing Physics Teaching for Self-dependence and Enhancing National Security in Nigeria. *Contemporary Journal of Inter-disciplinary Studies*, 2 (2):142-153. Academic Network Publishing Netherland. [www.cojjs.org](http://www.cojjs.org)
- Olabimtan, S. O and Basse, E. (2019). Fostering the Understanding of Physics Concepts through Indigenous Illustration Teaching Approach. *African Journal of Natural and Material Sciences*. A Publication of the School of Sciences, Federal College of Education, Kano, 8(2): 1 – 9.



- Ørngreen, R., & Levinsen, K. (2017). Workshops as a research methodology. *The Electronic Journal of e-Learning*, 15(1), 70-81. Retrieved from <http://www.ejel.org>
- Taber, K. S. (2012). Upper Secondary Students' Understanding of the Basic Physical Interactions in Analogous Atomic and Solar Systems. *Research in Science Education*, 1-30 doi: 10.1007/s11165-012-9312-3.
- Udoh, O. A. (2012). Refocussing Physics Education in Nigeria: Issues and Challenges in Teacher Education. *Mediterranean Journal of Social Sciences*. 3(13): 11 – 19.

## INTEGRATING ARTIFICIAL INTELLIGENCE IN STUDENTS' ASSESSMENTS: APPLICATIONS, PERCEPTIONS AND IMPLICATIONS IN A NIGERIAN UNIVERSITY

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### Abstract

*Artificial Intelligence (AI) has emerged as a transformative force across various domains, revolutionizing industries and reshaping the way we live and learn. In the realm of education, the integration of AI holds tremendous promise, particularly in the context of assessment and educational evaluation. This study is therefore guided by three objectives. Viz; identify how AI technologies are currently being applied for students' assessments at UDUSOK; determine the benefits and challenges of using AI assessment tools as perceived by students and staff; and explore how policies, training, and resources can support ethical integration of AI assessments at UDUSOK. Descriptive survey research design was used for the study. Surveys, interviews, and test data analysis were used to triangulate findings from 381 students and 92 Staff. Data analysis revealed automated essay scoring and plagiarism detection were frequently used AI tools. Students (n=381) and staff (n=92) noted benefits in efficiency, expanded access, and immediate feedback. However, concerns emerged regarding transparency, privacy, and potential impacts on learning experiences. Recommendations include developing policies and practices to govern ethical AI use, increasing staff training on AI assessments, and researching integrative assessment models.*

**Keywords:** Artificial Intelligence, Assessment, Automated Scoring, Adaptive Testing, Nigerian University

### Introduction

Artificial intelligence (AI) techniques such as machine learning, natural language processing, and adaptive algorithms are advancing rapidly and permeating various industries and professional domains (Jiang et al., 2017). In the field of education, AI

applications are being explored by institutions and edtech companies to facilitate administrative processes, curricular delivery, and student assessment (Westera, 2021). While AI has generated significant interest for its potential to transform education, thoughtful integration is necessary to maximize benefits and mitigate risks (Zawacki-Richter et al., 2019).

Student assessment is one major area in education where AI technologies are gaining adoption, supplementing traditional human-driven assessment methods. Specific applications of AI for assessment include automated essay scoring, plagiarism detection, intelligent tutoring systems, adaptive learning platforms, facial analysis, and predictive analytics based on student data (Timms, 2016; Luckin et al., 2016). Proponents argue AI assessment tools can enhance efficiency, consistency, accessibility, transparency, and personalization, while reducing costs and instructor workload (Williamson et al., 2012; Baker, 2019). However, legitimate concerns persist around data privacy, student experiences, pedagogical impacts, ethical risks, and appropriate integration with human raters (Balfour, 2013; Eynon, 2013).

Artificial intelligence (AI) has emerged as a transformative force across various domains, revolutionizing industries and reshaping the way we live, work, and learn. In the realm of education, the integration of AI holds tremendous promise, particularly in the context of assessment and educational evaluation. This profound shift in assessment methodologies not only brings forth unprecedented opportunities but also raises crucial questions about the ethical, social, and pedagogical implications of relying on intelligent systems for evaluating human learning and performance.

Educational assessment, a cornerstone of the learning process, plays a pivotal role in gauging students' understanding, skills, and overall academic progress. Traditional assessment methods, while serving their purpose, are often criticized for their limitations, including subjectivity, lack of adaptability, and inability to provide timely feedback (Balfour, 2013). The infusion of AI into educational assessment introduces a paradigm shift by leveraging advanced algorithms, machine learning, and data analytics to enhance the accuracy, efficiency, and fairness of evaluation processes (Williamson et al., 2012).

Artificial intelligence (AI) offers new opportunities and challenges for educational assessments. Applications like automated essay scoring, plagiarism detection, and adaptive testing aim to supplement human raters with algorithmic analysis of written work, academic integrity, and examinee responses (Eynon, 2013, Timms, 2016;). Proponents argue these tools can lower costs, reduce instructor workload, provide rapid feedback, and support more personalized learning (Baker, 2019; Luckin et al., 2016). However, legitimate concerns persist around data privacy, student experiences, pedagogical impacts, ethical risks, and appropriate integration with human raters (Kovanović et al., 2021; Prinsloo & Slade, 2020).

This research explores the applications, perceptions, and implications of using AI assessment technologies at Usmanu Danfodiyo University (UDUSOK) in Nigeria. As public universities in Nigeria and other African countries adopt more online and technology-enabled learning systems, understanding stakeholder perspectives can help inform policies and practices for ethical, culturally responsive AI integration (Adebisi et al., 2021; Rienties et al., 2020). This study addresses key questions around current applications of AI for student assessments at UDUSOK, perceived benefits and

challenges based on surveys and interviews, and recommendations for effective policies and training to support ethical AI assessment. As one of the first empirical investigations of AI applications in Nigerian higher education assessments, findings will provide insights into stakeholder views and guidance for institutions exploring similar innovations.

Integrating artificial intelligence (AI) into students' assessments in a Nigerian university presents a significant opportunity to enhance educational practices. Several studies highlight the potential benefits and implications of incorporating AI in educational settings. Makarenko (2024) emphasizes the importance of AI in personalizing learning, improving educational accessibility and efficiency, and preparing students for challenges in the modern labor market. Omorogiuwa et al. (2023) discuss the need for reviewing AI program curricula and fostering effective collaborations among academia to enhance research outputs in African universities.

Furthermore, Uluskan (2022) demonstrates the application of AI in assessing university services through a hybrid approach combining structural equation modeling and artificial neural networks. This approach could be adapted to evaluate students' perceptions and satisfaction with assessments in the Nigerian university context. Additionally, Chen et al. (2020) highlight how AI has enabled personalized learning experiences by customizing curriculum and content to meet students' individual needs, thereby improving overall learning quality.

Moreover, the study by Wang (2024) on reforming English precision teaching in colleges using AI technology showcases the positive impact of integrating AI on classroom interaction and learner performance. These findings underscore the potential benefits of leveraging AI in educational practices to enhance teaching methodologies and student outcomes.

Several studies have examined applications and stakeholder perceptions of AI technologies for educational assessment. A survey of students and faculty in China found positive views of AI-enabled assessment and learning analytics systems, with 73% agreeing AI could improve fairness and 51% indicating it would enhance learning experiences (Zawacki-Richter et al., 2020). In contrast, a study across Australia, UK, and China identified student concerns about AI scoring of written assignments, including accuracy, fairness, and impacts on writing skills (Timms, 2016). Faculty have shown mixed opinions as well, recognizing potential efficiency gains but questioning AI's capabilities for authentic, holistic assessment (Lipnevich et al., 2020). Researchers have highlighted the need for greater transparency in AI systems and stronger evidence on impacts to student motivation and metacognitive skill development from relying on automated assessment processes (Eynon, 2013; Kovanović et al., 2021).

Several ethical dimensions of AI assessment tools have also been analyzed. Bakalarczyk (2021) proposed an ethical framework encompassing beneficence, respect for autonomy, justice, transparency, and responsibility. Algorithmic bias, data privacy, student profiling, and effects on marginalized populations are active areas of ethics scholarship (Williamson, 2021; Prinsloo and Slade, 2020). Researchers emphasize the need to carefully validate AI systems against intended constructs and populations to prevent discrimination (Madnani et al., 2020). The appropriate balance of human judgment and

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oversight is another key issue, stressing that teachers should retain agency and authority in assessment processes (Becker et al., 2021).

Although studies have explored Western higher education contexts, little research has examined perceptions in developing country universities, especially Africa, regarding AI in assessment. As investments in education technology grow across the continent, understanding local stakeholder views can help shape appropriate applications (Adebisi et al., 2021). This study helps address this gap through an investigation at UDUSOK in Nigeria.

### ***Human-Machine Collaboration in Education***

Furthermore, the integration of AI in educational assessment necessitates a reevaluation of the roles of educators and students. While AI systems can automate certain aspects of assessment, the human touch in terms of interpretation, empathy, and contextual understanding remains irreplaceable (Buckingham Shum & Deakin Crick, 2012). Striking the right balance between human and machine contributions is crucial for fostering a symbiotic relationship that enhances the overall educational experience. The intersection of AI and educational assessment marks a pivotal moment in the evolution of learning and evaluation methodologies. This exploration will delve into the multifaceted implications, ranging from technological advancements and pedagogical shifts to ethical considerations and the changing dynamics of human-machine collaboration. As we navigate this transformative landscape, it is essential to approach AI integration in educational assessment with a critical lens, ensuring that the benefits are harnessed responsibly to create an inclusive, equitable, and future-ready educational ecosystem.

### ***Technological Advancements in AI for Educational Assessment***

Recent advancements in AI technologies, such as natural language processing (NLP), machine learning, and computer vision, have enabled the development of sophisticated assessment tools. These tools can analyze vast datasets, providing insights into individual learning patterns, identifying areas of strength and weakness, and offering personalized feedback. Citation (Rose, 2018; Siemens & Baker, 2012).

The integration of AI in educational assessment has the potential to redefine pedagogical practices. Adaptive learning systems powered by AI can tailor instructional content based on individual student needs, fostering a more personalized and student-centric learning experience (Khan, 2016; Luckin et al., 2016). This shift towards personalized learning aligns with the diverse learning styles and preferences of students, promoting a more inclusive and effective educational environment.

### ***Ethical Considerations and Fairness***

However, the increased reliance on AI in educational assessment raises ethical concerns, particularly regarding fairness and bias. Algorithms can inadvertently perpetuate existing biases present in training data, leading to unequal educational opportunities for certain demographic groups (Eubanks, 2018; Noble, 2018). It is imperative to address these ethical considerations to ensure that AI-driven assessments contribute to educational equity rather than exacerbating disparities.

The emergence of artificial intelligence (AI) technologies is poised to transform many sectors, including education. As AI capabilities in areas like natural language processing, computer vision, and machine learning rapidly advance, there is growing interest in how

these technologies could be applied to educational assessment and evaluation. This paper provides an overview of the current state and trajectory of AI in assessment, highlights key opportunities and challenges, and discusses implications for the future of educational measurement and policy.

### ***Trends in AI and Assessment***

Several contemporary trends have contributed to the rise in interest for using AI in assessment. First, there has been a push towards more continuous, real-time assessment in education rather than reliance on end-of-course exams (Shute & Rahimi, 2017). AI techniques like automated scoring and adaptive testing align well with this shift. Second, advances in natural language processing have enabled automated scoring of open-ended responses that was not previously possible (Burrows, Gurevych, & Stein, 2015). Third, growth in online and distance learning has increased demand for scalable, efficient assessment methods where AI could assist (Timms, 2016). Finally, large-scale learning data has become more available to train AI systems in identifying patterns and providing formative feedback to guide learning (DiCerbo & Behrens, 2014).

Several practical applications of AI in education assessment have already emerged. Automated essay scoring uses natural language processing to evaluate written responses based on a rubric, grammar, and other linguistic features (Burststein et al., 2017). Intelligent tutoring systems leverage machine learning to provide adaptive instruction and feedback tailored to individual students' needs and skills (Ma, Adesope, Nesbit, & Liu, 2014). Stealth assessment embedded in digital learning environments aims to unobtrusively assess competencies like critical thinking as a byproduct of student interactions (Shute & Rahimi, 2017). Computerized adaptive testing uses algorithms to adjust the difficulty of questions based on the test taker's previous responses (Timms, 2016). Each of these applications aim to extract insights from assessment data to enhance instruction, feedback, and personalization for students.

### **Objectives of the Study**

The objectives of the study were to:

- I. Identify how AI technologies are currently being applied for students' assessments at UDUSOK.
- II. Determine the benefits and challenges of using AI assessment tools as perceived by students and staff.
- III. Explore how policies, training, and resources can support ethical integration of AI assessments at UDUSOK.

### **Research Questions**

This study addresses the following research questions:

- I. How are AI technologies currently being applied for student assessments at UDUSOK?
- II. What benefits and challenges of AI assessment tools are perceived by students and staff?

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- III. What policies, training, and resources can support ethical integration of AI assessments at UDUSOK?

## **Methodology**

Descriptive survey research design was used for the study. Surveys, interviews, and test data analysis were used to triangulate findings.

### ***Participants***

Participants included students and staff from 5 faculties at UDUSOK during the 2022/2023 academic year. Convenience sampling was used to recruit:

- Students: 381 undergraduate and graduate students across 100-500 level courses that have used AI assessments
- Faculty: 46 lecturers and professors familiar with AI assessment tools
- Administrators: 27 Department Heads and University IT/Assessment Personnel

### ***Study Area***

Usmanu Danfodiyo University Sokoto (UDUSOK) is one of the largest public universities in Nigeria, located in Sokoto state and established in 1975. The main campus houses 15 faculties, including health sciences, sciences, arts and languages, education, and social sciences. In 2015, UDUSOK launched the Center for Distance Learning and Continuing Education to expand online offerings. Currently over 60,000 students are enrolled, taught by approximately 1,500 academic staff. In 2020, UDUSOK adopted the Blackboard learning management system (LMS) to support blended and fully online courses and assessments.

As educational technology and internet access increase in Nigerian higher education, institutions like UDUSOK are adopting AI technologies for various functions (Kpolovie and Awusaku, 2016). However, research on perceptions, appropriate applications, and implications of AI in the Nigerian and broader African context remains limited. This study aims to provide initial insights from the UDUSOK setting to inform policies for ethical and culturally responsive AI integration.

### ***Materials***

- Student survey: Questionnaire with Likert scale and open-ended questions on experiences with AI assessments and perceptions of benefits/challenges. Adapted from prior studies (Zawacki-Richter et al., 2020; Timms, 2016).
- Staff survey: Parallel questionnaire on perceptions of AI benefits/challenges and desired policies and training.
- Interviews: Semi-structured protocol exploring administrator views on AI policies, procedures, and recommendations.
- Test data: Scores from student assignments graded by AI tools (n=150) compared to human raters (n=3 per assignment).

### **Procedures**

The study procedures included:

- I. Administering online surveys to student and staff samples
- II. Conducting 60-minute virtual interviews with administrators
- III. Analyzing test data through statistical comparison of AI versus human scores
- IV. Triangulating results to answer the research questions

Quantitative data from surveys and test scores was analyzed in SPSS using descriptive and inferential statistics. Qualitative data from open-ended survey responses and interviews was thematically coded to identify key patterns. Participants provided informed consent prior to participation. Identifying information was removed during analysis to protect confidentiality.

### **Results**

**Research Question 1:** How are AI technologies currently being applied for student assessments at UDUSOK?

Applications of AI Assessment The surveys and interviews revealed the most commonly used AI assessment tools at UDUSOK are automated essay scoring (for written assignments), plagiarism detection software (for academic integrity), and adaptive learning systems (for personalized assessments). These have been integrated in specific courses within the faculties of education, sciences, and health sciences. Approximately 45% of student and 31% of staff respondents reported using one or more of these AI applications.

**Research Question 2:** Perceived Benefits and Challenges

Benefits Analysis of the open-ended survey responses and interview data identified key benefits perceived by students and staff:

- Efficiency - AI tools allow faster grading and plagiarism checking, reducing instructor workloads (63% agreeing)
- Consistency - AI systems apply scoring criteria more evenly than individual graders (51% agreeing)
- Accessibility - Automated assessment expands academic access for remote students (41% agreeing)
- Immediate feedback - AI enables rapid personalized feedback to support student learning (39% agreeing)
- Fraud prevention - Plagiarism checkers reduce cheating in online assessments (27% agreeing)

### **Challenges and Opportunities**

The surveys and interviews also revealed concerns about AI assessment tools:

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- Transparency - Criteria and inner workings of systems are unclear (51% agreeing)
- Privacy - Data collection poses risks of student profiling or monitoring (39% agreeing)
- Validity - AI scoring may miss nuances in grading writing or performance skills (29% agreeing)
- Fairness - Potential algorithmic biases could impact marginalized student groups (22% agreeing)
- Dehumanizing effects - Overreliance on AI may degrade student-teacher interactions (19% agreeing)
- Deskilled instructors - Eroding human expertise in assessment domains (14% agreeing)

Despite its promise, applying AI to educational assessment also poses some substantial challenges. A primary concern is the opaqueness of some AI techniques which could limit understanding of how scores are derived (Williamson, Mislevy, & Bejar, 2012). Maintaining the validity and reliability of assessment results will require ongoing evaluation of AI systems. There are also concerns about bias that could be inherent in training data or algorithms (Madnani, Cahill, Riordan, & Napolitano, 2017). Additionally, appropriate security mechanisms will need to be in place to prevent cheating with AI assistance.

However, AI presents opportunities to improve upon many limitations of traditional assessment methods. Automated scoring can reduce costs, increase consistency, and provide immediate results (Shermis & Burstein, 2013). Adaptive assessments offer a more precise gauge of ability by individualizing difficulty based on performance. Embedded stealth assessment enables continuous diagnosis of evolving skills during the learning process itself. With further development, AI could open new possibilities for assessment while maintaining rigor, validity, and transparency.

### ***Implications for Policy and Practice***

The integration of AI into assessment will have wide-ranging policy and practical implications. Policymakers will need to develop appropriate regulatory frameworks to ensure AI assessment tools meet expectations for fairness, validity, and accessibility (Timms, 2016). Teacher training and professional development programs should incorporate guidance on leveraging AI technologies for formative assessment purposes. Assessment vendors and educational institutions will need to establish prudent review processes as they adopt automated scoring tools. Additionally, debate regarding ethical usage of student learning data will persist as advanced AI techniques generate more granular insights. Overall, a balanced approach to AI in assessment that focuses on enhancing human judgment rather than replacing it could yield substantial benefits.

### **Research Question 3: Recommendations for Integration**

To address the challenges identified, students and staff proposed policies and practices to support ethical AI integration:

- Develop institutional principles and standards for ethical AI use (86% supporting)
- Increase training for instructors on incorporating AI tools into courses (79% supporting)
- Provide workshops for students explaining AI assessment processes (67% supporting)
- Conduct ongoing bias testing and validation of AI systems (63% supporting)
- Maintain human scoring and oversight mechanisms (59% supporting)
- Gather student feedback to continuously improve systems (57% supporting)
- Appoint a cross-functional AI ethics review committee (51% supporting)

These align with administrator recommendations from the interviews, emphasizing holistic policies, pedagogical alignment, validation, and combining AI with human raters.

## Discussion

This study provides initial insights into the applications and perceptions of AI-enabled assessments in a Nigerian university context. Findings suggest meaningful potential benefits in efficiency, accessibility, feedback, and consistency, but also risks around transparency, validity, ethics, and impacts on students and faculty roles. Developing policies and training to govern use of AI tools, maximize benefits, and mitigate challenges will be critical as adoption accelerates.

Results suggest that lecturers believe AI will be an able agent for optimising the higher education industry. This is evident in the responses as the respondents indicated that AI would be able to “replace lecturers when necessary”, “help enhance teaching methodology” as well as “help streamline educational systems and processes”. A number of authors have indicated this in their study(Ocaña-Fernández, Valenzuela-Fernández, & Garro-Aburto. 2019; . Renz 2020). Also, approximately 60% of respondents think AI will reduce their workload, and 90% believe teaching and learning will become more interactive with the use of AI. These views corroborate the studies of (Alam, 2021; Loeckx, 2016) who both acknowledged AI as a technology that would be helpful to both teachers and students in performing their routine functions, while also simultaneously and successfully offering effective learning experiences to both parties.

On the reservations that lecturers have towards AIED, this study showed that there is no clear disparity between the number of lecturers who fear for loss of jobs due to AI and those that do not. From the current findings, supported with evidence from the literature, it can be seen that the two views are present [24,25]. In addition, many lecturers also believe that the introduction of AI will lead to “loss of human touch and interaction”, this is in consonance with the findings of [26]

Furthermore, it can also be deduced from the study that potential implementation of AI in education could increase the vulnerability of personal security and privacy. Zawacki-Richter et al. [15] support this position when they stated that it is almost a certainty for the issue of privacy and data protection to be raised because AI will sometimes require

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large volumes of data, including information about students and lecturers which ought to be confidential.

Also, 56.7% of respondents agreed with Fahimirad and Kotamjani [27] by acknowledging that AIED is an innovation that requires huge capital outlay to implement and sustain. Finally, this study revealed that both male and female lecturers have equal tendencies to view the application of AI in the same way.

## **Conclusion**

AI has significant disruptive potential in the field of educational assessment. As emerging AI applications aim to replicate and augment human evaluation capabilities, critical attention must be paid to ensuring these tools are rigorously validated. However, if deployed conscientiously, AI assessment methods may open up new possibilities for improved assessment efficiency, personalization, and support for lifelong learning. Careful integration of human and artificial intelligence in the assessment process will enable progress toward more effective and meaningful evaluation of student learning. Further research and thoughtful policy will be needed to guide the ongoing incorporation of AI into essential assessment functions.

Overall, these findings highlight cautious optimism among UDUSOK students and staff around integrating AI and enhancing assessments. With deliberate policies and system design aligned to ethical principles, institutional contexts, and learning goals, AI tools can play a productive role in expanding access, efficiency, feedback for students, and complementary functionality alongside human graders. However, proactive steps must address transparency, validity, algorithmic bias, and impacts on marginalized populations before widescale adoption. Striking an appropriate balance between automation and human judgment will be critical for realizing the benefits of AI while preserving the interpersonal, qualitative elements essential for holistic assessment. These results provide an initial perspective from Nigeria to inform emerging practices as AI grows in higher education assessments globally.

## **Recommendations**

Consequent to the completion of this study, the following recommendations were made;

- I. Institutions need holistic principles for ethical AI integration addressing algorithmic bias, privacy, security, and impacts on marginalized populations. Ongoing testing and independent audits would support greater transparency and accountability.
- II. Developing faculty skills for combining AI with human raters and aligning systems to learning goals is essential for complementing teachers' expertise.
- III. Student awareness and co-design can help gain trust and prevent inequitable experiences.
- IV. Combining qualitative and quantitative assessment data will continue providing a holistic picture of complex skills. Further studies should evaluate the impacts of varying models combining human and AI grading on student motivation, metacognition, and learning outcomes.

## References

- Adebisi, F.I., Liman, Y.S., Raimi, L., & Shehu, H. (2021). The prospects and challenges of e-learning adoption in Nigeria amidst COVID-19 pandemic. *Ilkogretim Online*, 20(5).
- Alam, A. (2021) Possibilities and apprehensions in the landscape of artificial intelligence in education. *International Conference on Computational Intelligence and Computing Applications (ICCICA)*. IEEE. 2021:1-8. DOI: 10.1109/ICCICA52458.2021.9697272. (2021). 24.
- Bakalarczyk, W. (2021). Artificial intelligence in education: Ethical concerns. *Humanities and Social Sciences Communications*, 8(1), 1-6.
- Baker, R.S. (2019). Challenges for the future of educational assessment. *Journal of Educational Measurement*, 56(1), 1-9.
- Balfour, S. P. (2013). Assessing writing in MOOCs: Automated essay scoring and calibrated peer review. *Research & Practice in Assessment*, 8, 40-48.
- Becker, K., Niemann, D., Prinz, A., Albayrak, S., & Wild, F. (2021). Hybrid human–AI assessments: The best of both worlds?. *British Journal of Educational Technology*. American Sociological Association. 2019;5(1): 1-14. [Online]. DOI: 10.1177/2378023119846249 25.
- Chen, L., Chen, P., & Lin, Z. (2020). Artificial intelligence in education: a review. *Ieee Access*, 8, 75264-75278. <https://doi.org/10.1109/access.2020.2988510>
- Dahlin, E.(2019) Are Robots Stealing Our Jobs? *American Sociological Association*. 2019;5(1): 1-14. [Online]. DOI: 10.1177/2378023119846249 25.
- Eynon, R. (2013). The invisible challenges of being a student in a digital age: two case studies exploring the everyday realities of academic study. *iJADE*, 32(1).
- Jiang, F., Jiang, Y., Zhi, H., Dong, Y., Li, H., Ma, S., Wang, Y., Dong, Q., Shen, H., & Wang, Y. (2017). Artificial intelligence in healthcare: past, present and future. *Stroke and vascular neurology*, 2(4), 230-243.
- Kovanović, V., Joksimović, S., Poquet, O., Hennis, T., Dawson, S., Gašević, D., & Siemens, G. (2021). Examining communities of inquiry in massive open online courses: The role of study strategies. *The Internet and Higher Education*, 49, 100762.
- Kpolovie, P. J., & Awusaku, O. K. (2016). ICT adoption attitude of lecturers in Nigeria. *European Journal of Computer Science and Information Technology*, 4(5), 9-57.
- Kumari P, Hemalatha. H., (2019). Perception towards Artificial Intelligence in Human Resources Management Practices-with Reference to IT Companies in Chennai. *International Journal of Recent Technology and Engineering*. 2019;8(3): 2277-3878. [Online]. DOI: 10.35940/ijrte. D1045.1284S319

- Lipnevich, A. A., Berg, D. A. G., & Smith, J. K. (2020). Towards Integration of Human Raters and Automated Scoring in e-Assessment: A Survey of Attitudes. *Educational Assessment, Evaluation and Accountability*, 1-24.
- Loeckx J. (2016) Blurring boundaries in education: context and impact of MOOCs. *The Internatiobnal Review of Research in Open and Distributed Learning*. 2016;17(3):92-121. 23.
- Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). *Intelligence unleashed: An argument for AI in education*.
- Madnani, A., Loukina, A., Von Davier, A., Burstein, J., & Cahill, A. (2020). Building better open-domain dialog systems with possible uses in educational assessment. In *Proceedings of the 1st Workshop on Natural Language Processing for Conversational AI*.
- Makarenko, O. (2024). Embracing artificial intelligence in education: shaping the learning path for future professionals. *Multidisciplinary Science Journal*, 6, 2024ss0720. <https://doi.org/10.31893/multiscience.2024ss0720>
- Measurement, 56(1), 1-9.
- Ocaña-Fernández Y, Valenzuela-Fernández L. A, and Garro-Aburto L. (2019) Artificial Intelligence and Its Implications in Higher Education. *Journal of Educational Psychology - Propósitos y Representaciones*. 2019;7(2): 553–568. [Online]. Available:<http://search.ebscohost.com.ezproxy.iielearn.ac.za/login.aspx?direct=true&db=eric&AN=EJ1220536&site=eds-live> 21.
- Omorogiuwa, O., Ohiagu, K., & H., K. (2023). Towards the review of artificial intelligence programme curriculum and effective collaborations among academia for ai programme development in africa. *Advances in Multidisciplinary & Scientific Research Journal Publication*, 9(1), 1-14. <https://doi.org/10.22624/aims/digital/v11n1p1>
- Prinsloo, P., & Slade, S. (2020). Mapping responsible learning analytics: power and inequality in educational artificial intelligence. In *Datafied Research* (pp. 245-257). Routledge.
- Renz A, and Hilbig R.(2020) Prerequisites for artificial intelligence in further education: identification of drivers, barriers, and business models of educational technology companies *International Journal of Educational Technology in Higher Education*. 2020;17(1): 1–21. [Online]. DOI:10.1186/s41239-020-00193-3
- Rienties, B., Giesbers, B., Lygo-Baker, S., Ma, H. W. S., & Rees, R. (2016). Why some teachers easily learn to use a new virtual learning environment: a technology acceptance perspective. *Interactive Learning Environments*, 24(3), 539-552.
- Timms, M. J. (2016). Letting artificial intelligence in education off the leash: ethical considerations. *Ethics and Information Technology*, 18(2), 97-108.

- Uluskan, M. (2022). Structural equation modelling – artificial neural network based hybrid approach for assessing quality of university cafeteria services. *The TQM Journal*, 35(4), 1048-1071. <https://doi.org/10.1108/tqm-01-2022-0001>
- Wang, L. (2024). Research on the reform of English precision teaching in colleges and universities facilitated by artificial intelligence technology. *Applied Mathematics and Nonlinear Sciences*, 9(1). <https://doi.org/10.2478/amns-2024-0627>
- Westera, W. (2021). No Deep Learning in Higher Education! Why Artificial Intelligence (AI) Is Neither Artificial nor Intelligent in Solving Fundamental Educational Problems. *American Sociological Association*. 2019;5(1): 1-14. [Online]. DOI: 10.1177/2378023119846249 25.
- Williamson, B. (2021). Brain data: Privacy, property, practicality. *Learning, Media and Technology*, 46(4), 441-454.
- Williamson, D. M., Xi, X., & Breyer, F. J. (2012). A framework for evaluation and use of automated scoring. *Educational Measurement: Issues and Practice*, 31(1), 2-13.
- Williamson, D. M., Xi, X., & Breyer, F. J. (2012). A framework for evaluation and use of automated scoring. *Educational Measurement: Issues and Practice*, 31(1), 2-13.
- Zawacki-Richter, O., Bond, M., Nicolás, M. F., Nascimbeni, F., Zumaz, A. A., Aydin, C. H., Bedenlier, S., Bozkurt, A., Dolch, C., Göğüş, A., Ishiguro, K., Jung, I., Kondakci, Y., Marín, V. I., Mayrberger, K., Müskens, W., Naidu, S., Qayyum, A., Roberts, J., Sangrà, A., ... Xiao, J. (2021). Artificial intelligence in higher education: Calls for interdisciplinary research. *International Journal of Educational Technology in Higher Education*, 18(1).
- Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education—where are the educators?. *International Journal of Educational Technology in Higher Education*, 16(1), 1-27.

## NIGERIAN LANGUAGES IN EDUCATION AND GLOBALISATION: CHALLENGES AND REMEDIES

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### Abstract

*This paper discusses the role of Nigerian languages as a tool of education in the emergence of a global society, their challenges and solutions. For development to take place in any society, language is very essential. Language is culturally transmitted. It is the integral part of culture, a reflection of many features of a given culture. Like culture itself, it is learned behaviour which can be facilitated or enhanced through direct or indirect context and acculturation. Language is very important in teaching and learning because it plays a prominent role. It is central in the educational system of any nation if such a nation wants to move forward. Language is a powerful tool in educational system. Whatever knowledge is inculcated in a child is hardly as important as the language used as medium of instruction. Using the wrong medium can kill or destroy the child's cultural orientation and by the same stroke, his personality. Undue importance has been attached to the English language in our educational system, there is no reason why Nigerian Languages cannot be used in education because a language is not inferior to the other. Globalisation is a phenomenon that affects or includes the whole world. It is the defining process of the present age which is facilitated and influenced by technological developments such as modern information and communication technology. This paper looks into Nigerian Languages in Education and Globalisation: Challenges and Remedies*

**Keywords:** Nigerian Languages, Globalisation, Education, Challenges, Remedies

### Introduction

Language is not innate or inborn. That is, no human being is born with a language but every living human being has an innate tendency for acquiring a language. Language is therefore a phenomenon whose learning is facilitated by contact with a sociolinguistic situation. Human development as individuals or groups is said to be impossible without the use of natural language and remains "the principal signaling system used by humans for the transmission of information since it is the most communicative of all semiotic systems (Osakwe, 2006). It is the fund to which all human beings contribute and is generationally transferred in various contexts. In one form or the other, whether spoken or written, language involves humanity in its entirety, in much the same way that it voices

the existence of specific groups. It is the basis of all cooperative forms of socialization (Oyetade, 2015).

Language occupies an important position in human life. It is very important because it is the means through which concepts, ideas, thoughts and facts can be conveyed. Language is indispensable to man because it helps man to give expression and fully explore his environment to his advantage (Kolawole, 2016). Finocchiaro (2014) describes language as a system of arbitrary vocal symbols which permit all people in a given culture or other people who have learned the system of that culture to communicate or interact. Language occupies a very strategic position in human affairs. It is very strategic in the sense that language is the vehicle through which concepts, ideas, thoughts, facts and a host of others can be conveyed. According to Omonike, Alufohai and Idiakhwa (2020), language is a system or means of communication through spoken or written words by any group vital to the users as air is to human beings. It occupies an important position in human life. It is very important because it is the means through which concepts, ideas, thoughts and facts can be conveyed. Anthony (2015) notes that language is any set of system of linguistic symbols as used in a more or less uniform fashion by a number of people who are enabled to communicate intelligibly with one another.

Appreciating the importance of language in society is tantamount to understanding the role of language in education. It would be nauseating for one to begin to scratch from the surface now how every field and levels of education depend on language and how it would be impossible if there is no language to serve as a vehicle for our education. Language is central in the educational system of any nation if such a nation wants to move forward. That explains why meaningful policy on education must include a policy on the language or language that would serve as medium of instruction. Whatever knowledge is inculcated in a child is hardly as important as the language used as medium of instruction. Using the wrong medium can kill or destroy the child's cultural orientation and by the same stroke, his personality.

### ***Nigerian Languages***

According to Bamgbose (1971), there are about 450 indigenous languages in Nigeria. In Nigeria today, according to the 15th edition of the Ethnologue report for Nigeria, there are about 510 living languages co-existing with one another. It is interesting to note that apart from the many indigenous languages, which are of course the mother tongues of Nigerians, non-indigenous languages such as English, French, Arabic, German and Russian also exist. English has become a second language in Nigeria, while Pidgin English, with probably the largest number of speakers has also emerged as a result of the contact of English with the indigenous languages. There are over 520 languages in Nigeria, there are still some major languages. Hausa, Urhobo, Fulfulde, Igbo, Yoruba, Ibibio, Edo and Kanuri have most of the speakers in the country (Ethnologue, 2019). Papua New Guinea has the most languages, with 840 living languages. Indonesia has 710 living languages and Nigeria has 515 living languages (Ethnologue, 2019).

These Nigerian languages have been categorised as major and minor or class I, class II or class III, among others. using a number of factors such as the population of speakers, range of functions/domains of use, level of linguistic analysis. Nigerian languages are classified into three levels-major languages, state languages and local languages based on their status as dominant languages, their territorial spread and the population that speaks them (Ethnologue, 2019).



### ***Nigerian Languages and Education***

Education is a concept that encompasses everything that happens to man that makes him adopt new behaviour or modifies existing one. According to Fafunwa (1980), education is the aggregate of all processes by which a child or young adult develops the abilities, attitudes and other forms of behaviour which are of positive values to the society in which he/she lives. By this definition, education is the basis of the child's behaviour and will determine how his existence could benefit the society. These attributes are acquired by the child through the process of education.

Akinkuotu and Olufowobi (2016) viewed education as a process of transferring or imparting knowledge to individuals in the society so as to understand what is expected of them or what they should know. It is crucial in the development of a nation without which the nation cannot progress meaningfully (Meroyi, 2016). Education involves the young and the old. It is the cornerstone of a nation. Nigerian languages have roles to play in the education of the Nigerian children. Nigerian languages are simply the best medium of instruction to the Nigerian children in schools and homes. It ensures revitalisation through continued transmission and the image of the languages are enhanced by their use in teaching concepts hitherto believed to be only teachable in a foreign language (Ugwu, 2017). Besides, initial literacy in the child's first language makes the transition from the home to the school easier for the child and is likely to minimize dropout rates associated with inability to cope with an unfamiliar medium of instruction (Ugwu, 2021). The plain truth that initial literacy is best conducted in a child's mother tongue has given birth to bilingual education programmes (Oyekunle, 2022).

The roles Nigerian Languages play in education of the Nigerian child cannot be over-emphasized. The Ife six-year primary project began at January, 1970 at the then University of Ife (now Obafemi Awolowo University). The controlled class that was taught every subject in Yoruba performed better than those that were taught in English. In fact, a good example of such is the Afrikaans language of South Africa used as the sole medium of instruction from the primary to the university level. Using one's mother tongue makes it possible for a child to develop the talent God has deposited in him/her. Nigerians stand to benefit from the use of Nigerian languages as media of instruction instead of the foreign language. To use Nigerian languages as media of instruction from primary to the university level is achievable; although it will be a long-term project. Russian, China and Japan did not achieve that feat in a day (Ugwu, 2021).

Education in Nigeria is carried out largely through ex-colonial language of English. The presence of these dominant languages has largely hampered the development of the numerous Nigerian languages and dialects. The Nigerian languages are therefore underdeveloped in terms of inadequate usage and status. It is disheartening that Nigerian have apathy towards the study of Nigerian Languages at all levels of educational system in the country. If a French man could study French language in France as a discipline and citizens of Britain study English in Britain. Then, what is wrong with a Yoruba man studying Yoruba language in Nigeria? Some Nigerians feel it is degrading for them to speak their mother tongue openly with their children. What is interesting is that these children who are not allowed to speak Nigerian languages cannot speak correct English (a foreign language). We seem to have forgotten that the ability to speak one's mother-tongue enhances one's dexterity in foreign languages (Bamgbose, 2003). While recognising adult literacy as a form of education concludes that using a Nigerian language

enables to make as many people as possible literate, since literacy will be provided in a variety of languages and adapted to community needs.

Today, there is imposition of English language as medium of instruction in schools at the expense of the Nigerian languages. Education is carried on through the English language. The English language has taken the position of national language in Nigeria. The English language has become language of administration, trade, commerce, education, politics, international exchange and interaction.

### ***Importance of Nigerian Languages in Modern Education***

The development of a child is closely bound with the use of the language he has spoken from birth, the language of his parents, brothers, sisters, friends and people he has acquired his first experienced of life, from the language in which he dreams, thinks and in which he can easily express his feeling and emotions. To ignore the indigenous language which the learner is familiar with and begin to teach him in a language that is foreign as soon as he come to school is like taking such learner away from home and putting him among strangers (Oyekunle, 2022).

Nigerian languages should be taught and used as medium of instruction in schools for peace and development to take place. Educationally, instruction in the indigenous language will help the child to understand the concept easily because he is familiar with the vocabulary. Considering the researches carried out by scholars, they found out that learners learn better in their indigenous languages. It is now reasonable to say that if we want to develop and cope with contemporary issues in the society, we need indigenous languages (Ugwu, 2017).

Language and culture are inseparable, through the use of indigenous language as medium of instruction in schools, students will imbibe the cultural values of the society. It is a means of maintaining and preserving culture (Ugwu, 2017). Awobuluyi (1998) notes that if we are not ultimately to lose our national identity together with our rich indigenous culture, then we must begin to pay attention to the teaching of indigenous languages more effectively. According to when a language is threatened, their speakers too are most likely equally threatened because

people's agitation for the recognition and preservation of their language is invariably a cry for their own survival. There is a strong link between language and education, any language which the school promotes is more likely to survive than the one that is not recognised.

Ball (2010) says indigenous languages are important for children's cognitive development and their academic achievement. If the children are growing up with one language, educational provisions need to support them in becoming highly proficient in that language before engaging in academic work in L2. Bilikis (2003) it is believed in educational linguistics circles, that the indigenous language and not any language is more effective in learning and should, therefore be used as language of instruction in schools. This because it is the language, which a group of people in their early years and which normally becomes their instrument of thought and communication. To stress this, United Nation Education Scientific and Cultural Organisation (UNESCO 1953) recommended that pupils should begin their schooling through the medium of indigenous language and it should be extended to late stage in education as possible.

### ***Globalisation and Nigerian Languages***

Globalisation is the expansion of economic activities across political boundaries of nations. It entails a process and this process constitutes the integration and interdependence of economic activities between and among nations of the world (Shahzed, 2006). It is a phenomenon that affects or includes the whole world. It is the defining process of the present age which is facilitated and influenced by technological developments such as modern information and communication technology. The developed countries-United States of America, Britain, France, Germany, Japan, China etc. are well placed to determine the globalization agenda. They are well organised within their own countries with language experts who assist to plan and map out policies and strategies for the development of their languages for global use. This has made English language for example, a global language. English is used today by more than 400 million people all over the globe and second to Chinese. It is the native or official language of one fifth of the surface of the earth, it is being used throughout most of the North American continent, British Isles, Australia and New Zealand. It is important in Africa, Asia and the Islands of the central and Southern Pacific (Bamgbose, 2011).

At present, English is the most widely studied language in areas where it is not native. It is the chief foreign language taught in the schools of Latin American and European countries. Children in Japan study it in the seventh grade, and in Philippines, it is all classes from fourth grade. In India, English is an official language alternative to Hindi. In addition, the use of English is widely spread in international trade, international scholarship and scientific research. More than half of the world's scientific and technological journals as well as newspapers are printed in English. Three quarters of the world's mail is written in English and it is the language of three fifths of the world radio stations. The Soviet Union and Chinese use English in their propaganda broadcast to the developing countries of Africa and Asia. Finally, the United State information agency with its centres and libraries in various countries, and the British Council and its English languages schools aid greatly in spreading the knowledge of English. "As a result, a speaker of English can travel around the world and almost never find it necessary in major cities to employ a language other than his own in order to be understood (Oyetade, 2015).

In contrast, the Nigerian languages are not well disposed to meeting global challenges. For the global development and progress of Nigerian languages, certain problems must be tackled. In fact, the context of language learning and language use in Nigeria has advertently posed as constraints in language education. These problems are historical, socio-linguistic, socio-cultural, economic, pedagogic and political. The historical constraints are well known. Nigeria has continued to be prisoners of the past by not being able to largely rise above the colonial linguistic legacy. Nigeria continues to live under the illusion that colonial language is rallying point for the many ethnic nationals (Bamgbose, 2011).

The socio-linguistic problems have to do with language status, size of speakers and state of language development. All these factors are working against global status of the Nigerian languages but this is not the case with the ex-colonial languages which are most widely spoken at the present day. For example, the English language is an international language. Millions speak it either as first language or second. It is the vehicle of a great world literature and the main language of commerce. If not until recently, when organised bodies like the Centre for Advanced Studies of Africa Society (CASAS) started taking a

continental view of language problems in Africa, socio-linguistic study of Africa had not known the kind of networking that would speed up the process of language development in Africa. Also, in African states, some foreign educational agencies such as United Nations Children's Fund (UNICEF), United Nations Educational Scientific and Cultural Organisation (UNESCO), among others had lent their support to effect a positive development which is slow for global challenges.

The socio-cultural problems involve the problem a child faces when his language is ignored in the educational process. A child must have opportunity to learn his language and/or learn in it since education is to enhance integration, harness ethnic differences and reduce religious conflict. A child must be taught on these principles apart from giving him the skills in writing and reading from primary level. This was the agenda and focus of education during the colonial period. English language was used to achieve this agenda.

The economic problem has to do with the multiplicity of languages and the huge financial cost of developing them. Bamgbose (2011) states that the huge cost of developing the numerous languages is a necessary investment for the national unity and development. The pedagogical problem involves the conditions and facilities for teaching. In a situation where, successive governments in African states go after immediate gains in their policy formulation and implementation, spending money on education in terms of facilities, infrastructure and teacher training has become a problem. For instance, in Nigeria we have heard about some state Governors diverting or mismanaging the Universal Basic Education (UBE) fund given to them by the Federal Government. Lastly, the political problem has to do with policy, declaration without implementation. This situation is partly due to lack of political will or cavalier disposition on the part of the political class.

### ***Challenges of Using Nigerian Languages in Education.***

Many scholars have studied and made use of Nigerian languages in education but they encountered some difficulties. Nigerian languages are rich in traditional settings but they are generally insufficient to cope with the modern curriculum and concludes that this insufficiency is a major problem. Language is a tool for expressing our innermost views, feelings, desires, thoughts and experiences. The challenge therefore is that there are certain concepts in modern education which may not be adequately conveyed by any of the Nigerian languages (Ugwu, 2020).

The prestige the English language enjoys in Nigeria makes it impossible to make use of indigenous languages in education. Most of the elites in the country prefer to communicate in the English language and they look down on citizens of the country that cannot communicate in the language as illiterates and uncivilized. Parents believe that the only proof of literacy that their children can exhibit is to communicate in English. Jubril (2005) says most Nigerian parents prefer their children to have a head start in English and therefore prefer it as medium of instruction and sometimes as the language of the home, neglecting their own languages. Oyetade (2001) reports that negative attitude towards our indigenous languages has made some parents go to the extent of banning their children from speaking their indigenous languages at home even though both parents speak the same language.

Olugbuyi and Olaleye (2005) see language policy as a plan of action or statement of aims by the government on matters relating to language use in public life such as trade, administration, politics and education. The National Policy on Education (NPE)

acknowledges the federal government's appreciation of the importance of language as means of promoting social interaction, national unity and preserving culture. It encourages every child to learn the language of his/her immediate environment as well as the three major Nigerian languages namely Hausa, Igbo and Yoruba. This indicates a serious effort on the part of government because they aimed at developing indigenous languages but implementation of the policy is poor.

According to the National Policy on Education (2013), the English language is to assume the status of language of instruction from primary four and must be continuously used for the purpose onwards. The major challenge that confronts the development of modern education through indigenous languages is that the NPE does not support the use of indigenous language as medium of instruction from upper primary school. Bamgbose (2003) said that language policy has failed to work because for political reasons, government failed to specify how the policy is to be implemented. He identified some reasons such as perpetuation of colonial language policies after independence, dominance of English, marginalisation of the so-called minority languages, formulation of language policies without any plan of action for their implementation and drafted policy with escaped clauses.

Furthermore, the nature of orthographies of some of these indigenous languages particularly those with cases of tones and diacritic marks usually discourage publishers as the required characters are not contained in most of the computer keyboards. The poor attitude of Nigerians especially the elites towards reading or patronising newspapers published in indigenous languages. It is quite unfortunate that indigenous languages cannot develop without publications. Lack of literature in some indigenous languages hinders the sufficiency of such languages as media of instructions. Most of the textbooks are written in English language. Teachers cannot teach without textbooks. So, if indigenous languages are to be used as media of instructions where do teachers get textbooks. Most indigenous languages also do not have standard orthography. For instance, there are confirmed cases of variation in the orthography of the Igbo language; such variations will make it difficult to have a uniform, standard and acceptable system of writing making it difficult to develop textbooks in indigenous languages.

### ***Remedies to the challenges of using Indigenous Languages in Education***

A lot has been said about the importance and challenges of using indigenous languages in modern education but there is need to suggest possible solutions to some of the problems identified. Although, the indigenous languages have been described as insufficient to meet the demand of modern education but they should be developed and the orthography needs to be improved on (Olatunji, 2018). Emananjo (1996) drastic steps need to be taken to improve the orthography of most indigenous languages.

Textbooks and educational materials should be developed in indigenous languages while the primitive ones should be upgraded to meet the current realities of modern education. There is need to educate people on the dangers of relegating indigenous languages for a foreign language. They also need to orientate people on the importance of using indigenous languages in modern education (Olagbaju, 2009).

The mass media should promote the status of indigenous languages through her programmes. There is also a need to standardise the orthographies of the indigenous languages so that, they meet the demands of modern education (Olatunji, 2020). Emananjo (1996) suggested that indigenous language teachers should be trained and there

should be courses in indigenous languages in tertiary institutions in the country. He added that graduate teachers should be produced for all indigenous languages in Nigeria

### **Recommendations**

Problems militating against the progress and development of Nigerian languages for a possible global acceptability have been enumerated and discussed. There must be a way out, hence, these recommendations. This ex-colonial language (English) achieved its feet in the area of language development and global acceptability. So, if Nigerian Languages could toe those lines, there will be progress. We have realised that the problems are internal and external.

Now for the internal, it has to do with the attitude of Nigerians themselves (individuals, groups and government at all levels). Until Nigerians change their attitude towards the preferred use of ex-colonial language to Nigerian languages, things may not work as we expect. Nigerians must stop to live under the illusion that the English language is the rallying point for their national.

Efforts must be made at developing these languages in the area of orthographies. Some of the orthographies worked out for them are not adequate for teaching and learning. Published works in the areas of language, culture and literature must be available to meet global challenges in history, sciences, linguistics, economics, sociology etc. This will enhance the status and the size of speakers of these languages.

Governments, groups and individuals must be ready to invest in Nigerian languages development for Nigeria's technological advancement. Government must be ready to spend money on education in terms of facilities, infrastructures and teacher training.

Nigerian languages must not be used as instruments of exclusion through measures that have to do with language requirements, literacy, official language, language medium in schools, language proscription, language stigmatization, majority/minority language status and neglect of immigrants' language. All of these measures are the way by which any language could serve as a factor for participation or exclusion.

### **Conclusion**

In conclusion, it had been argued that for any meaningful development to take place in any society, education must take place in any society, education must take place using language as a tool. It was argued that Nigerian languages are central to the education of Nigerians. Nigerian languages must be developed to meet the global challenges. Emphasis must be placed on the use of Nigerian languages in education than English language. Japan and China abandoned foreign language before they could move forward technologically. All hands must be on deck to ensure that Nigerian languages attain global acceptability.

### **References**

Akinkuotu, Y.A & Olufowobi, O.K (2016). Education in Nigeria: Beyond the 21st century. In Kolawole C.O.O, Baguda, A.A, Moronkola, O.A, Akinkuotu, A.O, Babarinde, S.A, Ojedokun, I.M and Meroyi S.I. Education in Nigeria: Looking

- beyond the 21st century. A book of reading. Department of Teacher Education, University of Ibadan.
- Awobuluyi, (1998). Language Education in Nigeria, Theory, Policy and Practice in Fafunwa Foundation Internet Journal of Education. <http://www.fafunwafoundation.tripod.com>.
- Ball, J. (2010). Enhancing learning of children from diverse language backgrounds: Mother tongue-based bilingual or multilingual education in early childhood and early primary school years. Retrieved from <http://unesdoc.unesco.org/images/0021/002122/212270e.pdf>
- Bamgbose, A. (1971). The English language in Nigeria. In the English language in West Africa. Spencer J. (ed.) London: Longman pp.35-48.
- Bamgbose, A. (2003). Language as a factor in participation and exclusion in Ndimele Ozo- MEkuri (Ed), four decades in the study of languages and linguistics in Nigeria. A festschrift for Kay Williamson. Aba: National Institute for Nigerian Languages.
- Bamgbose, A (2011). African Languages Today: The Challenge of and Prospects for Empowerment under Globalisation. Retrieved October4, 2017 from <http://unesdoc.unesco.org/images/0014/001466/146632e.pdf>
- Bilikis, D.A. (2003). An Evaluation of Yoruba the Department of Arts and Social Sciences Education, Faculty of Education, University of Ilorin.
- Emananjo, E.N. (1996). Language and the National Policy on Education: Implication and Prospects
- Ethnologue. (2019). Ethnologue: Languages of the world. Retrieved May 2, 2020, <https://www.ethnologue.com/country/NG>
- Fafunwa, A. B. (1974). History of Education in Nigeria. London: Hazell Watson & Viney Ltd. Aylesbury, Bucks.
- Federal Republic of Nigeria (2013). National Policy on Education (4th Edition). Nigerian Educational Research and Development Council Press (NERDC)
- Finocchiaro, V. (2014). Language in national integration: Nigeria as a case study. A paper Presented at the Twelfth West African Language Congress, Ile-Ife
- Jibril, M. (2005). "Nigerian Languages and Linguistics in the Era of ICT". In Globalization and the study of Languages in Africa Porthacourt, Grand Orbit Communication.
- Kolawole, C. O. O. (2016). Language education and the curriculum nexus: Pathway to achieving sustainable development in Nigeria. Inaugural Lecture, University of Ibadan.
- Meroyi, S.I. (2016). Education in Nigeria beyond the twenty first century: knowledge, intelligence and sustainable development. In Kolawole C.O.O, Baguda, A.A, Moronkola,

- O.A, Akinkuotu, A.O, Babarinde, S.A, Ojedokun, I.M and Meroyi S.I. Education in Nigeria: Looking beyond the 21st century. A book of reading. Department of Teacher Education, University of Ibadan.
- Olagbaju, O. (2009). Challenges of using Nigerian languages in Modern Education. An unpublished paper presented as part of course work for TEE 813
- Olatunji, S.O. (2018). Bilingual education projects in ten countries, lessons for and from Nigeria. ASE 811. Department of Arts and Social Sciences Education, University of Ibadan.
- Olatunji, S. O. (2020). Promoting sustainable development goals through Nigerian languages: challenges and prospects. Journal of the International Association of Language Educators (JIALE) Special Edition, 310-322
- Olanrewaju, A. O. (1998). Using Nigerian Languages as media of instruction to enhance Scientific and technological development: An action delayed. *Fafunwa Foundation Internet Journal of Education*. <http://www.fafunwafoundation.tripod.com>. Retrieved on Thursday, December 11th 2008.
- Olugbuyi, A & Olaleye, T. (2005). “The Nigerian Language Policy Problem and National Integration”. A paper presented at the 9th Annual Conference and Workshop held at Federal College of Education, Omoku, Rivers State.
- Omonike, C, Alufohai, P & Idiakhwa, A. (2020). English language proficiency as a predictor of academic achievement of senior secondary school students in Edo state. *Journal of International Association of Language Educators* 1(1)
- Osakwe, R.N. (2006). Understanding Teaching Profession. Benin city: Osasu Printing Press.
- Oyekunle, N. E. (2022). The issue of language in science classroom: A qualitative study. *Journal of International Association of Language Educators (JIALE)*. Vol. 3, 152-158
- Oyetade, S. O. (2001). Attitude to foreign languages and indigenous language use in Nigeria. In Language attitude and language conflict in West Africa. Igboanusi, H. (ed.). Ibadan: Enicrownfit Publishers, pp 14-29
- Shahzad, A. (2006). What is globalization. Historical background. *Jadarpur Journal of International Relations*. <https://doi.org/10.117/0973598406110013>
- Ugwu, E.O. (2017). Promoting Nigerian languages beyond the 21st century: problems and Prospect. In D.O Fakeye, S.A.O. Oladunjoye, I.A. Alade, B.O Kayode Olawoyin, O.R.
- Bateye, S.O., Olatunji and O.S. Jayeoba (Eds.) Further thoughts on language, education and the curriculum nexus for sustainable development in Nigeria. Ibadan: Constellation Books. 107-145.



- Ugwu, E. O. (2020). Language policy and planning in Nigeria: Moving beyond rhetoric. *Language problem and language planning*, 44(1), 1-19. <https://doi.org/10.1075/lplp.00053.okw>
- Ugwu, E. O. (2021). Mother Tongue-Based Multilingual Education in Nigeria: A remote reality. *International Journal of Arts and Social Sciences Education (IJASSE)*. Vol. 6, No. 2, 61- 72
- UNESCO (1953). *The use of vernacular languages in Education. Report of the UNESCO Meeting of Specialists (1951)*. Paris: UNESCO Press.

## THE USE OF VISUAL BASIC AS AN ATTITUDINAL MODEL IN PRIMARY SCHOOLS' MATHEMATICS

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### Abstract

*The use of Visual Basic as an attitudinal model in primary school's Mathematics was conducted among primary school pupils in Oyo State. As a mixed method study of 50 basic five in Mathematics pupils were purposively drawn among all public and private primary schools in Oyo State, specifically in Ibadan North Local Government Area. Two research questions and hypotheses were raised and tested at 5% level of significance. Two instruments used for the study included Visual Basic and 22-items Pupils' Attitudes Towards Mathematics (PATM,  $r= 0.775$ ). Data collections were analyzed through frequency counts, mean and standard deviation, Pearson Moment Correlation and t-test inferential statistics at 0.05 level of significance. Findings showed that there were pre and post mean attitudinal scores, but no gender mean attitudinal scores in Visual Basic Primary Schools' Mathematics. There was significant relationship between pre and post attitudinal scores in Visual Basic Primary Schools' Mathematics with Pearson moment correlation coefficient ( $\rho=1.0$ ), thereby rejecting the null hypothesis. T-test inferential statistics of gender's mean attitudinal scores in Visual Basic Primary Schools' Mathematics showed  $\text{crit-t} = -2.0106$ ,  $\text{cal.t} = -0.05$ ,  $\text{df} = 48$ ,  $P > 0.05$  level of significance), was not rejected. Conclusion, discussion and recommendations were made in the study.*

**Keywords:** Visual Basic, Mathematics, Attitude, Primary School, Pupils

### Introduction

One of the important subjects that help in the attainment of future academic career of students is Mathematics. Most courses in science and social sciences require the knowledge of Mathematics, which is a core subject from the primary through the junior secondary school levels of educational system. This important position occupied by the subject in the school curricular is bore out of the role of Mathematics in scientific and technological development, While Science is the bedrock that provides the spring board for the growth of Technology, Mathematics is the gate and key to the Sciences. Mathematics as an idea and abstract in nature, is also a universal language with particular kind of logical structure that contains body of knowledge relating to number and space with prescribed set of method for reaching conclusion about the physical world. In other words, Mathematics is the precursor and the queen, of Science and Technology, and indispensable in the nation building.

### ***Historical frameworks in Mathematics***

Since the introduction of formal education in Nigeria, Mathematics education has gone through several developments from the era of formal Arithmetic, Algebra, Geometry and the likes through the period of traditional Mathematics and the modern Mathematics controversy to the present everyday general Mathematics. Some of these changes have always been necessitated by the realization of the role which Mathematics should play in the nations Scientific and Technological development. Mathematics is the subject which often rewards the creator with strong sense of aesthetic satisfaction. Elementary Mathematics was part of the educational system in most ancient civilizations (Ancient Greece, Roman Empire, Vedic society and Ancient Egypt).

In most cases, a formal education was only available to male children with a sufficiently high status, wealth or caste. In Plato's division of the liberal arts into the trivium and quadrivium, the quadrivium included the mathematical fields of arithmetic and geometry. This structure was continued in the structure of classical education that was developed in Medieval Europe. Teaching of geometry was almost universally based on Euclid's Element. Apprentices to trades like masons, merchants, and money-lenders should expect to learn such practical Mathematics as was relevant to their profession. The first Mathematics textbook to be written in English and French language were Published by Robert Recorde, beginning with the *Grounde of Artes* in 1540. In the Renaissance the academic status of Mathematics declined, because it was strongly associated with trade and commerce though, it continued to be taught in Europe universities, yet it was seen as subservient to the study of Natural, Metaphysical and moral philosophy. However, researchers in Mathematics education are primarily concerned with the tools, methods and approaches that facilitate practice or study of practice. Mathematics educational research since the 19th century had shown that Mathematics as a subject had develop into an extensive field of study, with his own concept theories, methods, national and international organizations, conferences and literature. This trend was somewhat reversed in the seventeenth century with the University of Aberdeen creating a Mathematics chair in 1613, followed by the chair in Geometry being set up in Oxford University in 1619 and Lucasian chair of Mathematics established by the University of Cambridge in 1662. However, it was uncommon for Mathematics to be taught outside primary, secondary and tertiary institution. In the 18th and 19th centuries the industrial revolution led to an enormous increase in urban population when basic numeric skills, such as the ability to tell the time, count money and carry out simple arithmetic became essential in that new urban lifestyle. Within the new public educational systems, Mathematics became a central part of the curriculum from an early age. It was, however, saddened that pupils' interest comparatively to other subjects was not encouraging.

Visual Basic as an object-oriented programming language easily permits individuals to incorporate user-written functions into a speed-sheet. As a computer language (High level language) designed by Microsoft company which is now the core Macro language for all Microsoft's office products, including Microsoft word, different object-oriented programming language that has been in existence, is the simplest of all to perform any given operation. Visual Basic is a high-level language (human-language) which is user-friendly in nature. It helps in learning Mathematics easy and faster. According to (Oladayo, 2009) object-oriented programming language is an outgrowth of functional language. In object-oriented language, the code used to write the program and the data processed by the programme are grouped together into units called Objects. It has object-oriented programming language with its source from the Computed-Aided Instruction.

In the mid-1950s and early 1960s collaboration between educators at Stand Ford University in California and International Business Machines (IBM) Corporation introduced Computed Assisted Instruction (CAI) into selected elementary schools. Initially, CAI programmes were a linear presentation of information with drill and practice sessions. These early CAI systems were limited by the expense and the difficulty of obtaining, maintaining, and using the computers that were available at that time. Programmed Logic for Automatic Teaching Operations (PLATO) system, another early CAI system initiated at the University of Illinois in the early 1960s and developed by Control Data Corporation, was used for higher learning. It consisted of a mainframe computer that supported up to 1000 terminals for use by individual pupils. By 1985 over 100 PLATO systems were operating in the United States. From 1978 to 1985 also introduced a communication system between pupils that was forerunner of modern electronic mail (messages electronically passed from computer to computer).

The time-shared Interactive Computer Controlled Information Television (TICCIT) system was a CAI project developed by MITRE Corporation and Brigham Young University in Utah. With the advent of cheaper and more powerful Personal Computers in the 1980s, use of CAI increased dramatically. In 1980 only five percent of elementary schools and 20% of secondary schools in the United States had computers for assisting instruction. A recent development with far ranging implications for CAI is the vast expansion of the Internet, a consortium of interlinked computers. By connecting millions of computers worldwide, these networks enable pupils to access huge stores of information, which greatly enhances their comprehension ability. Mathematics as a practicable instruction since ages had made use of so many methods in its way of disseminating information, which include teacher centered methods, pupils-based methods, teacher pupils' method and other methods which include the using of audio, visual and audio-visual aids in the releasing of its own case study (Oladayo, 2009).

The present of visual elements in today's learning is increasing of images and visual presentations with text in textbooks, instructional manuals, classroom presentation and computer interfaces broadens. Although the educational community is embracing visual enhancements in instructions, the connection of visual and verbal information, is evidenced through history. According to Benson (2019) words are the image of things stressed further that without image, thinking is impossible and characters in alphabets began as picture with meaning. These symbols portray a man-made language with no distinction between words and pictures, just as musical notes convey the language of music. However, the modernization of this present era supports the concepts of visualizing school curriculum and instructions for better comprehension.

Recently history shows a reversal in this separation of teacher based learning and audio-visual learning which shows a great reliance on visually oriented approaches to information presentation. These facts and findings had led to a visualization movement in modern computing society whereby complex computations are presented graphically, allowing for deeper insights as well as heightened abilities to communicate concepts. Visualization helps make sense of data that may have seemed previously unintelligible. The proficiency of words and numbers is insufficient and must be supplemented with additional basic skills as new and emerging technologies permeate activities of daily living. Those who thought processes are predominantly in the right-hemisphere where visual-spatial and nonverbal component. Cognition activities rule frequently may have

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difficulty capitalizing on a learning style that is not compatible with their abilities. Instructional materials as well as teaching styles should be matched with cognitive styles for greater benefits. However, this research looks into how Visual Basic as an object-oriented language help in attitudinal solving some basic Mathematical problems.

Oladayo (2009) stated that Computer Aided Instruction had fuel the spirit of practicable thinking in Mathematics among primary schools' learner as it is diverting and rapidly expanding and learning process. It makes thinking ability to be fastened compared to when the learner is roved of Computer-Aided Instruction; and further explained that children are naturally excited and interested in Mathematics that, the first three years of school has always been a solid background for the learners because of the proper use of visual aids. Some of them may get disenchanted because of the unavailability of visual element in learning of Mathematics from primary four (4) to primary six (6) thereby returning their interest in Mathematics to zero point (level).

Subsequently, Mathematics has a practicable subject whose knowledge and its relevant in day-to-day activities, should be supported with current trend of information and communication technology through the use of Computer Aided Instruction otherwise called Computer-Assisted Instrument. On these premises lie the use of Visual Basic as an attitudinal model in Primary Schools' Mathematics.

Historical frameworks in Visuals Basics and Students' Attitudes in Mathematics-As a result of no classification index of research domains were provided in the proceedings of the joint meeting of PME-27 and PME NA-25 in Hada&Arcavi (2001), it was necessary to examine all of the Research Reports published that year, 19 of which (and two Short Orals) had titles suggesting visualization. Of these 19, nine turned out to be directly concerned with the topic Cohen; Nardi and Iannone; and three were indirectly related to it, the remaining seven mentioned visualization incidentally. In the 12 papers cited, visualization in mathematics education was investigated in the following areas: computer technology (Pratt & Davison, 2003; Schunk,2002); geometric solids (Campbell & Beaudry, 2005), notations and representation (Herman, 2004), use by mathematicians (Nisbet & Bain, 2000), theoretical development of models for cognition (Sinclair, 2003), metaphors (Maschietto & Bartolini, 2005), gestures (Radford, Bardini, Sabena, Diallo & Simbagoye, 2005), and finally, teaching and curriculum development (Owens, 2005). At PME-28 in Bergen, Nooriafshar (2007), the research domain index listed seven Research Reports (and no Short Orals) classified under the heading Imagery and Visualization. Three of the research studies reported (all conducted in Cyprus) addressed a family of topics involving the role of pictures and other representations in problem solving, the number line, fractions and decimals, with children in grades ranging from 1 to 6 (Elia & Philippou,2004; Gagatsis & Elia, 2004; Michaelidou, Gagatsis, &Pitta, 2004). The results of these studies stressed the need for multiple representations of fractions and decimals, and led to further theory construction in this content area. The Cyprus researchers, under the direction of Athanasios Gagatsis, have been prolific not only in their research output, but also in addressing the need for an overarching theory with regard to the role of visual representation in mathematics education. One other Research Report at PME-28 investigated fractions and developed theory (Herman.2004). The results of this study suggested that the process object duality of notation for a fraction result in images as a product that are problematic in the sense that they cannot easily be converted into images of the process required in addition of fractions. Their research suggested "the routes to seeing the fraction symbol as process and as object may be cognitively separate". This

result led Herman (2004). to conclude that the difficulty experienced by students in their study "may just be because (in the domain of fractions at least) objects are not the encapsulation or reification of processes after all". This rather startling conclusion seems to call for further research, and if confirmed in related studies, may have implications both for the teaching of fraction concepts and processes, and also for avenues of further investigation of how use of imagery may facilitate or hinder reification. PME-29 in Melbourne, Australia in 2005 witnessed the consolidation of a trend that had been gaining momentum in the last few years, namely, Gesture and the construction of mathematical meaning, which was the title of a Research Forum organized by Arcavi & Hadas (2002). The recent trend of conducting systematic research on the use of gesture links these indicators to "the birth of new perceivable signs" The connection of gestures with semiotic theories, and with theories of embodiment, is further epitomized in the research (Thomas, 2003; Vermeer, Boekaerts & Seegers, 2000; Sabena, Radford & Bardini, 2005). This development marks the genesis of a typology of kinds of gestures and their uses in mathematics education. The visual nature of this research endeavour is illustrated by the inclusion of photographic evidence in many research reports.

In some case, boys were more confident than girls even when their mathematics achievement test was the same to that of girls; and reported by Vermeer, Boekaerts, & Seegers (2000). had further shown that the gender differences in self-confidence were more marked for application problems than computation problems, with girls showing significantly lower confidence for application problems. Despite such consistent findings of girls' low confidence in mathematics, studies of classroom environment have shown that the girls' confidence in mathematics improved greatly in classes which actively involved girls in the learning of mathematics (Boaler, 2000).

### **Statement of the problem**

Mathematics is an indispensable and essential subject that forms the basis of other disciplines: in Science, Technology, Engineering and Mathematics (STEM) fields. It is the subject that is often perceived as challenging and intimidating, particularly by young learners in primary schools. In recent years, there have been growing concern about the declining performance of students in Mathematics, particularly at the primary school levels; and this issue has led to various debates about the effectiveness of traditional teaching methods and the need for innovative approaches such as the use of Visual Basic to improve learner's Mathematical literacy. Many of these innovative methods have not been fully indigenously used at the elementary level of the nation educational system, instead at the secondary school levels. Apart, most of these methods focused on achievement without considering the attitudes to which learners have towards topics in Mathematics, and the subject as a whole, necessitated the need to explore this teaching strategy as replica indigenous on one hand, and where primary school levels serve the foundation to the secondary levels necessitate the need to fill the vacuum in the use of Visual Basic as an attitudinal model in Primary Schools' Mathematics, as indispensable.

### **Objectives of the Study**

Study determined use of Visual Basic as an attitudinal model in Primary Schools' Mathematics, as visual basic is an object-oriented programming language that have positive effect on learning process of Mathematics in primary schools. It would expose to

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the primary school teachers the needs of visual elements in the learning of Mathematics. Study would show the attitudinal model of learning of Mathematics with visual and hasten comprehension of the pupils' learning of Mathematics.

### **Research Questions**

- I. What are the pre and post mean attitudinal scores in Visual Basic Primary Schools' Mathematics?
- II. What is the gender mean attitudinal scores in Visual Basic Primary Schools' Mathematics?

### **Hypotheses**

Ho1: There is no significant difference or relationship between pre and post attitudinal scores in Visual Basic Primary Schools' Mathematics.

Ho2: There is no significant difference or relationship between gender mean attitudinal scores in Visual Basic Primary Schools' Mathematics.

### **Methodology**

#### ***Research Design***

The research design was a mixed method study where some pupils were exposed to the use of Visual Basic of learning of some topics in Mathematics at the selected primary schools.

#### ***Population***

The target population for the study comprised of primary schools' pupils of Ibadan North Local Government Area of Oyo State, Nigeria, aged-bracket (9-12) years old or simply basic five pupils.

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

The study focused on pupils of two public and private schools in Ibadan North Local Government Area of Oyo State, Nigeria, with precise fifty (50) basic Mathematics pupils who have spent five years of studying basic Mathematics.

#### ***Research Instruments***

Two major instruments deployed for the study included Visual Basic and Pupils' Attitudes Towards Mathematics (PATM)-As a result of the available numbers of the Visual Basic the treatment group was assigned one instrument to five pupils during the school's hours of learning Mathematics with their teachers performing mere supervisory role in other not affect the smooth academic calendar of the schools, among others. Pupils' Attitudes Towards Mathematics (PATM) comprised of 20-items in Four-point Likert type was adapted and used for the study.

#### ***Validity of Instrument***

The Visual Basic was trial tested on some pupils not within the local council areas to identify the problems the similar pupils of the selected pupils might encounter in the course of their use. In fact, these visual basic could as well be tagged 'improvised' which have been configured scope of the primary school Mathematics' topics at those levels.

Similarly, Pupils’ Attitudes Towards Mathematics (PATM) was trial tested on some pupils not within the local council areas to identify the problems the similar pupils of the selected pupils might encountered in the course of their use.

**Reliability of Research Instrument**

In the course self-pilot study to the instruments of the study Visual Basic was Textron selected pupils over two weeks so as to determine the extent to which their general applications could fair for their designed-purposes. A reliability analysis of Visual Basic via Kuder Richardson 21-formula had value of 0.832 was obtained. On the Pupils’ Attitudes Towards Mathematics (PATM) which was trial tested had Cronbach Alpha co-efficient reliability of 0.775.

**Administration of the Research Instrument**

Prior to the time of their administration researcher personally visited the participating schools, and solicited the assistants of their respective head teachers and those handling the primary five pupils of the mission of the study, in line with the contemporary topics within Mathematics curriculum. These teachers were well informed on the need to ensure that their pupils were grouped based on the available quantity of the visual basic to go round the selected pupils of one per five pupils to learn Mathematical topics within timeframe of seven weeks. The Visual Basic students were given Pupils’ Attitudes Towards Mathematics (PATM) to complete at the end of using Visual Basic through their teachers.

**Data Collection and Procedure**

Prior to the data collection as the study, Visual Basic was introduced to pupils for some weeks of the school’s calendar and thereafter given Pupils’ Attitudes Towards Mathematics (PATM) to complete, retrieved through their teachers.

**Result**

RQ1: What are the pre and post mean attitudinal scores in Visual Basic Primary Schools’ Mathematics?

**Table 1:** Pre- and Post-Pupils’ Attitudes Towards Mathematics (PATM)

S/N	Statements of Visual Basic and Attitudes to learning Mathematics	4 = SA Pre Post	3 = A Pre Post	2 = D Pre Post	1 = SD Pre Post	Means Score Pre Post
1	Visual Basic leads pupil on belief "I can	24 27	17 12	02 00	07 11	3.16 3.10
2	Visual Basic leads pupils on belief. "I cannot"	13 12	17 16	13 19	07 03	2.72 2.74
3	Visual Basic teachers are not often friendly	15 12	12 09	10 04	13 25	2.58 2.16
4	Visual Basic is the most difficult aids in the school	13 06	13 04	20 16	04 24	2.70 1.84

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5	Visual Basic makes pupil enjoys learning	22	04	02	22	2.52
		15	02	10	14	2.36
6	Visual Basic is more likely to show pupil's interest in Mathematics	24	07	13	06	2.98
		10	05	14	21	2.08
7	Visual Basic make pupils values Mathematics period	23	08	15	04	3.00
		22	08	14	08	2.92
8.	Visual Basic make pupil puts effort toward learning Mathematics	17	06	03	24	2.32
		08	09	01	32	1.86
9	Visual Basic makes pupil performs well in Mathematics	03	13	18	16	1.80
		10	08	16	26	2.44
10.	Visual Basic makes pupil not enjoy learning in Mathematics	13	14	08	15	2.50
		27	06	08	09	3.02
11	Visual Basic makes pupil Hasgreat value in learning Mathematics	20	17	12	01	3.12
		10	10	11	19	2.22
12	Visual Basic stimulates one to accomplish success	10	10	11	19	2.22
		20	17	12	01	3.12
13.	Visual Basic creates fear for one's learning	27	06	08	09	3.02
		13	14	08	15	2.50
14	Visual Basic is not needed for one's grows in life	10	08	16	26	2.44
		03	13	18	16	2.06
15	Visual Basic makes pupils not social	08	09	01	32	1.86
		17	06	03	24	2.32
16.	Visual Basic makes pupil hasno energy into completing the task at hand	22	08	14	06	2.92
		23	08	15	04	3.00
17	Visual Basic affords pupil's minimal work	10	05	14	21	2.08
		24	07	13	06	2.98
18.	Visual Basic affords pupil to go above	15	02	19	14	2.36
		22	04	02	22	2.52
19.	Visual Basic affords pupil to go behind end result	06	04	16	24	1.84
		13	13	20	04	2.70
20.	Quality work in Visual Basicis affected by Classroomsurrounds	12	09	04	25	2.16
		15	12	10	13	2.50
21.	Quality work in Visual	12	16	19	03	2.74

	Basic is affected by school Environment	13	17	13	17	2.92
22.	Quality work in Visual Basic is affected by pupil's Emotions	27	12	00	11	3.10
		24	17	02	07	3.16
	Subtotal	346	217	238	319	2.57
	50= 4,170	346	217	238	323	2.58

Keys: Strongly Agreed=4, Agreed=3, Disagreed=2, Strongly Disagreed=1, (Pre)(Post)=(Pretest Response) (PosttestResponse), (Pretest Response Grand Mean) (Posttest Grand Mean) = (2.57) (2.58). Table 1 described Pre- and Post-Pupils' Attitudes Towards Mathematics (PATM) which showed diverse response to the attitudes under consideration using mean score of 2.5 as criterion referenced point.

RQ2: What is the gender mean attitudinal scores in Visual Basic Primary Schools' Mathematics?

**Table 2:** Gender's means scores of post-Pupils' Attitudes Towards Mathematics (PATM)

S/N	Statements of Visual Basic and Attitudes to learning Mathematics Female	4 = SA		3 = A		2 = D		1 = SD		Mean score
		Male	Female	Male	Female	Male	Female	Male	Female	
1	Visual Basic leads pupil on belief "I can	11	07	02	03	03	13	3.13		
		14	06	00	07	03	07	3.00		
2	Visual Basic leads pupils on belief. "I cannot"	05	07	05	06	06	2.48			
		06	08	10	03	03	2.63			
3	Visual Basic teachers are not often friendly	06	05	04	08	08	2.39			
		06	04	02	15	15	2.04			
4	Visual Basic is the most difficult aids in the school	05	05	09	04	04	2.48			
		03	02	08	14	14	1.78			
5	Visual Basic makes pupil enjoys learning	10	01	01	11	11	2.43			
		08	01	10	08	08	2.33			
6	Visual Basic is more likely to show pupil's interest in Mathematics	11	03	05	04	04	2.78			
		05	02	07	13	13	1.96			
7	Visual Basic make pupils values Mathematics period	10	03	06	04	04	2.83			
		11	04	07	05	05	2.78			
8.	Visual Basic make pupil puts effort toward learning Mathematics	07	02	01	13	13	2.13			
		04	04	01	18	18	1.63			

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9	Visual Basic makes pupil performs well in Mathematics	01 05	05 04	08 08	09 10	1.91 2.15
10.	Visual Basic makes pupil not enjoy learning in Mathematics	05 14	06 03	03 04	09 06	2.30 2.93
11	Visual Basic makes pupil Hasgreat value in learning Mathematics	09 05	07 05	05 05	02 12	3.00 2.11
12	Visual Basic stimulates one to accomplish success	04 10	04 09	05 06	10 02	2.09 3.00
13.	Visual Basic creates fear for one's learning	12 07	02 07	03 04	06 09	2.87 2.44
14	Visual Basic is not needed for one's grows in life	04 01	03 07	07 09	09 10	1.91 1.96
15	Visual Basic makes pupils not social	03 09	04 03	00 01	16 14	1.74 2.26
16.	Visual Basic makes pupil hasno energy into completing the task at hand	10 12	03 04	06 08	04 03	2.83 2.93
17	Visual Basic affords pupil's minimal work	04 12	02 03	06 07	11 15	1.96 3.19
18.	Visual Basic affords pupil to go above	06 11	01 02	08 01	08 13	2.22 2.41
19.	Visual Basic affords pupil to go behind end result	02 07	01 07	07 10	13 03	1.65 2.67
20.	Quality work in Visual Basicis affected by Classroomsurrounds	05 08	04 06	01 05	13 08	2.04 2.52
21.	Quality work in Visual Basic is affected by school Environment	05 07	07 09	08 07	03 04	2.61 2.70
22.	Quality work in Visual Basic is affected by pupil's Emotions	12 12	05 09	00 01	06 05	3.00 3.04
	Subtotal	147	087	100	172	2.41
	50= 4,170	177	116	211	197	2.51

Keys: Strongly Agreed=4, Agreed=3, Disagreed=2, Strongly Disagreed=1, (M)(F)=(Male) (F),(Male Grand Mean)(Female Grand Mean) = =(2.41)(2.51), Male=23, Female=27, Total=50

Table 2 described students’ gender’ Attitudes Towards Mathematics (PATM) with different mean scores to the Visual Basic but the overall criterion mean score of 2.5 as referenced point to the students ‘adaptability.

**Hypotheses**

Ho1: There is no significant difference or relationship between pre and post attitudinal scores in Visual Basic Primary Schools’ Mathematics.

**Table 3a:** Computation of Pre-Post attitudinal scores in Visual Basic Primary Schools’ Mathematics

Pre(X)	Post(Y)	X <sup>2</sup>	Y <sup>2</sup>	XY	Mean (μ of X)	Mean (μ of Y)
346	346	119,716		119,716	119,716	
217	217	47,089		47,089	47,089	
238	238	55,930		56,644	55,930	280
319	323	101,761		104,329	103,037	
1,120	1,124	324,496	327,778	325,773		

**Table 3b:** Relationship of Pre-Post attitudinal scores in Visual Basic Primary Schools’ Mathematics

Pre-attitudinal scores in Visual Basic Primary Schools’ Mathematics	50	280	0.99 ≈ 1.0	Perfect or Very Strong
Post attitudinal scores in Visual Basic Primary Schools’ Mathematics	50	281		

Table 3a and b showed the pre and post’s means (μ<sub>1</sub>, μ<sub>2</sub>) of attitudinal scores in Visual Basic were (280, 281) in Visual Basic with Pearson Moment Correlation Coefficient 1.0. The Null hypothesis is rejected, and one says there was significant relationship between pre and post attitudinal scores in Visual Basic Primary Schools’ Mathematics

Ho2: There is no significant difference or relationship between gender mean attitudinal scores in Visual Basic Primary Schools’ Mathematics.

**Table 4-** Gender’s mean attitudinal scores in Visual Basic Primary Schools’ Mathematics

Gender’s scores	N	Means (μ)	Standard. Deviation	Crit-t	Cal-t	df
Sig.						
in Visual Basic						

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Primary Schools'

Mathematics

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Males' mean scores	23	126.50	114.366	-2.00	-0.05	48
P>0.05						

in Visual Basic

Female's mean score	27	152.75	136.841
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in Visual Basic

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The above table 4 showed male and female's mean and standard deviation ( $\mu$ ,  $\sigma$ ,) of attitudinal scores in Visual Basic were (126.50, 114.366) and (152.75, 136.841) respectively as gender's mean attitudinal scores in Visual Basic Primary Schools' Mathematics. With the aid of t-test where  $Crit-t = -2.0106$ ,  $Cal.t = -0.05$ ,  $df = 48$ ,  $P > 0.05$  level of significance, showing not rejecting the Null hypothesis and confirm that there was no significant gender mean attitudinal scores in Visual Basic Primary Schools' Mathematics.

### Discussions

Olaoye (2013) posited in a paper titled 'Better attitude attainment in Teaching Profession' that attitude in man's life constitute an indispensable variable in life as it constituted the altitude man reaches in life due to its 100% variation in life, in particular when it is done in numerical configuration of the English Alphabets from A-Z, among other words configurations

This finding is consistent with Warren (2000) as cited by Akpan & Abia (2009) asserted that when new technologies are integrated into teaching and learning, there is greater student engagement in learning, and greater engagement equals to higher achievement. During learning it was noticed that Visual Basic morale and enthusiasm was high and they were seen showing great interest in the lessons. Creating a web of information relating to every question portrayed the need for pupils to be problem-solvers and thinkers and not just memorizers of rules and the pupils found this very enjoyable. Their findings indicated that the use of colour graphics in instructional modules as opposed to black and white graphics promotes achievement, particularly when learning concepts. Some Research suggests that using visual treatments in lessons enhances student achievement with varying degrees of success. Study indicated that there would always be a difference in the attitudes of pupils exposed to visual basic. It makes pupils use their intellectual ability during learning processes; and therefore, supports the report by Harding & Terrel (2006) that it has been found that visual learning technique is one of the best methods for students on how to learn and think and be enthusiastic.

The causes of the gender differences in mathematics attitude test were found to be multifaceted. This leads to the submission of Stylianou, (2001) that the gender differences in visual basic were more marked for application problems than computation problems, with girls showing significantly lower confidence for application problems via visual basic. Despite such consistent findings of girls' low confidence in mathematics, studies of classroom environment have shown that the girls' confidence in Mathematics improved greatly in classes which actively involved girls in the learning of Mathematics. Several

studies have reported that there are gender differences in attitude towards learning mathematics via visual basic with girls showing more negative attitudes than boys. Stylianou, (2001) reported from her study of the perceptions and use of visualization by mathematicians and undergraduate students, and concluded that the results gave prevalent evidence that both experts and novices perceive visual representation as a useful tool.

### **Conclusions**

According to the above-mentioned result, attitude of pupils in Mathematics could be influenced by the use of visual basic. This confirms the postulation of Stylianou, (2001) that an effective use of visual aids and tools would have a positive enhancement of learning from about 50% to 80%. Hyde, Fennema & Lemon (2009) visual aids provided practical solutions to the problems of Mathematics than a verbal textbook. It was concluded that attitudes of male and female are significantly not the same in the study which may be the same when carrying out the research among the secondary and tertiary students.

### **Implications**

These findings have implication for educational administrators, teachers and teachers because the pupils play an important role before any educational process could succeed. There is therefore need for appropriate government agencies to provide necessary visual facilities for learning processes to go on smoothly in educational system, and create an environment in which pupils do not feel threatened and relax. Secondly, assisted learning equipment are provided in schools they improve the performance of pupils and influence cooperative grouping, thereby help pupils to understand others' problems as they do.

### **Recommendations**

The research was based on primary five pupils in Ibadan North local government area Oyo State. Students should be exposed and be given the necessary visual equipment and facilities in order to facilitate learning in primary school. Government and Policy makers in primary schools should make significant fund available to provide visual basic software and computer system in schools, for required numbers of pupils. Primary school teachers should be groomed on how to make use of visual basic software, how to make use of the computer system in the school as this would enhance their jobs. Pupils in primary school should be sensitized and encouraged to use visual aids in the school and at home. To ease the work of teachers' meaningful academic excellence, the bodies concerned, be it the state, ministry of education, association as well as the school proprietors should endeavour provide the necessary materials in schools.

### **Limitation of the Study**

The study composed only pupils in Ibadan North local government area Oyo State, Nigeria, it could be strengthened by increasing the sample size as the data analysis results and findings may vary substantially when the sample size is increased or decreased.

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## **Suggestions for Further Studies**

The research should also be carried out among secondary school students. Training of teachers should also be well oriented about the use of visual basic before using it to test the ability of students. Government should provide credit facilities for researchers who wish to continue the study because of its capital intensive for large pupils' population. The scope of the study should be widened i.e. the research should be carried among states of the nation not only in Ibadan.

## **References**

- Aguele, L.I. (2004). Difficulties facing the teaching and learning of Mathematics in Nigeria. *Science, Technology and Mathematics (STM) Education in Cotemporary Nigeria*. Agdor Kmensuo education Publishers.
- Akpan 1. O, Abia D. U. (2009). ICT and Attainment of Educational Goals in Nigeria. *J. Educ. Technol. Instr. (JETI)*, I(1): 93-104.
- Hart, L. (1989). Classroom processes, sex of student and confidence in learning mathematics. *Journal for Research in Mathematics Education* 20(3), 242-260.
- Arcavi, A., & Hadas, N. (2002). Computer mediated learning: an example of an approach. In F Hitt (Ed.), *Representations and mathematical visualization*. Mexico City: Cinvestav-IPN.
- Benson, P. J. (2019). Problems in picturing text, A study of visual/verbal problem-solving. Tro State University.
- Boaler, J. (2000). So girls don't really understand mathematics? Dangerous dichotomies in gender research. Paper presented at the 9th International Congress of Mathematics Education (ICME-9). Tokyo.
- Campbell, J.R. & Beaudry, J.S. (2005) Gender gap linked to Deffendall socialization for high achieving senior mathematics "Journals of educational research 91, 140- 147.
- Elia, I., & Philippou, G. (2004). The function of pictures in problem solving. In M. J. Hoines & A. B. Fuglestad (Eds.), *Proceedings of the 28th PME International Conference*, 2, 327-334 Encarta (2010) Version Encyclopedia
- Gagatsis, G., & Elia, I. (2004). The effects of different modes of representation on mathematical problem solving. In M. J. Hoines & A. B. Fuglestad (Eds.), *Proceedings of the 28th PME International Conference*, 2, 447-454.
- Hadas, N., & Arcavi, A. (2001). Relearning mathematics the case of dynamic geometrical phenomena and their unexpected Cartesian representations. In M. van den Heuvel Panhuizen (Ed.), *Proceedings of the 25th PME International Conference*, 3, 81-88.
- Harding, G. & Terrell S. L. (2006). Strategies for alleviating math anxiety in the visual learner Retrieved February 2, 2010 from [www.coscc.cc.tn.us/baker/cartons2.htm](http://www.coscc.cc.tn.us/baker/cartons2.htm)

- Herman, J., (2004). Images of fractions as processes and images of fractions in processes. In M. J. Høines & A. B. Fuglestad (Eds.), Proceedings of the 28th PME International Conference, 4, 249-256.
- Hyde, J.S., Fennema, E.H. & Lemon, S.J. (2009), Gender difference in mathematics performance: a meta-analysis psychological bulletin 107, 139-150.
- Maschietto, M., & Bartolini Bussi, M. G. (2005). Meaning construction through semiotic means: The case of the visual pyramid. In H. L. Chick & J. L. Vincent (Eds.). Proceedings of the 29th PME International Conference, 3, 313-320.
- Michaelidou, N., Gagatsis, A., & Pitta-Pantazi, D. (2004). The number line as a representation of decimal numbers: A research with sixth grade students. In M. J. Conference, 3, 305-312 Høines & A. B. Fuglestad (Eds.), Proceedings of the 28th PME International
- Nisbet, S., & Bain, J. (2000). Listen to the graph: Children's matching of melodies with their visual representations. Electronic Journal for the Integration of Technology in Education. Proceedings of the 24th PME International Conference, 4(15), 49-56.
- Nooriafshar, M. (2007). Virtual Reality and 3D Animation Technologies in Teaching Quantitative, USA Honolulu, Hawaii.
- Olaoye, A.A. (2013) 'Better attitude attainment in Teaching Profession' *Isolo Journal of Education*, Nigeria,1(1):33-37.
- Oladayo. D (2009). Using Visual Basic Version 6.0 in the calculating of CGPA (A case study of University of Agriculture, Abeokuta). Living Waters Publishers.
- Owens, K. (2005). Substantive communication of space mathematics in upper primary school. Electronic Journal for the Integration of Technology in Education. Proceedings of the 29<sup>th</sup> PME International Conference, 4(11), 33-40.
- Pratt, D. & Davison, I. (2003). Interactive whiteboards and the construction of definitions for the kite. Electronic Journal for the Integration of Technology in Education. Proceedings of the 27th PME International Conference 4, 31-38.
- Radford, L., Bardini, C., Sabena, C., Diallo, P., & Simbagoye, A. (2005) On embodiment, artifacts, and signs: A semiotic-cultural perspective on mathematical thinking. In L. Chick & J. L. Vincent (Eds.), Proceedings of the 29th PME International Conference, 4 113-120.
- Sabena, C., Radford, L., & Bardini, C. (2005). Synchronizing gestures, words and actions in pattern generalization. In H. L. Chick & J. L. Vincent (Eds.), Proceedings of the 29th PME International Conference, 4, 129-136.
- Schunk, D.S. (2002). Ability versus effort attributional feedback: Differential effects on Self- efficacy and achievement. *Journal of educational Psychology*, 82(6), 848-856.

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<sup>\*1</sup>Adetunji Abiola Olaoye (LMAN), <sup>2</sup>Temitope Abosede Sosanwo, & <sup>3</sup>Olugbenga Alani Adesina



- Sinclair, M. P. (2003). The provision of accurate images with dynamic geometry. *Electronic Journal for the Integration of Technology in Education. Proceedings of the 27th PME International Conference*, 4(2), 191-198.
- Stylianou, D. (2001). On the reluctance to visualize in mathematics: Is the picture changing? *Electronic Journal for the Integration of Technology in Education*, 4(7), 225-232.
- Thomas, M. (2003). The role of representations in teacher understanding of function. *Electronic Journal for the Integration of Technology in Education. Proceedings of the 27th PME International Conference* 4, 291-298.
- Vermeer, H., Boekaerts, M., & Seegers, G. (2000). Motivational and gender differences: Sixth grade students' mathematical problem-solving behavior. *Journal of Educational Psychology*. 92(2), 308-315.
- Warren, E. (2000). Visualization and the development of early understanding of algebra. *Electronic Journal for the Integration of Technology in Education, Proceedings of the 24<sup>th</sup> PME International Conference* 4, 273-280.

## EFFECTS OF COOPERATIVE INSTRUCTIONAL STRATEGY ON ACADEMIC PERFORMANCE AND RETENTION AMONG BIOLOGY STUDENTS OF DIFFERENT COGNITIVE STYLES IN GOMBE STATE, NIGERIA

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### Abstract

*The study was carried out to investigate the Effects of Cooperative learning Instructional Strategy on Academic Performance and Retention among Biology Students of Different Cognitive Styles in Gombe State, Nigeria. The study adopted quasi experimental control group design comprised pre-test post-test and post posttest. The population of the study comprised of two thousand one hundred and five (2105) SSII Biology Students of Public Secondary Schools in Akko Education Zone. The sample of the study comprised one hundred and eleven (111) SSII students from four (4) Schools randomly selected in the Zone. Three (3) Schools were designated as the experimental groups and the other one School was the control group. Two instruments were used for the study; one of the instruments was for the determination of the participants Cognitive Styles. Group Embedded Figure Test (GEFT) with a reliability coefficient of 0.83 was used to establish the cognitive style of the participants while Biology Performance Test (BPT) with a reliability coefficient of 0.76 was used to measure the performance and retention of the subjects after treatment. The reliability of BPT was determined using Pearson Product Moment Correlation Coefficient (PPMC) after test-retest method was applied. The experimental groups were taught using Cooperative Learning Instructional Strategy (CLIS) while the control group was taught using the lecture method. Four research questions were answered using descriptive statistics, mean and standard deviations and four null hypotheses were tested at  $P \leq 0.05$  the data collected were analysed using *t*-test and Analysis of Variance (ANOVA). Least Significant Difference (LSD) was used to indicate the significant level among the groups. Among the other results revealed: (a) A significant difference exist in the mean performance scores between the Experimental group and the control group (b) A significant difference exist in the mean retention score between the Experimental group and the control group. Based on these finding, it was concluded that think-pair-share enhanced the performance and retention of senior secondary school students of both field dependent and independent cognitive style in ecology. Based on these findings, the research recommends (a) Think-Pair-Share should be used to help both the field independent and field dependent learners learn effectively (b) Workshops and seminars should be organized to train teachers on how to teach using Cooperative Learning Instruction Strategy.*

**Keywords:** Retention, Ecology, Performance, Cooperative Instructional Strategy and Lecture method

## **Introduction**

Science education plays prominent roles in determining scientific and technological advancement of every individual and the nation as a whole. According to Twan, Danjuma and Useni (2022), the major goal of science education is to develop scientifically literate and personally competent individuals with higher competence for rational thought and actions. According to Godek (2014), there cannot be any meaningful development without science education. In view of its importance, the teaching of science and technology in all institutions is emphasized by the Federal Government of Nigeria as contained in the National Policy on Education (FRN, 2013). Biology is a science subject offered in senior secondary school in Nigeria; which study living organisms (Martin & Robert, 2015). Biology is a very important subject that enables living thing to understand oneself and its' environment (Twan et al., 2022). The knowledge of biology is vital to the study of medicine, pharmacy, nursing, dentistry, agriculture, industry, biotechnology (Abimbola, Omosewo & Upahi, 2014)). Biological knowledge has largely contributed to humanity's welfare in a variety of domains such as medicine often employed in organ and tissue transplant, in disease control and identification, as seen in the recent identification of the Ebola and Corona Viruses host, which are rats and pangolins respectively.

Biology has witnessed high enrolment compared to any other science based subject in the final year of external examinations without a corresponding increase in the students' academic performance (Piwuna & Mankilik, 2023; Twan & Useni, 2022). The WAEC and NECO Chief Examiners have consistently lamented the poor performance of candidates in biology for more than twenty years, by using phrases like, "not satisfactory"; "downward trend"; "abysmal/dismal performance" "decline in pass rate"; "fluctuating performance"; and persistent failure"; in describing the performance of students (WAEC and NECO Chief Examiners' reports, 2021, 202, 202023). The Chief Examiners' annual report gives a résumé of each subject area according to the number of papers written, for WAEC biology, there is Biology paper I, which is a multiple-choice (objectives) type paper. Biology II is a theory paper and Biology III is a practical paper. For NECO biology, Biology paper I is practical, Biology paper II is essay, and Biology paper III is multiple choice objective questions. The résumé for assessing biology follows the format of the National résumé found in the WAEC and NECO reports and the analysis is in-depth and very specific. General comments by both Chief Examiners on each year's paper are given and the responses to each question highlighted. The reports of the two major examining bodies in Nigeria may hold the answer to improving motivation of students of biology thereby addressing the perennial poor performance of students in public examinations. The continuous decline in performance alongside the annual recommendation of the Chief Examiners report which is presumed to hold the solution to low performance in biology recorded in Nigeria, reasons by Akubuilu (2012), Ajaja (2013), Sakiyo and Waziri (2015); Twan and Useni (2022) attributed to issues such as teacher preparation, overcrowding, poor instructional methods, insufficient laboratory equipment, poor students' attitude toward learning, ambiguous nature of some concepts, difficulty of some biology concept and also the students' Cognitive styles.

Cognitive style is a psychological concept that emphasizes the fact that individuals perceive and process information differently. According to Olagbaju (2020), cognitive style determines how individuals perceive, receive, and process information. Cognitive styles can also be an attitude that determines an individual's mode of retention and

performance (Twan, 2021). The effects of Cognitive Style on student's Performance have been investigated in a number of studies, for example, Ezekiel (2007) investigated on Students Achievement in Chemistry, Okoruwa (2007) on integrated science, Fakeye (2008) and Olagbaju, (2020) in English, also Abubakar (2018) and Twan (2021) investigate on Performance and Attitude/Interest in Biology. These studies found Cognitive Style to have contributed significantly to improving learning outcomes in those subject areas. Cognitive Styles are categorized into different types. Some of the common cognitive styles are outlined by Shi (2011), among which are: Field Independent and Field-Dependent Cognitive Style, Analytic and Holistic Cognitive Style, Reflective and Impulsive Cognitive Style, Deductive and Inductive cognitive style as well as Sharpener and Leveler Cognitive Style. However, the focus of this study is on the Field Independent and Field-Dependent Cognitive Style. Similarly, among all Cognitive Styles; Field Dependent/Independent has been acknowledged as the most widely researched and more applicable in education research by Cao (2009), Muhammad, Daniel and Abdurauf (2015); Abubakar (2018); Twan (2021). Participants who scored twelve (12) marks or above were classified as Field Independents while participants who scored eleven (11) marks or below were classified as Field-Dependents. These classifications were determined using the Group Embedded Figure Test developed by Witkin, Oltman, Raskin and Karp (1971). Students vary in their Cognitive Styles and this tends to reflect in the extent to which they are affected by a particular teaching method.

Teaching methods otherwise called instructional methods are many and varied. Various teaching methods are used by teachers in the teaching of Biology aimed at bringing about meaningful learning. These include lecture method, demonstration method, discovery, project, inquiry among many others. The most commonly used is the lecture method. Ahmadzaide & Shojoe (2013) criticized the Lecture Method which seems to be the most frequent used method by teachers, because only hardworking students can benefit from it. Okeke (2006) claims that the lecture method; is ineffective in science instruction. It is therefore very imperative to employ the use of innovative strategies that could improve the performance of students in Biology examinations such as WAEC and NECO. Some of the strategies that could be used are Cooperative Learning, Problem Solving. Current trend will require strategy that will allow students to interact, exchange ideas in order to retain concept and acquire knowledge for better performance. This may be achieved through the use of Cooperative Learning Instruction Strategy.

Cooperative Learning Instruction Strategy is an instructional method in which students work in small groups each with different levels of ability and different Cognitive Styles by using a variety of learning activities to improve their understanding of a subject, each member of a team is responsible not only for learning what is taught but also for helping teammates learn, thus creating an atmosphere of achievement to accomplish common learning goals under the guidance of the teacher (Gillies, 2016). According to Olarenwaju (2012), Students are organized in pairs or small groups to help each other understand the prescribed content in a Cooperative Learning Instruction Strategy. There are various strategies of Cooperative Learning Instruction, some of the most common strategy are: Think-Pair-Share, Round Table or Rally Table, Jigsaw II, Round Robin Brainstorming or Rally Robin, Three-Step Interview. However, for this study 'Think-Pair-Share' was adopted. Think-Pair-Share Instruction Model (TPSIM) is a Model of Cooperative Learning Instruction Strategy where students work together to solve a problem or answer a question about an assigned task. The strategy was first proposed by Frank Lyman (1992). Think-Pair-Share allows students to engage in individual and small-group

thinking before they are asked to answer questions individually in front of the whole class. There are four steps to this method; the first step, groups of four students listen to a question posed by the teacher. Secondly, individuals in this groups are given time to think and then write their responses. Thirdly, the students in each group are paired to read and discuss their responses. Finally, few students are called on by the teacher to share their thoughts and ideas with the whole class members. This model differs from the Lecture Method because it allows a great deal of interaction where students can reflect on their own ideas in a very active manner. According to Twan et al. (2022), Think-pair-share strategy has many advantages over Lecture Method. The 'think time' incorporates the important concept of 'wait time; in which it allows students to develop answers within few minutes, students are more willing to take risks and suggest ideas because they have already 'tested' them with their partner. Therefore, in order to attain their personal goals, students are likely to encourage each member within the group to achieve their objectives and group task. There is persuasive evidence that Think-Pair-Share team achieves higher levels of thoughts and retains information longer than students who work quietly as individuals. Sani (2017) opined that the shared learning gives students an opportunity to engage in discussions, take responsibility for their own learning, and thus become critical thinkers. This strategy supports the efforts to help students understand and apply Science concepts especially ecology concepts since researchers like Oyarole (2016); Danjuma (2017); Sani (2017) established it to be a difficult concept; encouraging thinking and social interaction thereby improving student's performance. For these apparent benefits of using Think-Pair-Share Instruction Strategy (TPSIS) as a learning strategy, the study will determine the effects of Cooperative Learning Instruction Strategy on the student's Academic Performance and Retention among Biology Students of different Cognitive Style.

### **Research Questions**

The following research questions were raised to guide the study.

- I. What is the difference between the mean performance scores of SSII students exposed to Think-Pair-Share (TPS) and those exposed to Lecture Method?
- II. What is the difference between the mean retention ability of SSII Biology students taught ecology concept using Think-Pair-Share (TPS) and those taught using Lecture method?
- III. What is the difference among the mean performance scores of SSII Biology students of field dependent (HFD), field independent (HFI) and field independent/dependent (HTFID) groups taught ecology concept using Think-Pair-Share (TPS) and their counterpart taught ecology concept using lecture method (LM)?
- IV. What is the difference among the mean retention ability of SSII Biology students of field dependent (HFD), field independent (HFI) homogenous and field independent/dependent (HTFID) groups taught ecology concept using Think-Pair-Share (TPS) and their counterpart taught ecology concept using lecture method (LM)?

## Research Hypotheses

The following null hypotheses are formulated and tested at  $p \leq 0.05$  level of significance:

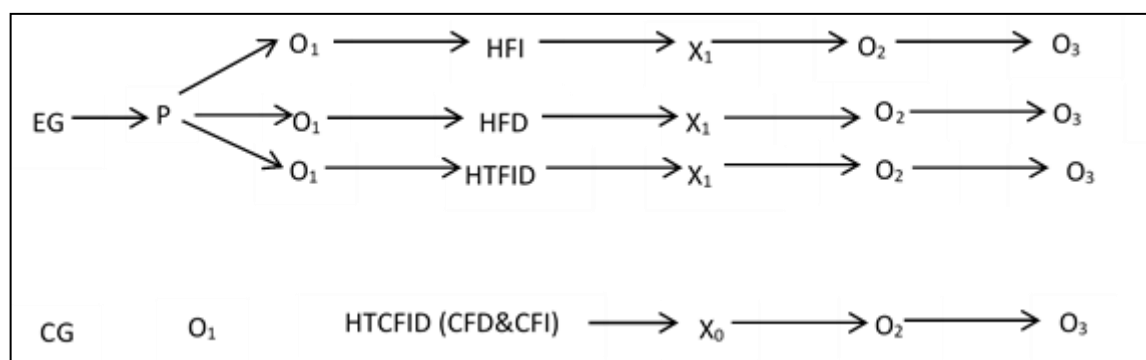
- H<sub>01</sub> There is no significant difference between the mean performance scores of SSII Biology students taught Ecology Concept using Think-Pair-Share (TPS) and those taught using Lecture Method.
- H<sub>02</sub> There is no significant difference between the mean retention level of SSII Biology students taught ecology concept using Think-Pair-Share (TPS) and those taught using Lecture Method.
- H<sub>03</sub> There is no significant difference among the mean performance scores of SSII Biology students of field dependent (HFD), field independent (HFI) homogenous and field independent/dependent heterogeneous (HTFID) taught ecology concept using Cooperative Learning Instructional Strategy (CLIS) and those in the control group taught ecology concept using lecture method (LM)
- H<sub>04</sub> There is no significant difference between the mean retention ability of SSII Biology students of field dependent (HFD), field independent (HFI) homogenous and field independent/dependent heterogeneous (HTFID) groups taught ecology concept using Think-Pair-Share (TPS) and their counterpart taught the same ecology concept using lecture method (LM).

## Methodology

The study adopted quasi-experimental control group research design involving pretest, posttest and post posttest. The study was conducted in Akko Local Government Area (LGA), Gombe State, Nigeria. The target population of the study comprised of two thousand one hundred and five (2105) of all SSII Biology students of senior public secondary schools in Akko Education Zone of Gombe State, Nigeria. The choice of SS II students was because the class is stable, it is neither facing the problem of being freshly introduced to senior secondary biology nor preparing for any end of the course or terminal examination (as is the case with SS I or SS III). Simple random method of sampling technique was used to select four (4) Secondary Schools from the population, three (3) experimental groups and one control group. The four (4) Schools were designated as Experimental 1, Experimental 2, Experimental 3 and Control group. The samples of the participants present for the study were one hundred and eleven (111) Senior Secondary Schools Students which were selected from the SS II classes used. Two instruments were used, namely Group Embedded Figure Test (GEFT) and Biology Performance Test (BPT). GEFT was adopted from Twan (2022) and BPT adapted from the West African Examinations Council (WAEC) biology past questions from 2019 to 2022 with little moderation, hence, there was need validation and establishment of reliability. To ensure the reliability of the research instrument, the instruments were pilot tested. The test-retest method was used to determine the reliability coefficient and results yielded 0.83 and 0.76 respectively. Group Embedded Figure Test (GEFT) was administered to the students in order to establish their cognitive style categories (either field dependent or field independent), they were grouped into: Homogenous Field Dependent Group (HFD), Homogenous Field Independent Group (HFI) and Heterogeneous Field Independent/Dependent Group (HTFID) which comprised both field dependent and field independent students. The three groups served as the experimental

groups. The control group also comprised both Field Dependent (CFD) and Field Independent (CFI) students. All the three experimental groups were taught Ecology concepts using Think-pair share (TPS) which is a Cooperative teaching Model while the control group was taught the same Ecology concepts using the Lecture Method (LM).

Biology Performance Test (BPT) was employed for data Collection which is administered to the sample as pre-test, post-test and post-posttest. The pre-test was administered to determine the equivalence of the groups and whether the treatment has any effect on the participants. The experimental groups were exposed to the treatment (TPS) for six weeks while control group no treatment was also conducted for six (6) weeks. After the treatment, post-test was administered to the four (4) groups to determine their performance in ecology concepts. Thereafter, two (2) weeks after posttest, the post-posttest was also administered to both groups to determine the retention ability of the participants. The scores for the experimental and control groups were recorded accordingly and analyzed using appropriate statistical tools. Mean and Standard Deviation were used to answer the research questions while t-test and ANOVA were used to test the null hypotheses at  $p \leq 0.05$  level of significant. The design for the study is presented in Figure 3.1.



**Figure 1: Research Design**

**Key:**

EG = Experimental Groups: HFI {Homogenous Field Independent Group (Exp1)}

HFD {Homogenous Field Dependent Group (Exp2)}

HTFID {Heterogeneous field independent and field dependent Group (Exp3)}

CG = Control Group: CFI (field independent) and CFD (field dependent)

P= participant

O1 =Pretest;

O2= Posttest

O3= Post Posttest

X1= Treatment for Experimental Groups (taught using Cooperative Learning Instructional Strategy)

X0 = No Treatment (taught using Lecture Method)

**Result**

The results were analysed and presented in tables.

Answering Research Questions

**Research Question One:** *What is the difference between the mean performance scores of SSII Biology Students taught Ecology Concept using Think-Pair-Share (TPS) and those taught using Lecture Method?*

**Table 1:** Summary of Posttest Mean and Standard Deviation Scores for Experimental Group and Control Group

Groups	N	Mean Score	Std. Dev.	Std. Err	Mean Diff
Experimental	85	20.94	5.96	0.65	7.06
Control	26	13.89	5.04	0.99	
Total	111				

Table 1: shows the Summary of Posttest Mean and Standard Deviation Scores for the Experimental Groups and Control Group, the experimental group had a posttest mean score of 20.94 with a standard deviation of 5.96 while the Control group had a mean score of 13.89 with a standard deviation of 5.04. This means that the students who were taught using the Think-Pair-Share (TPS) had a higher mean score than those who were taught using the Lecture Method. The mean difference between TPS of CLIS and LM is 7.06.

**Research Question Two:** *What is the difference between the mean retention ability of SSII Biology students taught Ecology Concept using Cooperative Learning Instructional Strategy (CLIS) and those taught using Lecture method?*

**Table 2:** Summary of Post Posttest Mean Retention Score for the Students in Experimental and those in Control Groups

Groups	N	Mean	Std. Dev	Std. Err	Mean Diff
Experimental	85	21.11	6.05	0.66	8.30
Control	26	12.81	4.77	0.93	

The result in Table 2 revealed that the experimental group who were exposed to Cooperative learning instruction strategy had a mean gain score of 21.11 while the control group had a mean gain score of 12.11. This implies that the students taught biology using TPS retain better than those in the control group.

**Research Question three:** *What is the difference between the mean performance scores of SSII Biology students of field dependent (HFD), field independent (HFI) and field independent/dependent (HTFID) groups taught ecology concept using TPS and their counterpart taught ecology concept using lecture method (LM)?*



**Table 3:** Summary of Posttest Mean and Standard Deviation (SD) Scores for the Students in HFI, HFD, HTFID and Control Groups

Groups	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
HFI	26	21.38	5.71	1.12	14.00	35.00
HFD	23	19.44	5.36	1.12	7.00	35.00
HTFID	36	21.58	6.47	1.08	11.00	34.00
CG	26	13.89	5.04	0.99	6.00	22.00

The mean posttest scores and SD of students in the HFI, HFD, HTFID, and Control groups are shown in Table 3. Students in the HTFID had the greatest mean performance score of 21.58 with SD of 6.47, while students in the CG had the lowest mean performance score of 13.89 with SD of 5.04. HFI, HFD, and HTFID were taught utilizing the treatment TPS and had greater mean performance values than the Control Group.

**Research Question 4:** *What is the difference between the mean retention ability of SSII Biology students of field dependent (HFD), field independent (HFI) homogenous and field independent/dependent (HTFID) groups taught ecology concept using Cooperative Learning Instructional Strategy (CLIS) and their counterpart taught ecology concept using lecture method (LM)?*

**Table 4:** Summary of Post Posttest Mean and Standard Deviation (SD) Scores for the Students in FI, FD, HTFID and Control Groups

Groups	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
HFI	26	23.50	5.87	1.15	12.00	36.00
HFD	23	18.09	4.07	0.85	10.00	26.00
HTFID	36	21.31	6.52	1.09	10.00	36.00
CG	26	12.81	4.77	0.93	4.00	22.00

Table 4 indicates the results of the mean retention scores of HFI, HFD, HTFID and Control Group. The mean retention scores and SD of the Homogenous Field Independent (HFI) Group was 23.50 and 5.87 respectively which is the group with the highest mean retention score, while CG had the lowest mean of 12.81 with SD of 4.77. The table also shows that HFI Group recalled better retention ability than those of the other groups. This indicated that the four groups were different in the retention of ecological concept.

### Hypotheses Testing

**H0<sub>1</sub>:** *There is no significant difference between the mean performance scores of SSII Biology students taught Ecology Concept using Cooperative Learning Instructional Strategy (CLIS) and those taught using Lecture Method.*

To test for the hypothesis, students’ performance scores in the posttests were computed and subjected to t-test Analysis. The summary of the result Analysis of the statistics is presented in table 5.

**Table 5:** Independent t-test Statistics on the Students’ Performance in Cooperative Learning and Lecture Groups

Groups	N	Mean	Std. Dev	Std. Err	Df	p	Remark
Experimental	85	20.94	5.96	0.65	109	0.001	Sig
Control	26	13.89	5.04	0.99			

**Sig at  $\alpha \leq 0.05$**

Results in Table 5 Shows the mean posttest scores of the participants in the experimental group had high mean when compared with their counterpart in the control group. The significant value obtained 0.001 was less than  $\alpha \leq 0.05$ . Since the p-value is less than the set level of significance, then Independent t-test shows significant difference exists in the academic performance of students in the experimental group and those of control group, in favor of the experimental group. Therefore, the null hypothesis, which stated that there is no significant difference in academic performance of Biology students taught Ecology concept using TPS and those taught using lecture Method is hereby rejected, implying that Think Pair Share Model of Cooperative Learning Instructional Strategy significantly enhances secondary Schools Biology Students performance in Ecology than Lecture Method.

*H0<sub>2</sub>: There is no significant difference between the mean retention level of SSII Biology students taught ecology concept using Cooperative Learning Instructional Strategy (CLIS) and those taught using Lecture Method.*

**Table 6:** Independent t-test Statistics on the Students’ Retention Scores in Cooperative Learning and Lecture Groups

Groups	N	Mean	Std. Dev	Std. Err	Df	p	Remark
Experimental	85	21.11	6.05	0.66	109	0.001	Sig.
Control	26	12.81	4.77	0.93			
Total	111						

**Sig at  $\alpha \leq 0.05$**

The t-test in Table 6 reveals a p-value of 0.001. The p-value is less than the set level of significance,  $\alpha \leq 0.05$ . This indicates that there is significant difference between the mean Retention ability of the Experimental group and their counterpart in the Control group. Therefore, the null hypothesis which stated that, there is no significant difference between the mean retention ability of the students taught ecology concept using TPS and those taught using Lecture Method is therefore rejected, implying that Think Pair Share Model of Cooperative Learning Instructional Strategy significantly enhances secondary Schools Biology Students’ retention ability in Ecology than Lecture Method.

*H0<sub>3</sub>: There is no significant difference between the mean performance scores of SSII Biology students of field dependent (HFD), field independent (HFI) homogenous and field*

*independent/dependent heterogeneous (HTFID) taught ecology concept using Cooperative Learning Instructional Strategy (CLIS) and those in the control group taught ecology concept using lecture method (LM).*

ANOVA test statistics was used to test this hypothesis at  $\alpha \leq 0.05$  level of significance. Summary of the analysis is shown in Table 7

**Table 7:** Summary of One-way ANOVA on Mean Performance Scores of Experimental and Control Groups of Students

	Sum of Squares	Df	Mean Square	F	P-value	Remark
Between Groups	1063.67	3	354.52	10.69	0.001	Significant
Within Groups	4567.271	107	33.15			
Total	4610.78	110				

**Sig at  $\alpha \leq 0.05$**

The result of the analysis in Table 7 shows students differed significantly by the two strategies used and their identified cognitive styles which were placed according to the indicated groups. The table also shows the observed p-value of the performance is 0.001 which is less than the level of significance set at  $\alpha \leq 0.05$ . The results indicate significant difference in the performance of student taught ecology concept. Thus by these observations, the null hypothesis which states non-significant difference between the mean performance scores of SSII Biology students of field dependent (HFD), field independent (HFI) homogenous and field independent/dependent heterogeneous (HTFID) taught ecology concept using TPS and those in the control group taught ecology concept using lecture method (LM) is therefore rejected, implying that Think-Pair-Share Model significantly enhances secondary Schools Biology Students' performance in Ecology than Lecture Method. A post-hoc test was conducted on the mean performance scores to determine the group that had more significant effect on the students' performance.

**Table 8:** Post-hoc (Scheffe) Test on Mean Performance Scores of Experimental and Control Groups of Students

(I) Experimental	(J) Experimental	Mean Diff	Std. Error	Sig.	Remark
HFI	HFD	1.95	1.65	0.706	NS
	HTFID	-0.20	1.48	0.999	NS
	Control Group	7.50*	1.60	0.001	Sig.
HFD	HFI	-1.95	1.65	0.706	NS
	HTFID	-2.15	1.54	0.584	NS
	Control Group	5.55*	1.65	0.013	Sig.
HTFID	HFI	0.20	1.48	0.999	NS
	HFD	2.15	1.54	0.584	NS
	Control Group	7.70*	1.65	0.013	Sig.
Control Group	HFI	-7.50*	1.60	0.001	Sig.
	HFD	-5.55*	1.65	0.013	Sig.
	Control Group	-7.70*	1.48	0.001	Sig.

**Sig at  $\alpha \leq 0.05$**

The result in Table 8: shows that students’ in the Homogenous Field Independent (HFI) group and Heterogeneous field independent/dependent group (HTFID) had significant difference with the control group, but no significant differences were observed with the FD group, even though HTFID had higher mean values.

*H0<sub>4</sub>: There is no significant difference between the mean retention ability of SSII Biology students of field dependent (HFD), field independent (HFI) homogenous and field independent/dependent heterogeneous (HTFID) groups taught ecology concept using Think-Pair-Share (TPS) and their counterpart taught the same ecology concept using lecture method (LM).*

**Table 9:** Summary of ANOVA on Mean Retention Scores of Experimental and Control Groups of Students Taught Ecology Concept

	Sum of Squares	Df	Mean Square	F	P-value	Remark
Between Groups	1731.08	3	577.026	18.812	0.0001	Significant
Within Groups	3282.003	107	30.673			
Total	5013.081	110				

**Sig at  $\alpha \leq 0.05$**

The Analysis of Variance in table 9 reveals the calculated p-value for the effect of treatment on the students’ retention ability in ecology as 0.0001. The p-value is less than the set level of significance,  $\alpha \leq 0.05$ . This indicates that there is a significant difference between the mean retention ability of the Field Independent and Field dependent students in the Homogeneous Group and their counterpart in the Heterogeneous field independent/field dependent Group. The hypothesis which stated that there is no significant difference between the mean retention scores of SSII Biology students of field dependent (HFD), field independent (HFI) homogenous and field independent/dependent heterogeneous (HTFID) in the experimental groups taught ecology concept using TPS and their counterpart taught using Lecture Method (LM) is therefore rejected.

**Table 10:** Post-hoc (Scheffe) Test on Mean Retention Scores of HFI, HFD, HTFID and Control Group of Students

(I)Experimental	(J)Experimental	Mean Diff	Std. Error	Sig.	Remark
HFI	HFD	5.41	1.59	0.011	Sig
	HTFID	2.19	1.43	0.502	NS
	CG	10.69*	1.54	0.001	Sig.
HFD	HFI	-5.41*	1.59	0.011	Sig
	HTFID	-3.23	1.48	0.199	NS
	CG	5.28*	1.59	0.014	Sig
HTFID	HFI	-2.19	1.43	0.502	NS
	HFD	3.23	1.48	0.199	NS
	CG	8.50*	1.43	0.001	Sig.
CG	HFI	-10.69*	1.54	0.001	Sig.
	HFD	-5.28*	1.59	0.014	Sig.

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HTFID	-8.50*	1.43	0.001	Sig.
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**Sig at  $\alpha \leq 0.05$**

The result in Table 10 shows the post-hoc test of retention. It indicated that HFD had significantly mean difference with the CG. The table also shows that HFI and HFD were also significantly different in their Retention ability in favour of HFI. Therefore, the observed table revealed that, students' exposed to Think-Pair-Share Model (Experimental Groups) had higher mean scores on the retention ability of ecology concept than their counterpart in the lecture method (Control Groups), and HFI had more effects compared with HFD in the Retention ability when taught using TPS.

## **Discussions**

This study investigated the effect of Cooperative Learning Instructional Strategy (CLIS) on Retention and Performance among Secondary Schools Biology Students of Different Cognitive Styles in Gombe State, Nigeria. There were six (6) null hypotheses examined.

The findings of this study revealed that, there is a substantial difference in mean posttest scores between students who were taught ecology concepts using TPS of CLIS and those who were taught using the Lecture Method. These shows that the experimental group who were taught ecology concepts using TPS had a significantly higher mean Performance score than those in the Control Group who were taught using the Lecture Method. The result agrees with the findings of Eke, Mumuni and Nwanekezi (2016) who found a substantial difference in performance between students in Cooperative Learning group and those in Lecture group, favoring the experimental group, implying that students learn better while actively participating in the CLIS. However, the result disagrees with the findings of Tran (2014) who found out that there is no significant difference in the mean Achievement score of students in the Cooperative Learning Instructional Strategy with those taught using Lecture Method.

The findings of this study on the grouping pattern of different Cognitive Styles with regard to the performance of Homogeneous Field Independent (HFI), Homogeneous Field Dependent (HFD) and Heterogeneous Field Independent/Dependent (HTFID) groups vary significantly with their counterpart in the Heterogeneous control group (HTCFID) respectively. This indicated that the use of CLIS significantly enhanced the academic performance of students who were exposed to it. Their performance was significantly higher than that of students exposed to Lecture Method. The result obtained in this study could be due to the unique characteristics of CLIS which gave the learners the opportunity to interact with one another, thereby assisting in each other's learning. The finding is in agreement with the study by Samuel and Oka (2020) which revealed a significant difference in performance of students' cognitive styles. This study also support the findings of Okoye (2016), Pandhu (2018), Musa and Samuel (2019), Agu and Samuel (2019), in their various researches which reported that there is a significant difference between the mean performance scores of Science Students with Field Independent (FI) cognitive styles and those with Field dependent (FD) cognitive styles.

The analysis of results with regard to the Retention of Ecology Concept, the findings of the t-test analysis revealed that there is significant difference in the post posttest mean scores of the students taught Ecology Concept using TPS of CLIS and those taught using Lecture Method. This means that the retention ability of the students in the experimental

group improved more than the retention ability of the students in the Control group. The observed variability between the CLIS and the LM was found to be statistically significant in favor of the experimental group. The findings are congruent with those of (Olawaju, 2012; Nwaukwa, and Okolocha, 2020), who found that Cooperative Learning Instructional Strategy is an excellent teaching technique for improving student retention in science. The findings also suggested that if the treatment administered has no impact, the two groups are likely to have similar Retention ability. This is an indication that, using CLIS in teaching learners enhanced their retention ability at Senior Secondary School level.

With regard to the retention of Ecology Concept based on the grouping of participant according to their cognitive styles, the results of the present study provide substantial evidence on the student's retention ability. The findings of the ANOVA test indicate significant difference in the mean retention ability of the different cognitive style grouping pattern. From the post-hoc test performed on the mean retention ability of HFI, HFD and the heterogeneous FID students and their counterpart in the control group vary significantly. The finding revealed that the field independent students taught using TPS, retained Ecology Concept better and are significantly different than those in the control group. This shows that CLIS significantly enhance student's retention ability irrespective of their cognitive styles. This finding is in agreement with the findings of Pandhu (2018) who observed that; field independent students typically demonstrate higher levels of retention in science concept.

The present result suggests that Field Independent cognitive style participants in Cooperative Learning Instructional Strategy had the ability to retain Ecology Concept more than Field Dependent and Field Independent/Dependent participants. A possible explanation is that the Field Independent participants who had been described by Samuel and Oka (2020) as less socially inclined, task-oriented, competitive and as one who does not limit his learning to the immediate environment might have enjoyed the social nature of Cooperative Learning Instructional Strategy and extend his experience to the wider environment and provided materials which assist the learner the ability to retain ecology concept better than the Field Dependent and Field Independent/Dependent learner. The result concurs with the result of Mehta and Thakur (2008) which indicate that Field Independent students exhibit better retention than Field Dependent group of students.

## Conclusion

- I. Think-Pair-Share (TPS) as a Model of Cooperative Learning Instructional Strategy (CLIS) enhanced the performance of senior secondary school students in ecology concept.
- II. Homogenous Field Dependent (HFD), Field Independent (HFI) and those in heterogeneous field independent/dependent (HTFID) taught using Think-Pair-Share (TPS) did not differ significantly. This shows that Cooperative Learning Instructional Strategy (CLIS) enhance the performance of participant irrespective of their Cognitive Styles.
- III. The Cooperative Learning Instructional Strategy (CLIS) appeared to help participant retain information significantly more effectively than the Lecture Method.

## **Recommendations**

- I. The schools authority should encourage Biology Teachers to acquire training on the use of Cooperative Learning Instructional Strategy (CLIS) in teaching some Biology concepts at Senior Secondary School level.
- II. The Teachers should use Cooperative Learning Instructional Strategy (CLIS) to help the field dependent students learn effectively, it was established that CLIS helped field dependent learners learn better as well as the field independent learners.
- III. The Government should provide Necessary facilities that can facilitate effective use of Cooperative Learning Instructional Strategy (CLIS) in all schools. The availability of adequate Instructional materials during lessons using the Cooperative Learning Instructional Strategy (CLIS) will enhance classroom interactions and thus improve students' performance, interest and retention of facts.

## **References**

- Abubakar, D. (2018). *Effect of Cooperative Learning Instructional strategy on Performance and Attitude among Secondary Schools Biology Students in Zaria, Nigerian*. Unpublished Thesis in Faculty of Education, Ahmadu Bello University Zaria.
- Abimbola, I. O., Omosewo, E. O., & Upahi, J. E. (2014). Assessment of education policy thrust of the National Economic Empowerment and Development Strategy (NEEDS) in Nigeria. *Problems of Education in the 21st Century*, 60, 23.
- Agu, P. A., & Samuel, I. R. (2019). Influence of Cognitive Learning Styles on Achievement of Science and Technical College Students in Nasarawa State, Nigeria. *East African Journal of Engineering and Computer Sciences*, 2(9), 232-238.
- Ahmadzaide, L. & Shojoe, M. (2013). Investigating the Relationship between Cognitive Style (Field dependence/Independence and Academic Achievement in Male and Female Students of Behbahn Islamic Azad University. *Journal of life Science Biomed*, 3(3), 245
- Ajaja, O. P. (2013). Which Strategy Best Suits Biology Teaching? Lecturing, Concept Mapping, Cooperative Learning or Learning Cycle. *Electronic Journal of Science Education (South Western University)*. Retrieved from <http://ejse.southwestern.edu>: on 24<sup>th</sup> September, 2019.
- Akanmu, A. M. (2019). Effects of Think-Pair-Share on Senior School Students' Performance in Mathematics in Ilorin, Nigeria. *African Journal of Educational Studies in Mathematics and Sciences*, 15(2). 9109
- Akubuilu, D. U. (2012). Effects of two Modes of Instructional Treatment on Students' Achievement and Attitude in Biology.
- Cao, Y (2009). *Effect of Field Dependent – Independent Cognitive Styles and Cueing Strategies On Students Recall and Comprehension*. A Dissertation Submitted to The

- Faculty of Virginia Polytechnic Institute and State University. Retrieved From:<https://vtechworks.lib.vt.edu/bitstream/handle>.
- Danjuma, S. (2017). *Effects of Inquiry-Based Instruction on Acquisition of Process-Skills, Interest and Performance in Ecology among Secondary School Students in Lere, Kaduna, Nigeria*. Unpublished Dissertation Faculty of Education, A.B.U.Zaria.
- Eke, M. E., Mumuni, A. A. & Nwanekezi, A. U. (2016). Effects of Guided Inquiry and Cooperative Instructional Strategies on Ss1 Students' Academic Achievement In Conceptual Understanding of Photosynthesis. *International organization of Scientific Research*, 6(8), 1-11
- Federal Republic of Nigeria (2013). *National Policy on Education* (6th ed). Yaba, Lagos, Nigerian Education Research and Development Council.
- Fakeye, T. O., & Onyemadu, O. (2008). Evaluation of knowledge base of hospital pharmacists and physicians on herbal medicines in Southwestern Nigeria. *Pharmacy practice*, 6(2), 88.
- Gillies, R. (2016). Cooperative Learning: Review of Research and Practice. *Australian Journal of Teacher Education*, 41: 39–51.
- Lyman, F.T.( 1992). Think- Pair-Share, Thinktrix, Thinklinks, and Weird Facts, and interactive system for cooperative thinking. In D. David & T. Wirsham (Eds), *Enhancing thinking through Cooperative learning* (pp.169-181) New York: Teachers College Press.
- Martins-Omole, M. I. (2015). *Effect of Using Concept Mapping and Experimental Techniques in Teaching Biology in Senior Secondary Schools in Federal Capital Territory*. Unpublish thesis Ahmadu Bello University.
- Mehta, V. & Thakur, K. (2008). Effect of cooperative learning on achievement and retention in mathematics of seventh graders with different cognitive styles. *Indian Educational Review*, 44(1), 5-31.
- Muhammad, T., Daniel, E. G. S., & Abdurauf, R. A. (2015). Cognitive Styles Field Dependence/Independence and Scientific Achievement of Male and Female Students of Zamfara State College of Education Maru, Nigeria. *Journal of Education and Practice*, 6(10), 58-63.
- Musa, D. C., & Samuel, I. R. (2019). Influence of cognitive and gender on upper basic III Mathematics students' achievement in Keffi, Nasarawa State, Nigeria. *International Journal of Scientific and Research Publications (IJSRP)*, 9(8), 566-576.
- Ndukaihe, I. L. (2016). Effects of Cognitive Style and Context on Creativity among Secondary School Students. *Social Science Research*, 3(1).
- Nwaukwa, F. C., & Okolocha, C. C. (2020). Effect of Think-Pair-Share Instructional Strategy on Students' Academic Achievement and Self-Efficacy in Financial Accounting in Abia State. *International Journal of Recent Innovations in Academic Research*, 4(1), 37-48.
- Okeke Z.O. (2006). Woman in Science, Technology and Mathematics Education in Nigeria. A keynote Address at 42nd Annual Conference Proceeding.



- Okoye, M. R. (2016). "Towards Effective Teaching and Learning of Science and Technology and Mathematics in Science Teaching, *Journal of Research in Science Teaching* **19**, 213 – 215.
- Olagbaju, O. O. (2020). Literature-in-english as a tool for fostering intercultural communicative competence in multicultural classrooms in Nigeria. *Konfrontasi: Jurnal Kultural, Ekonomi dan Perubahan Sosial*, 7(1), 40-49.
- Olarewaju, R.R. (2012) Effects Of Cooperative Learning Strategy With Models On Academic Achievement And Retention Of Biology Concepts Among Pre-National Diploma Students In Kaduna State. Unpublished Ph.D Thesis, Ahmadu Bello University, Zaria.
- Okoye, P. O. (2016). Influence of gender and cognitive styles on students' achievement in Biology. *AFRREV STECH: An International Journal of Science and Technology*, 5(1), 59-65.
- Oyarole, Y. A. (2016). *Impact of Collaborative Strategy on Retention and Performance in Ecology Concepts among Concrete and Formal Reasoning Ability Students, Zaria, Nigeria*. Unpublished thesis in the Faculty of Education, Ahmadu Bello University Zaria.
- Pandhu, N. (2018). Effect of Instructional with scaffolding on school students' achievement in science in relation to cognitive styles and intelligence. *Journal of Advanced Research in Psychology & Psychotherapy*, 1(1&2), 53-59
- Piwuna, C. N. and Mankilik, M. (2023). Effect of the Implementation of WAEC and NECO Chief Examiners' Reports On Senior Secondary Biology Students Motivation in Jos South, Plateau State, Nigeria. *Educational Research and Policy Journal*, 9 (2): 62-71
- Sakiyo, J., & Waziri, K. (2015a). Concept Mapping Strategy: An Effective Tool for Improving Students' Academic Achievement in Biology. *Journal of Education in Science Environment and Health*, 1(1), 56-62.
- Sakiyo, J. and Waziri, A. (2015b). Assessment of the Trend of Secondary School Students' Academic Performance in the Sciences, Mathematics and English: Implications for the Attainment of the Millenium Development Goals in Nigeria. *Advance in Social Sciences Research Journal*, 2(2).
- Sani, M. (2017). Impact of Cooperative Learning Enriched with Analogy on Retention and Performance among Biology Students in KANU State Nigeria. Unpublished Dissertation, Ahmadu Bello University, Zaria Department of Science Education
- Samuel, I. R. and Oka, U. A. (2020). Effects of Scaffolding Instructional Strategy, Cognitive Learning Styles and Intelligence on Students' Achievement in Genetics in North Senatorial District, Benue State, Nigeria. *International Journal of Advance Research*, 8(2), 1000-1008.
- Shi, C (2011). A Study of the relationship between Cognitive Styles and Learning Strategies, *Higher Education Studies*, 1 (1) 23-24
- Tran, V. D. (2014). The effects of cooperative learning on the academic achievement and knowledge retention. *International journal of higher education*, 3(2), 131-140.

- Tuckman, B. W. (1999). *Conducting Educational Research* (5th Ed). Harcourt Brace Publishers, Toronto, London.
- Twan, S. M. and Kuboye, S. (2018). *Effect of Concept Mapping Strategy on retention and performance in Ecology among Biology Students in Sabon-Tasha Education Zone Kaduna, Nigeria*. Faculty of Education Ahmadu Bello University, Zaria Proceedings of African Conference. 644.
- Twan, S. M. (2017). *Effects of Cooperative Instructional Strategy on Interest, Retention and Performance among Biology students of Different Cognitive Styles in Gombe state, Nigeria* Unpublished Dissertation Faculty of Education, A.B.U.Zaria.
- Twan, S. M., Danjuma, G. S. and Useni, B. (2022). *Effects of Think Pair Share Instructional Strategy on Interest and Performance in Biology Among Secondary Schools Students in Akko Education Zone, Gombe state, Nigeria*. *Journal of Science, Mathematics and Entrepreneurial Education*, **1**(5):220-228
- Twan, S. M. and Useni, B. (2022). *Effects of cooperative Instruction Strategy on Performance and Retention in Ecology Among Secondary Schools Biology Students in Akko Education Zone of Gombe state, Nigeria*. *South Eastern Journal of Research and Sustainable Development*. **8**(1):1-18
- WAEC (2016). *May/June Chief Examiners Report*, Ikeja Lagos.
- West African Examination Council (WAEC), (2019). *Analysis of Result*, Lagos WAEC.
- Witkin, H.A., Olmann, P.K, Raskin E. & Karp, S.A (1971). *A manual for the Group Embedded Figure Test*, Palo Alto CA: Psychologist press

## LIBRARY SERVICES PATRONAGE AS PANACEA FOR COMBATING SOCIAL MEDIA IMPLICATIONS TO UNDERGRADUATE STUDENTS IN NORTH WEST, NIGERIA

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### Abstract

*The aim of the study was to determine the implications of social media to patronage of library services by undergraduate students in North West, Nigeria. Two research questions were formulated to guide the study. . Descriptive survey research design was employed for the study. The population of the study are thirty seven thousand, four hundred (37400) Undergraduate students. The entire sample chosen was three hundred and eighty eight (388) using purposive sampling technique. This comprises UG II Students of five universities under study. The purposive sampling or judgmental was used based on the characteristics of the population, the reason for this, is that UG II students are most conversant (that is, they are not new and they are not old enough). This would give the researcher an insight into undergraduate commitment to patronage of library services. The sample size from the population would be considered adequate as it conform in Krejcie and Morgan table for determining sample size. The questionnaire was used as instrument for data collection. The instrument was face validated by three experts one from Measurement and Evaluation unit and two experts from library department, Sokoto State University, Sokoto. Data collected was analyzed using percentage score. The major finding of the study revealed extent use of social media which includes: Facebook, WhatsApp, Twitter, Badoo, Instagram, Messenger, YouTube are used by the Undergraduate students at very high extent, that implies they dedicated their time on social media which may eventually denied them to patronize University library services. It also revealed provision of relevant services, good human relation, hybridization of library services are the strategies to increase the level of patronage to university library services. Some of the recommendations made were includes: Libraries can also curtail use of social media by providing staff and students with a full range of print and electronic resources to support teaching and learning and thereby enhancing students patronage to library services. Librarians should do their best within their abilities to promote reading among the students by organizing literacy activities such as book discussion, library orientation, library seminar and friendly demeanor of librarians, will go a long way.*

**Keywords:** Library services, social media implications, Patronage, Undergraduate students

### Introduction

University libraries offer a wide range of services catering to their users' diverse needs. From providing access to a vast collection of books and resources to delivering

innovative programs and technologies, libraries have become dynamic hubs of knowledge and community engagement. The library services that contribute to the enrichment of individuals, support education and research, foster literacy and lifelong learning, and promote community development. Whether it's traditional services like lending materials and reference assistance or modern initiatives like digital resources and maker spaces, libraries play a vital role in connecting people with information and creating inclusive spaces for exploration, discovery, and personal growth.

According to Ezeabasili and Umeji (2021) Stated that, libraries have evolved beyond traditional repositories of books to dynamic hubs that offer diverse services to cater to the ever-changing needs of their patrons. In today's digital age, libraries have become multifaceted institutions, providing an extensive range of services that extend far beyond the lending of physical books. From digital resources and online databases to community engagement initiatives and educational programs, libraries now serve as comprehensive information and cultural centers. Different library services encompass a spectrum of offerings, including research assistance, technology access, multimedia resources, and specialized collections. Additionally, libraries often provide a variety of educational programs, workshops, and events to promote literacy, lifelong learning, and community development. Whether through maker spaces, computer labs, or collaborative workspaces, libraries have transformed into dynamic environments that foster creativity, innovation, and knowledge exchange (Ashikuzzaman, 2024)

Effective, high quality library services successfully support the undergraduate/postgraduate programs of the institution. To facilitate academic success, library services to the students must provide access to a broad range of information resources. Reference services, Referral services, Orientation activities, and instruction sessions that teach students the skills necessary for using library resources are basic services provided to undergraduate by library personnel. Varied and innovative teaching programs include teaching by personal contact and through the preparation and use of instructional materials in various formats. The Library services are being provided and make students to acquire information literacy skills that enable students to identify the needed information, ethical use of intellectual and physical resources, knowledge of when to ask for help as well as the confidence to gateway to all future library inquiry. The services also prepare students for graduate work and research, but also teaching them to use information sources as citizens, as consumers, as professionals, and for recreational purposes (American library Association, 2019).

Undergraduate Students who have access to computers and internet facilities prefer to browse, chat, send email, sms, Facebook, yahoo messenger, and play computer games. While at home students most times play football, watch Television entertainment programs such as drama, films, comedies, listening to music, watch dancing competitions and so on in the absence of house hold chores. Occasionally we see isolated cases of students engaged in reading as a recreation, something must be wrong somewhere a few years back the situation was different. According to Boyd and Ellison (2023) stated that, Social networking sites are any website designed to allow multiple users to publish content of them. The information may be on any subject and may be for consumption by friends, mates, employers, employees just to mention a few.

Social media refers to the means of interactions among people in which they create, share, and exchange information and ideas in virtual communities and networks, despite all the

abundance potentials in information and communication technology and social media which can enhance students reading ability and improve their performance but are being under-utilize (Humphrey, 2008). Similarly, Boyd and Ellison (2023) define social networking sites as Web-based services that allow individuals to construct a public or semi-public profile within a bounded system, expressive a list of other users with whom they share connections, view and negotiate their list of connections and those made by others within the system.

The advancement in technologies such as television; computer, social media and internet are expected to be agent of deteriorating reading habit among undergraduates which is a means of entertainment and getting information and enables us to create online presence very easily. Part of the side effect social media is reducing reading habit and decrease the level of library patronage by the Undergraduate student. Besides that, Undergraduate students academic achievement is the ability of student to study, remember facts and being able to communicate his/her knowledge orally or in written form even in an examination conditions. The main focus here is on social network not goggle or internet where electronic databases are found and readable (Kolan and Dzandza, 2018). Despite all the techno wonders there is no substitute for books when it comes to encouraging reading and expanding imagination. Therefore, Undergraduates need to adequately patronize university library services (Asiedu, 2017).

Similarly, Neal (2012) describes social media as easy to use services which hinder student to patronize library services by contributing to aliteracy, because Undergraduate use it to interact with other people online such as Facebook, YouTube, Blog, Twitter and so on and so forth. Therefore, being social media site as easy and simple services, too much usage is a challenge because part of the side effect social media reducing reading habit decreases the level library patronage by the Undergraduate student.

Social media could be seen as a process of communicating, interacting, marketing through information communication Technology and internet connectivity. Social media is a 21st century term used to broadly define a variety of networking tools or technologies that emphasized the social aspect of the internet as channel for communication, collaboration and creative expression. The examples of social media sites include: Facebook, twitter, WhatsApp, Instagram, MySpace, YouTube, LinkedIn, Wikipedia to mention but a few. Kaplan and Haenlein (2010) defined social media as “Internet based applications that allow the creation and exchange of content which is user generated”.

Technologies are gashing our young people away from the good habit of reading. The technologies such as television, computer, social media and internet are gradually replacing reading as an accepted form of entertainment and getting information. The emergence of social media simplified the process, because they do not call for advanced internet knowledge or experience and are made up of a wide array of different formats and topics. This means that anyone can connect through social media (Sudha and Kavitha, 2016). Preliminary investigations revealed that, nowadays Undergraduates were spending more than two-hour chatting with friends, sending pictures, short clips, text and music that are contrary to their intellectual benefit, thus fail to achieve academic success (Kpolovie, Joe and Okoto, 2014).

Furthermore, Jha, Jaipuria, Jha, and Sinha (2016) asserted that students are more probably affected by social media to some extent; it absolutely affects the lives of

undergraduate university student's academic performance. They added that social media is attractive as it gives university students another world to make friends, also provides a good way to release pressure upon all this it takes students time, which may deny them to patronize and make judicious use of the abundance resources in the library.

Nathanson, Pruslow and Levitt (2008) stated that, high percentage of university undergraduate students do not read regularly and should be considered alliterate. As frequent voluntary reading has been connected with high level of performance in other areas, it is expected that university student as professionals in training, should practice literacy beyond the functional level. They are expected not only to read what is required for their courses, but also read advanced text critically. The latest literacy skills not only enable the new way of generating and preserving knowledge, but to disseminate it to various users (Showman, Cat, Cook, Holloway and Wittman, 2023).

The technological innovation has brought changes in the way people carry out their day to day activities, the internet made available for the undergraduate students to carry out their daily activities of which social media are part of it, social media have changed the undergraduate students the way they do things in such areas like communication, education, socialization among others. In this information age, social media seem to be growing popularity rapidly, especially among young adult.

Sudha and Kavitha, (2016) also believed that social media have a negative effect on student library patronage and academic performances compared with positive effects, due to lack of awareness among the students and faculty members about the appropriate usage of social media topics of educational interest. In the meantime, the positive effects of student use of social media on academic performances appeared to be very low. Moreover, Heffner and Tara (2016) stated that, social media do not have a positive effect on the students' academic achievements. Because the student GPA decreased as much as they are not patronizing library services and engaged in social media activities. Furthermore, the undergraduate students should manage and monitor their time spent using social media such as Facebook, WhatsApp, Twitter among others.

Junco (2012) stated that social media has an implication to students on library patronage, the relationship between multiple files of Facebook and academic performance; it was revealed that the time students spent on Facebook and checking Facebook were negatively related to student performance and time spent on Facebook is slightly negatively related to time spent on library services and studying. In addition, the availability of time spent on Facebook negatively effecting students who use Facebook in certain ways. Paul, Baker and Cochran, (2012) argued that, online social networking has effect on student patronage to library services, whereas the time spent by students on online social network are more than the time given to their studies.

Patrick and Lorraine (2023) opined that, University library is an academic library which is situated in an academic environment of higher institutions of learning university libraries included. University libraries can be seen as dynamic and vibrant places and spaces in which learners, cast in the role of discursive consumers with a manifold of mutable needs and expectations, are socially and academically networked, supported and developed in a myriad of ways (Vogus & Frederiksen, 2019). In the same vein, Salisbury and Peseta (2018) posited that, University libraries play a vital role in responsive and receptive disposition of knowledge and educational innovations. University libraries are operating with a range of versatile and interactive learning and study spaces that utilize

the rapid advances in digital technologies as well as supporting the changing practices in research, teaching and learning as well as creating social and inspirational spaces to both scaffolds. University library services provide a gateway to all future library inquiry, not only preparing students for graduate work and research, but also teaching them to use information sources as citizens, as consumers, as professionals, and for recreational purposes (American Library Association, 2019).

Library patronage is a physical and remote access to and consultation or use of libraries' collections by undergraduate students and or any clientele in the university. Schoenberger (2018) stated that patronage of the library by intended users is a vital measure of output services provided by libraries. One of the fundamental laws of library is that the information resources such as books and non-book materials must be well consulted by the intended users. Library users are very significant in the practice of librarianship. This is because library practice revolves around the users. Francisca and Goodluck (2013) defined library patronage as access to libraries collections and services by the university community.

However, Potnis, et al (2018) reported that the frequency of library patronage by undergraduate students in the university has been slowly declining. Similarly, Odu (2016) reported that there is a decline in library patronage, while Onuoha and Subair (2013) also reported that studies and observations suggest that there is a decline in library patronage. Even though, Yusuf and Iwu (2010) observed that libraries are being patronized, they are however, reduced to seasonal places as most students make use of the library to read their books when preparing for examinations. Statement of the problem

The university library engages in provision of various services to its users which ranges from technical services to reader services (conventional and electronic services) are what the Undergraduate students ought to patronize in order to inculcate good reading habit. Without access to books, academic success among undergraduates must absolutely suffer. Social media has become a great concern to undergraduate students whereby they become reluctant readers and addicted, because they no longer see reading and writing as a pleasure, they prefer to watch events on the screen rather than read about them on the pages of paper. This problem seems to be as a result of the embracement of social media and interaction with new technologies that Undergraduate students may find it difficult to patronize the library services available for their consumption. In line with the deficiency and challenges that prompted the study to investigate the implications of social media that hinder undergraduate students to patronize library services in North West geopolitical zone, Nigeria

### **Objectives of the study**

The main objective of this study is to determine social media implication to undergraduate student's patronage to library services in North West geopolitical zone, Nigeria. Specifically, the study is intended to:

- I. Find out the extent to which the library services are used by the undergraduate students in North West geopolitical zone, Nigeria.
- II. Determine the effect of social media on the patronage of the undergraduate university student to library services in North West geopolitical zone, Nigeria

## Research questions

- I. What is the extent to which library services are used by Undergraduate students in North West geopolitical zone, Nigeria?
- II. What are the effects of social media on the patronage of the undergraduate university student to library services in North West geopolitical zone, Nigeria?

## Methodology

Descriptive survey design was adopted for the study. The descriptive survey is appropriate and suitable as a guide to examine the opinion of the respondents on the subject under study. The population of the study is thirty seven thousand, four hundred (37400). The populations are two hundred level Students in the Five (5) Universities under study. Proportionate sampling technique or judgmental was used based on the characteristics of the population, the reason for this, is UGII students are the most conversant (that is they are new and they are old enough) to sample three hundred and eighty eight (388) with the view of getting adequate information. The sample size from the population would be considered adequate as it conform in Krejcie and Morgan table for determining sample size. Three hundred and eighty (380) questionnaires were filled and return. Data was collected through the use of questionnaire as an instrument with 19 items, the instrument was face validated by three expert one from measurement and evaluation unit and two experts from the library department Sokoto State University, Sokoto. The data collected was analyzed using percentage frequency.

## Result

**Table 1:** Biodata of the respondents

<b>Biodata</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Faculty</b>		
Arts and social sciences	131	34.4%
Sciences	126	33.1%
Education	123	32.3%
<b>Total</b>	<b>380</b>	<b>100%</b>
<b>Gender</b>		
Male	256	67.3%
Female	124	32.6%
<b>Total</b>	<b>380</b>	<b>100%</b>
<b>Level</b>		
200	380	100%
<b>Total</b>	<b>380</b>	<b>100%</b>
<b>Age</b>		
16-19	62	16.3%
20-24	86	22.6%
25-29	122	32.1%
30-34	75	19.7%
35 and above	35	9.2%
<b>Total</b>	<b>380</b>	<b>100%</b>



**Source: Questionnaire 2024**

The bio data of the respondents presented in Table 1 above reveals that: 131(34.4%) of the respondents are from faculty of Arts and social sciences.126 (33.1%) are the number of respondents from faculty of sciences and 123 (32.3%) are respondents from Faculty of Education. The results on the distribution of respondents by gender revealed that 256 respondents representing (67.3%) are males, while 124 respondents representing (32.6%) are females. This shows that a majority of the respondents in this study were males. The results on the respondent's levels of study are two hundred level alone which stands at 380 (100%).The age distribution reveals that 62(16.3%) of the respondents were within the age range of 16 - 19 years; 86(22.6%) were within the age group of 20 - 24 years, 122(32.1%) of respondents who were within the age group of 25 - 29 years and 75(19.7%) respondents were in the age group of 30 - 34 years and 35(9.2%) respondents were in the age group of 35 years and above.

**Research Question 2.** What is the extent to which library services are used by Undergraduate students in North West geopolitical zone, Nigeria?

**Table :**

S/N	Items statement	VHE	HE	LE	VLE
1	Selective and Dissemination Information	26(6.8%)	9(2.3%)	216(56.8%)	129(33.9%)
2	Reference services	17(4.4%)	9(2.3%)	198(52.1%)	156(41.0%)
3	Internet services	101(26.5%)	123(32.3%)	100(26.3%)	56(14.7%)
4	Serial/periodical services	15(3.9%)	6 (2.0%)	211(55.5%)	148(38.9%)
5	Borrowing services	19(5.0%)	8(2.1%)	199(52.3%)	154(40.5%)
6	Current Awareness Services	65(17.1%)	68(17.8%)	126(33.1%)	121(31.8%)
7	Photocopying services	76(20.0%)	86(22.6%)	118(31.0%)	100(26.3%)
8	Electronic resources services	29(7.6%)	50(13.1%)	139(36.5%)	162(42.6%)
9	Binding services	65(17.1%)	84(22.1%)	117(30.7%)	114(30.0%)
10	Documentation	42(11.0%)	54(14.2%)	128(33.6%)	156(41.0%)

KEYS: VHE (very high extent) HE (high extent) LE (low extent) VLE (very low extent)

**Source: Questionnaire, 2024**

From the table two above data revealed 42.6% of the respondents patronize electronic resources services at very low extent, that implies the e- resources are not patronize at very extent 41.0% of the respondents uses reference services at very low extent, 41.0% of the undergraduate students patronize documentation services at very low extent 40.5% of the respondents patronizes borrowing services at very low extent, 38.9% of the respondents patronizes serial/periodical services at very low extents, 33.9% of undergraduate students uses SDI services at low extent, 31.8.% of the respondents patronizes current awareness services at very low extent binding services at very low extent and the remaining services provided by the library are being patronize at low extent,

**Research Question 3** What are the effects of social media on the patronage of the undergraduate university student to library services in North West geopolitical zone, Nigeria?

**Table :**

S/N	Items state	SA	A	D	SD
1	Social media distract student from their studies	235(61.8%)	124(32.6%)	19(5.0%)	2(0.5%)
2	Social media require spending of money like buying of data	251(66.0%)	70(18.2%)	32(8.2%)	27(7.1%)
3	Addiction to social media affect students' academic life	244(64.2%)	100(26.3%)	22(5.7%)	14(3.6%)
4	Social media activities do not allow student to patronize library services	239(62.8%)	92(24.2%)	30(7.8%)	19(5.0%)
5	Online games on social media denies students to concentrates on their studies	254(66.8%)	115(30.2%)	11(2.8%)	0(0.0%)
6	Extensive use of social media leads students to live in introversion	195(51.3%)	84(22.1%)	59(15.5%)	42(11.0%)
7	Time spent on social media can never be compared that of reading	249(65.5%)	100(26.3%)	25(6.5%)	6(1.5%)
8	Chatting denies students to benefit from the abundance resources in the library	242(63.6%)	136(35.7%)	2(0.5%)	0(0.0%)
9	Social media activities contribute to the aliteracy	193(50.7%)	124(32.6%)	37(9.7%)	26(6.8%)

KEYS: SA (strongly agree) A (agree) D (disagree) SD (strongly disagree)

Source: Questionnaire, 2024

The data gathered from table three above indicated that, 66.8% of Undergraduates strongly agree Online games on social media denies students to concentrates on their studies and it require spending of money like buying of data, 65.5% of the respondents strongly agree upon Time spent on social media can never be compared that of reading, 64.2% of the respondents strongly agree Addiction to social media affect students' academic life, and 62.8% of the respondent also strongly agree Social media activities do not allow student to patronize library services.

### Discussions

The findings of the study revealed the extent of use of library service by undergraduate Students. The result indicated that the use of these services was at varying extent. Services such as electronic services, reference services, literature search, borrowing services, and Photocopying services were made use at very low extent; Lamination services, binding services, Indexing services, Current Awareness Services were at low extent this implies undergraduate are not patronizing library services effectively. This is in line with the opinion pointed out by Potnis, Deosthali, Zhu and McCusker (2018) that, frequency of library patronage by undergraduate students in the university has been slowly declining due to increase interaction with social media.

The findings of the study also made it clear that implication of social media on Undergraduate students which includes: Social media activities do not allow Undergraduate students to patronize University library services, Social media affect students spelling, Social media distract student from their studies, Social media require spending of money like buying of data, Addiction to social media affect students' academic life, Time spent on social media can never be compared that of reading books. This is line with idea of Neal (2012) and Jha, Jaipuria, Jha, and Sinha (2016) Who describes social media as easy-to use services which hinder student to patronize library services, because student use it to interact with other people online such as Facebook, YouTube, Blog, Twitter and so on and so forth. At the same time, it affects their academic performances.

### **Recommendations**

The findings of the study recommends, libraries can also curtail social media implications by providing staff and students with a full range of print and electronic resources to support teaching and learning activities and thereby enhances students' achievement. The finding of the study also recommends librarians to adapt social media sites to disseminate information resources and services to the students, Librarians should promote reading habit among undergraduates by organizing literacy activities such as book discussion, library orientation, these would minimize the effect of social media among Undergraduates Students and the need for the students to pursue an excellent academic performance, frequent library patronage and gain adequate knowledge that will help them in the future.

### **Conclusion**

This study investigated Library services Patronage as Panacea for combating Social media Implications to Undergraduate Students in Sokoto State Nigeria. Descriptive survey design was used, the respondents comprises undergraduate students in Sokoto State. The study made use of questionnaire as instrument of data collection. The findings disclose that undergraduate students have become reluctant readers in the sense that, they see reading as a task not pleasure, too much interaction with technological devices and social media which has an effect that denied them and or led to low level of patronage to University library services.

### **References**

- Ashikuzzaman, M.D. (2024). Library user training for optimum use of library resources. Library and information science academic blog: <https://lisedunetworks.com/category/general>.
- American Library Association (2019). ALA conference and exhibition, <https://2019.alaannual.org>. Washington DC.
- Asiedu, N. K. (2017). Influence of social networking sites on students' academic and social lives: The Ghanaian perspective. *Library philosophy and practice (e-journal)*. 1535. <https://digitalcommons.unl.edu/libphilprac/1535>

- Boyd, D.M. & Ellison, N.B. (2023). Social network sites: Definition, history, and scholarship. *Journal of Computer Mediated Communication*, 13, 210-230. <https://10.1111/j.1083-6101.2007.00393.X>
- Basky, E. and Purdon M. (2006). Introducing web 2.0 social networking and social book making for health librarians: *Journal of the Canadian Health Libraries Association*. 27 (3) <https://journals.library.ualberta.ca/jchla/index.php/jchla/article/view/22472>
- Ezeabasili, C. and Umeji, E.C. (2021). Inclusive library services for academic libraries in Nigeria. *E-library science research journal* 3(1): 73-78
- Heffner, Tara. (2016). "The effects of social media use in undergraduate students" *Theses and Dissertations*. <https://rdw.rowan.edu/etd/1440>.
- Junco, R. (2012). Too much face and not enough books: The relationship between multiple indices of Face book use and academic performance. *Computers in Human Behavior* 28 187–198
- Jha, J., Jaipuria, N., Jha, S and Sinha, P. (2016). Effect of Social media on student, *International journal of computer applications*. (0975 - 8887) International conference on advances Information technology and management ICAIM – 2016.
- Kpolovie, P. J, Joe, A.I and Okoto, T. (2014). Academic achievement prediction: Role of interest in learning and attitude towards school. *International Journal of Humanities, Social Sciences and Education (IJHSSE)* 1, Issue 11, PP 73- 100s (Online).
- Kaplan, A. and Haienlein, M. (2010) Users of the World Unite: The challenges and opportunities of social media: *Business horizons*, 53, 59, 68 available online at <https://www.sciencedirect.com>
- Neal, D, R. (2012). *Social media for academics: a practical guide (electronic resources)* Oxford: Chandos Publishing social media series.
- Nathanson, S, Pruslow, J. and Levitt, R. (2008). The Reading habits and literacy attitudes of In- service and prospective teachers: Results of a questionnaire survey. *Journal of Teacher education* 59.4: 313-21. EBSCOhost. Web. 18 Aug. 2019.
- Onuoha U. D. & Subair M. O. (2013). Study habits of undergraduate students in selected federal Universities in South-west Nigeria. *Educational research*. 4(10):717-721
- Odunola, O. A. & Tella, A. (2019). Influence of information technology skills on library patronage by undergraduate students in south-west, *Library Philosophy and Practice (e- journal)*. <https://digitalcommons.unl.edu/libphilprac/2582>
- Patrick, O.D., & Lorraine A. (2022) The University Library: Places for Possibility, *New Review of Academic Librarianship*, 28:3, 232-255. <https://www.10.1080/13614533.2021.1906718>

- Salisbury, F., & Peseta, T. (2018). The idea of the university: Positioning academic librarians in the future university. *New Review of Academic Librarianship*, 24(3-4), 242-262.
- Showman, A., Cat, L.A., Cook, J., Holloway, N., & Wittman, T. (2023) Essential skills for every Undergraduate researcher;33.(3). *Quarterly council on undergraduate research*. <https://www.cur.org>
- Swai, S.S. (2023). Challenges and influence of using social media on student in higher learning education in Tanzania: ELECTR J.MED TE 2023: 16(1):em2302. <https://doi.org/10za333/ejmet/12618>
- Schoenberger, N. (2018). Access to information in the age of trump. *Emerging Library & Information Perspectives*, 1: 6 - 33, <https://doi.org.10.5206/elip.v1i1.360>
- Sudha, S and Kavitha E S. (2016). "The Effect of Social networking on students' academic performance: the perspective of faculty members of Periyar University, Salem. *Library Philosophy and Practice (e-journal)*. 1455.
- Vogus, B., & Frederiksen, L. (2019). Designing spaces in libraries. *Public Services Quarterly*,15(1), 45-50. <https://www.doi:10.1080/15228959.2018.1556146>
- Yusuf, F., & Iwu, J. (2010). Use of academic library: A case study of Covenant University, Nigeria. *Chinese Librarianship: An International Electronic Journal*, 30. <https://www.iclc.us/cliej/cl30YI.pdf>

## EFFECTS OF CONCEPT-MAPPING INSTRUCTIONAL STRATEGY ON PERFORMANCE AMONG BIOLOGY SCHOOL STUDENTS' OF AKKO LGA, GOMBE STATE, NIGERIA

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### Abstract

*The study was carried out to investigate the Effects of Concept Mapping Instructional Strategy on Performance among Biology Students in Akko Education Area, Gombe State, Nigeria. Concept mapping instructional strategy is one of the innovations in the teaching and learning of science and biology in particular. Previous studies have reported that teachers and students experienced difficulties in the use of concept mapping. The study adopted quasi experimental control group design comprised pre-test and post-test. The population of the study comprised of two thousand one hundred and five (2105) SSII Biology Students of Public Secondary Schools in Akko Education Zone. Two intact classes of SS II students were involved and randomly selected in the study with the sample size of sixty five (65) SSII students from two (2) Schools. The two (2) Schools were designated as the experimental group and the other School was the control. The research instruments used was Biology performance Test (BPT) with a reliability coefficient of 0.79. It was used to measure the performance. The experimental groups were taught using concept mapping Instructional Strategy (CMIS) while the control group was taught using the lecture method (LM). Two research questions were answered using descriptive statistics, mean and standard deviations and two null hypotheses were tested at  $P \leq 0.05$  the data collected were analysed using  $t$  –test to indicate the significant among the groups. Among the other results revealed shows: (a) A significant difference exist in the mean performance scores between the Experimental group and the control group (b) no significant difference exist in the mean performance score of the male and female students. Based on these finding, it was concluded that CMIS enhanced the performance of senior secondary school biology students in ecology. Based on these findings, the research recommends (a) Concept Mapping should be used to help learners learn effectively (b) Workshops and seminars should be organized to train teachers on how to teach using Concept Mapping Instruction Strategy.*

**Keywords:** Concept Mapping, Gender, Performance and Lecture method

### Introduction

Biology is a broad field that offers a lot of opportunities to science students and also provides the society with lots of benefits. Biology is a very important subject that enables one to understand oneself and the environment, which the national curriculum emphasizes

both foundational knowledge and its practical application, hence there is a need for the effective teaching of biology in our secondary schools to better harness its benefits. Biology as a branch of science is a study of living organisms and vital processes (Twan & Useni, 2022). The knowledge of biology is vital to the study of medicine, pharmacy, nursing, dentistry and agriculture, industry, biotechnology, and other fields like genetic engineering and hybridoma technology (Abimbola & Omosewo, 2006). Due to high number of field of studies in which biology has been link to them, Biology has witnessed high enrolment compared to any other science subject in the final year Senior School Certificate Examinations (SSCE). This increase in the SSCE candidates, has not indicates any corresponding increase in students' academic performance (Sakiyo, 2014; Twan, Danjuma & Useni, 2022). Despite the efforts of both federal and state governments to encourage biology education, students' failure in biology in Senior School Certificate Examinations (SSCE) is still high (Agboghoroma & Oyovwi, 2015; Twan & Useni, 2022). The major reasons for this poor performance was attributed to negative attitude of teachers and students, poor reading habit, the nature of the curriculum which is overloaded and poor methodology in science education (Kingaru, 2014; Twan & Useni, 2022). In a bid to cover the syllabus, teachers result to limiting themselves to the traditional way of teaching (lecture method) which involves mostly the cognitive domain of learning to the detriment of affective and psychomotor domains (Arokoyu & Obunwo, 2014). The performance of Biology students at the SSCE level continues to be abysmal. Aside the above reasons for students' underperformance, the approach to teaching and learning of Biology have also been identified as a contributing factor (Twan et al., 2022). Most teachers in the secondary schools are still using the traditional techniques of teaching the subject. This seems to cause students to inadequately understand the lessons they are taught hence, might cause them to memorize facts only for examinations and thereafter promptly forgetting what they have learnt. The teaching approach that is widely used in the Western countries and in this 21st century in presenting science concepts to students is concept mapping. Some studies have revealed that concept maps have been effective for performance and retention and comprehension of concepts, and that there have been significant differences between concept map groups with lecture method and other non-Concept maps technique also known as cognitive maps or organizers, semantic networks, visual or graphic organizers make use of figures, lines, arrows, and spatial configurations to show concept map groups (Ahmed & Abdelraheem, 2016; Novak and Canas, 2008; Twan & Kuboye, 2018).

Concept mapping as a method of instruction, however, is not widely used in secondary schools in Nigeria. Therefore, this study was designed to compare the concept mapping approach which is based on constructivist with traditional approach which commonly used in Nigerian schools. Concept map according to Novak and Gowin (1984) is a graphical tool for representing knowledge. It is also tool that illustrates the interconnection ideas between and among individual concepts dimensional hierarchical diagram. Jonassen (2000) state that concept map is a visual representation of concepts and their interrelationship; how content ideas and concepts are organised and related. The process of concept mapping involves representing with a diagram the logical relationships among concepts in an orderly, sequential or hierarchical manner such that the most broad or general concepts are at the top and the most specific ones are at the bottom of the map.

Novak and Gowin (1984) developed the technique of concept mapping which has had significant impact on education. Concept maps are now widely used in various education

settings to promote meaningful learning and visual thinking (twan and Kuboye, 2018). It has subsequently been used as a tool to increase meaningful learning in the sciences and other subjects as well as to represent the expert knowledge of individuals and teams in education, government and business. Concept maps have their origin in the learning movement called constructivism. Novak's work is based on the cognitive theories of Ausubel, who suggested that learn meaningfully by building knowledge on the bases of their prior knowledge. Ausubel, (1968, as cited in Novak and Canas 2008) stated that "the most important single factor influencing learning is what the learner already knows, ascertain this and teach accordingly". The fundamental idea in Ausubel's cognitive psychology is that, learning takes place by the assimilation of new concepts and propositions into existing concept and propositional framework by the learner. This knowledge structure as held by the learner is also referred to as the individual's cognitive structure (Ausubel et al., 1978).

### **Research Question**

- I. What is the difference between the mean performance scores of SSII Biology Students taught Ecology Concept using Concept Mapping and those taught using Lecture Method?
- II. What is the difference between the mean performance Score of male and female SSII Biology students taught Ecology Concept using Concept Mapping and those taught using Lecture method?

### **Research Hypotheses**

- H01: There is no significant difference between the mean performance scores of SSII Biology students taught Ecology Concept using Concept Mapping and those taught using Lecture Method.
- H02: There is no significant difference between the mean Performance Scores of SS II Biology Students' taught Ecology Concept using Concept Mapping and those taught using Lecture method with regard to their Gender

### **Methodology**

This study adopted a quasi-experimental research design with pre-test post-test experimental and control group. The population of the study comprised of two thousand one hundred and five (2105) of all Biology students in public senior secondary schools in Akko LGA Gombe state, Nigeria (Ministry of Education Gombe, 2020). Simple random sampling technique was used to select two intact classes from two schools which gave a sample of 65 students were used: 35 in the control group and 30 in the experimental group. One intact class served as experimental group while the other class in a different school served as the control group. The choice of the schools was based on the fact that they shared the same characteristics in terms of the entry condition of students, geographical location, and presentation of candidates for external examinations. One instrument was used for data collection, namely: Biology Performance Test (BPT) for pre-test which was administered prior to the treatment while a post-test was administered after the treatment. The BPT used for the pre-test was renumbered for the post-test to avoid testing experience, it has 40-item multiple-choice objective test with four options (A-D). The instrument was adapted from the West African Examinations Council



(WAEC) biology past questions from 2017 to 2021 with little moderation, hence, there was need for validation and reliability. To ensure the reliability of the research instrument, the instrument was pilot tested. The test-retest method was used to determine the reliability coefficient and results yielded 0.79. Data collected were analysed using descriptive statistics and independent sample t-test. The analysis was done using the Statistical Package for the Social Sciences (SPSS) software version 20.0. The first week was used to administer the pre-test to both experimental and control groups before the treatment. The second and third week was used to administer the instructional method meant for each group with the help of the research assistants in a two 40 minutes lesson per week. The control group was taught ecology concept without the use of the treatment Concept Mapping Instructional strategy (CMIS) but with Lecture method, while the experimental group was taught with the usage of CMIS. The Post-test (BPT) was administered to the students in both the experimental group and the control group after the six weeks treatment. The hypotheses were tested at 0.05 level of significance using t-test.

## **Result**

The results were analysed and presented in tables.

**Research Question One:** *What is the difference between the mean performance scores of SSII Biology Students taught Ecology Concept using Concept Mapping and those taught using Lecture Method?*

**Table 1:** Summary of Posttest Mean and Standard Deviation Scores for Experimental and Control Group

<b>Groups</b>	<b>N</b>	<b>Mean Score</b>	<b>Std. Dev.</b>	<b>Std. Err</b>	<b>Mean Diff</b>
Experimental	30	30.10	6.48	1.18	6.81
Control	35	23.29	8.84	1.50	
Total	65				

Table 1: shows the Summary results of Posttest Mean and Standard Deviation Scores for the Students in Experimental Groups and those in Control Group. The experimental group had posttest mean score of 30.10 with a standard deviation of 6.48 while the Control group had a mean score of 23.29 with a standard deviation of 8.84. The mean difference between Experimental and Control groups is 6.81 this means that the students who were taught using the Concept Mapping had higher mean score than those who were taught using the Lecture Method.

**Research Question Two:** *What is the mean difference between the Gender performance Score of SSII Biology students taught Ecology Concept using Concept Mapping and those taught using Lecture method?*

**Table 2:** Summary of Posttest Mean Score for the Students with regard to Gender

Gender	N	Mean	Std. Dev.	Std. Err	Mean Diff
Male	38	26.89	9.01	1.37	0.61
Female	27	25.78	7.90	1.505	
Total	65				

The result in Table 2 revealed the mean and mean difference in the gender of the students exposed to Concept mapping and those taught Lecture Method. The Male had mean score of 26.89 while the Female had a mean gain score of 25.78; the mean difference between male and female is 0.61. This implies that the male students had better performance than the female students.

### Hypotheses Testing

*H01: There is no significant difference between the mean performance scores of SSII Biology students taught Ecology Concept using Concept Mapping and those taught using Lecture Method.*

To test for the hypothesis, students' performance scores in the posttests were computed and subjected to t-test Analysis. The summary of the result Analysis of the statistics is presented in table 3.

**Table 3:** Independent t-test Statistics on the Students' Performance in Cooperative Learning and Lecture Groups

Groups	N	Mean	Mean Dif	T	Df	p	Remark
Experimental	30	30.10	6,8	3.49	63	0.001	Sig
Control	35	23.29					

### Sig at $\alpha \leq 0.05$

Results in Table 3 Shows that mean posttest scores of the participants in the experimental group had more significant effect when compared with their counterpart in the control group. The significant value obtained 0.001 was less than  $\alpha \leq 0.05$ . Since the p-value is less than the set level of significance, then Independent t-test shows significant difference exists in the academic performance of students in the experimental group and those of control group, in favour of the experimental group. The results therefore, reveal the null hypothesis, which stated that there is no significant difference in academic performance of Biology students taught Ecology concept using Concept Mapping (CP) and those taught using lecture Method is hereby rejected, implying that CP Model of Instructional Strategy significantly enhances secondary Schools Biology Students performance in Ecology than the Lecture Method.

## Null Hypotheses Two

**H<sub>02</sub>:** *There is no significant difference between the mean Performance Scores of SS II Biology Students' taught Ecology Concept using Concept Mapping and those taught using Lecture method with regard to their Gender*

**Table 4:** Independent t-test Statistics on the Students' Gender Related Scores in the Experimental and Control Group

Groups	N	Mean	T	Mean Dif	Df	p	Remark
Male	38	26.89	0.52	0.61	63	0.606	Not Sig.
Female	27	25.78					
Total	65						

### Sig at $\alpha \leq 0.05$

Table 4 reveals a t-test analysis of students' performance based on the gender with a p-value of 0.606. The p-value is greater than the set level of significance,  $\alpha \leq 0.05$ . This indicates non-significant difference between the mean of male students with their female counterpart. Therefore, the null hypothesis which stated that, *There is no significant difference between the mean Performance Scores of SS II Biology Students' taught Ecology Concept using Concept Mapping and those taught using Lecture method with regard to their Gender* is therefore accepted, implying that Concept Mapping significantly enhances secondary Schools Biology Students' performance without given any preferential advantage to any gender.

## Discussions

This study which dealt with the effect of concept mapping teaching learning techniques on students' performance in Biology among senior secondary schools in Gombe state, Nigeria is quite timely considering the importance of Biology in the admission into the universities and other higher institutions to study virtually all science related courses. Since it has been observed that lecture method is the most dominant methodology used in the teaching of Biology science, and it has also been observed that its usage is one of the major problems of teaching sciences at the senior secondary school level. The findings from the study revealed that students who were taught ecology using concept-mapping instructional strategy perform better than those taught using the lecture method. This means students' performance significantly differed based on the teaching methods used in the study. It was found that the mean score of students who were taught ecology using concept-mapping was higher than that of the control group. The pedagogical implication of this finding is that concept mapping instructional strategy can be employed by biology teachers to teach biology and other difficult biology concepts that have been identified in literature. This finding agrees with the findings of Eravwoke, (2017) that found significant difference between experimental and control groups in favour of concept mapping group. Dhaaka (2012) recommended the use of concept mapping as an effective tool for biology teaching. Along the same vein Ahmed and Abdelraheem (2016) maintained that, concept mapping strategy promotes meaningful learning as well as students' academic achievement. The result is also in agreement with the previous studies

of other researchers (Twan and Kuboye 2018; Okoronka, 2018; Meheux, 2017; Ogonnaya et al., 2016; Arokoyu & Obunwo, 2014) whose findings indicated that concept mapping instructional strategy is more effective in teaching abstract and difficult science concepts than the traditional teaching method. The finding also revealed that concept-mapping instructional strategy helped to improve students' academic performance in the target concept, this might be due to the fact concept mapping-instructional strategy is interactive, student-centred in nature, and allows for students' participation.

The second finding of the study showed no gender difference in the students' performance in biology. That means statistically does not indicate a significant difference in the performance of males and female students taught with concept mapping teaching techniques. The finding concurs with that of Eravwoke, (2017) who found no significant difference among the genders; these indicate the effectiveness of concept mapping teaching technique which is flexible to all gender. Sakiyo (2008) also, reported no gender difference in the acquisition of science process skills when students are taught using student-centred teaching methods. Sakiyo (2007) suggested that, gender differences can be eliminated when teachers used certain teaching strategies that can bring about gender equity in science education. The implication of this finding is that concept maps can be employed in teaching science concepts as it has the tendency of enhancing conceptual understanding by the students without minding their specific gender, which in turns allow the students to perform better by having strong memory of retaining concepts that have been taught earlier. The findings is also in disagreement with the findings of Cheema and Mirza (2013) who found out that male students significantly performed better than the female students.

Furthermore, the findings of the study showed significant effect among method whereas, there is no significant difference in the gender of biology students' performance. This shows that the concept mapping influenced biology students' performance independent of gender. This agrees with the findings of Eravwoke, (2017) who found no significant interaction effects among gender on students achievement in mathematics and basic science respectively. This study shows that, Concept mapping strategy promotes students' academic performance in biology. The indication of no gender difference in students' performance, the results show that the increase in students' performance does not depend on gender, and this means concept mapping is an effective to tool for both male and female students.

## **Conclusion**

The study investigated the effects of concept mapping instructional strategy on students' performance in ecology. Based on the findings from the research, it was concluded that concept mapping instructional strategy had a significant effect on students' performance in biology. The use of concept map as an instructional strategy was, therefore, deemed to be more effective than the use of the lecture method. Also, the finding concluded that male and female students benefitted almost equally when concept-mapping instructional strategy was used in teaching biology.

## **Recommendations**

Based on the research findings, the following recommendations were made:

- I. Teachers should use many activity-based strategies such as concept mapping and cooperative learning instruction strategies while teaching biology because those strategies are learner center which it has been proven to increase students' better performance.
- II. The instructional strategy should be used in mixed-gender classrooms, as it has been established by these findings to be gender friendly.
- III. Workshops should be organized and made compulsory for practicing teachers so that they can embrace the skills of concept mapping teaching method.

## **References**

- Abimbola, I. O., & Omosewo, E. O. (2006). *History of science for degree students. Ilorin: Olayiwola Publishers.*
- Agboghoroma, T. E., & Oyovwi, E. O. (2015). Evaluating effect of students' academic achievement on identified difficult concepts in senior secondary school biology in Delta State. *Journal of Education and Practice*, 6(30), 117-125
- Ahmed, A. M., Shittu, A. F., Yahaya, L., Dada, O. A. (2021). Effects of Concept-Mapping Instructional Strategy on Senior School Students' Achievement in Biology, Lagos State, Nigeria. *Malaysian Online Journal of Educational Sciences*, <http://mojes.um.edu.my/> EISSN: 2289-3024
- Ahmed, A., & Abdelraheem, A. (2016). Investigating the effectiveness of digital-based concept mapping on teaching educational technology for undergraduate students. *Journal of Educational and Psychological Studies-Sultan Qaboos University (Pages 737-749)*, 10(4).
- Arokoyu, A. A., & Obunwo, J. C. (2014). Concept-mapping: An instructional strategy for retention of organic chemistry concepts. *International Journal of Scientific and Innovative Technology*, 1(3), 50-58
- Ausubel, D. P., Stager, M., & Gaite, A. J. H. (1968). Retroactive facilitation in meaningful verbal learning. *Journal of Educational Psychology*, 59(4), 250.
- Ausubel, D. P., Novak, J. D., & Hanesian, H. (1978). *Educational psychology: A cognitive view.*
- Awodun, A. O. (2017). Effects of concept mapping teaching strategy on students' academic performance and retention in senior secondary school physics in Ekiti state, Nigeria. *International Journal of Research in Educational Studies*, 3(6), 10-18
- Cheema, B. A., & Mirza, M. S. (2013). Effects of concept mapping on students' academic achievement. *Journal of Research and Reflections in Education*, 7(2), 125-132

- Dhaaka, A. (2012). Concept mapping: Effective tool in biology teaching. *VSRD-TNTJ*, 3(6), 225, 230
- Eravwoke, O. (2017). *Effects of concept mapping techniques on students achievement and attitude in basic science in secondary schools in Delta central senatorial district*. (Unpublished Dissertation), Department of Curriculum and Integrated Science, Faculty of Education, Delta State University, Abraka, Nigeria.
- Jonassen, D. H. (2000). Toward a design theory of problem solving. *Educational technology research and development*, 48(4), 63-85
- Kingaru, J. M. (2014). Factors contributing to poor performance of science subjects: A case of secondary schools in Kawe Division, Kinondoni Municipality [Master's Dissertation, Open University of Tanzania]. repository.out.ac.tz-JAMES\_MUCHWE\_KINGDARU\_Final\_Thesis.pdf
- Meheux, M. E. (2017). Effects of concept mapping teaching strategy on the academic achievement of senior secondary school students in physics. *International Journal of Education and Evaluation*, 3(12), 25-32
- Novak J. D. (2004). Application of advances in learning theory and philosophy of science to the improvement of chemistry teaching. *Journal of Chemical Education* 61(7), 607-612
- Novak, J. and Gowin, D. R. (1984). *Learning how to learn*, New York: Cambridge University Press. Offor, E. I. (2007). Gender Stereotyping in some Popular Primary Science Textbooks used in Primary Schools in Imo State: *Journal of Women in Academies*, 4(1),232-240.
- Novak, J. D., & Canas, A. J. (2008). The theory underlying concept maps and how to construct and use them.
- Ogonnaya, U. P., Okafor, G., Aboniyi, O. S., & Ugama, J. O. (2016). Effects of concept mapping instructional approach on students' achievement in basic science. *Journal of Education and Practice*, 7(8), 79-84.
- Okoronka, A. U. (2018). Effects of concept mapping instructional strategy and gender on secondary students achievement in difficult physics concepts in Yola, Nigeria. *Gombe Journal of Education (GOMJE)*, 2(1), 1-12.
- Sakiyo, J. (2008). Effectiveness of science technology society teaching method on students' acquisition of science process skills in Yola Metropolis, Adamawa State. *Journal of Technology and Educational Research*, 1(2), 89-100.
- Sakiyo, J. (2014). Assessment of the trend of secondary school student's academic performance in the sciences, mathematics and English: Implication for the attainment of the millennium development goals in Nigeria. *Advance in Social Sciences Research Journal*, 2(2), 31-3
- Twan, S. M. and Kuboye, S. (2018). *Effect of Concept Mapping Strategy on retention and performance in Ecology among Biology Students in Sabon-Tasha Education Zone Kaduna, Nigeria*. Faculty of Education Ahmadu Bello University, Zaria Proceedings of African Conference. 644.

- Twan, S. M., Danjuma, G. S. and Useni, B. (2022). Effects of Think Pair Share Instructional Strategy on Interest and Performance in Biology Among Secondary Schools Students in Akko Education Zone, Gombe state, Nigeria. *Journal of Science, Mathematics and Entrepreneurial Education*, 1(5):220-228
- Twan, S. M. and Useni, B. (2022). Effects of cooperative Instruction Strategy on Performance and Retention in Ecology Among Secondary Schools Biology Students in Akko Education Zone of Gombe state, Nigeria. *South Eastern Journal of Research and Sustainable Development*. 8(1):1-18

## AVAILABILITY, ACCESSIBILITY AND USABILITY OF ELECTRONIC-LEARNING TOOLS IN NORTH-WEST NIGERIA UNIVERSITIES AMIDST COVID-19 AND RURAL BANDITRY

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### Abstract

*The research “Availability, accessibility and usability of electronic-learning tools in north-west Nigeria universities amidst covid-19 and rural banditry” was guided by three (3) objectives and three (3) research questions. A cross-sectional survey research design was employed in the study. The study used both quantitative and qualitative methods for data collection. The population of the study were 175,928 participants comprising of 10,402 academic staffs and 165,526 undergraduate students in 17 public universities (federal and state own) in north-west, Nigeria. Cluster sampling technique was employed in selecting three (3) public universities as a sample. The entire sample chosen were 537 consisting of 31 academic staff and 506 undergraduate students in faculty of education from three (3) public universities in north-west, Nigeria. The instruments used were questionnaires for quantitative data collections and interview schedules for qualitative data collection. Frequency count, mean and simple percentage were used to answered the three (3) research questions stated. The major findings of the study revealed that, there was an adequate available, favourable access policies and moderate used of e-learning tools in teaching and learning at the universities of north-west Nigeria amidst covid-19 and rural banditry. Similarly, also it shows that some of the academic staffs and undergraduate students encountered different challenges in using e-learning tools for teaching and learning where by lack of constant electricity supply, bureaucratic bottleneck of the ICT centre’s administrator in terms of accessibility policy, lack of ICT skills, etc. are some of the Major challenges. Moreover, the study recommended that the university vice chancellors and head of ICT units should try to consider and suspend accessibility policy in usage of e-learning tools to enhance effective use of e-learning tools in the teaching and learning in universities.*

**Keywords:** E-learning, availability, accessibility, usability, covid19 and rural banditry

### Introduction

The impact of e-learning in human life, learning inclusive are numerous and its roles in tertiary education too cannot be subsided particularly, with the current scenario of Covid-19 and rural banditry in Nigeria, the contribution of e-learning has gained momentum due



to the closure of educational institutions in North-West region of Nigeria and other part of the country which raised challenges for students learning. During this period, e-learning are serving the solution for the ongoing learning processes through innovations and learning management systems (Zayabalaradjan, 2020 & Muzaffar et-al, 2020). E-learning can provide opportunities for academic staff to implement information technology solutions for teaching as well as evaluation for the completion of coursework of the undergraduate students. Academic Staff and undergraduate students across the world have accepted and appreciated the electronic form of learning. The rationales behind the acceptance are ease of use, learning flexibility and controllable environment.

Electronic-learning (e-learning) is commonly referred to the intentional use of networked information and communications technology in teaching and learning (Hassan et-al, 2022). A number of other terms are also used to describe this mode of teaching and learning. They include online learning, virtual learning, distributed learning, network and web-based learning. Fundamentally, they all refer to educational processes that utilize information and communications technology to mediate asynchronous as well as synchronous learning and teaching activities. On closer scrutiny, however, it will be clear that these labels refer to slightly different educational processes and as such they cannot be used synonymously with the term e-learning. The term e-learning comprises a lot more than online learning, virtual learning, distributed learning, networked or web-based learning. As the letter “e” in e-learning stands for the word “electronic”, e-learning would incorporate all educational activities that are carried out by individuals or groups working online or offline, and synchronously or asynchronously via networked or standalone computers and other electronic devices.

Availability means the state of having sufficient of something/ presence of an items of the same kind in the various places under study. Ajayi (2013) viewed availability as a conflict with the observed facts on the ground, while items of the same kind were available in large quantity, variety was absent. He continues further to state that accessibility was determined to a large extent by bureaucratic bottleneck of documented policies on where and when to release the e-learning tools or materials. Usability refers to the degree to which the e-learning tools or materials are allowed or in readiness to be used.

University was defined by Dictionary.com (n.d) as an Institution of higher education (typically accepting students from the age of about 17 or 18, depending on country, but in some exceptional cases able to take younger students) where subjects are studied and researched in depth and degrees are offered. Nigeria has 36 states and a Federal Capital Territory (FCT) - Abuja. These states are also further classified into a geo political zone. There are six (6) geo political zones namely - South West, South-South, North Central, South East, North West and North East; there are federal universities in each of all the 36 states in Nigeria, including the FCT. Likewise, each state has its University, that is each state in Nigeria has at least two universities- One federal university and one State University and The north west Zone (Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto and Zamfara) has ten (10) public federal universities plus seven (7) State own public Universities and has the highest number of federal universities.

World Health Organization (WHO) on March 11, 2020, declared Covid-19 as pandemic and since then, its spread worsened and many deaths cases continue occurring. The federal government through the ministry of education directed the closed down of all

educational institutions like tertiary, secondary and primary schools nationwide over the outbreak of the Corona virus in Nigeria (Premium times, 2020).

Rural banditry started in Zamfara around 2011, as a traditional farmer-herder conflict or insignificant rural unrest, transforming into full-blown conflict, engulfing most parts of the north-west. Multiple factors/ actors account for the transformation of the conflict (Rufai, 2021). Since then north-west region was divided into bandits' camps and each area/ zone are allocated to a particular leader. Niger and Kaduna states are Gide's territory; under him are smaller camps with loyalty and allegiance to individual leaders. Katsina was controlled by late Auwalun Daudawa and Dangotte Ba zamfare, under them also are large numbers of mini gang leaders. In Sokoto state, particularly the eastern part is under the jurisdiction of Turji, while there are numerous leaders in Zamfara state.

Rural banditry has disrupted the educational system in north west region Nigeria; most states in the country have resulted in temporarily closure of all educational institutions in an attempt to contain the spread of the pandemic and rural banditry (Adeoye, Adanikin & Adanikin, 2020). Rural banditry also had a severe influence on educational institutions as educational institution in North-West region of Nigeria were suffering from villages school shutdowns, merging of some schools with other school within the capitals of the states and shifting of schooling mode from boarding to day school in response to Covid-19 and rural banditry measures. Although some universities were quick to replace face-to-face lectures with online learning, these shutting affected education and research as well as the safety and legal status of international students in their host country. Perhaps most importantly, the covid-19 and rural banditry rises difficulties about the value offered by a university education which includes networking and social opportunities as well as educational content. To continue as vital, Universities must to reinvent their educations so that digitalization multiplies and supplements instructional process (Schleicher, 2020).

The trend of handling teaching and learning in 21st century is changing speedily in most of the societies in the world now as a result of scientific and technological advancements which gives birth to what is called Information and Communication Technology (ICT) like e-learning, thus educational institutions and agencies have to take of this and embrace the use of e-learning instructions. In this era of covid-19 and rural banditry, e-learning was accepted by all as universal remedy when our villages schools were temporarily shut down, merged of some schools with other school within the capitals of the state and shifting of schooling mode from boarding to a day schools as a result of novice challenges of covid-19 and rural banditry. Despite the different calls to contain the Corona Virus and rural banditry, a growing number of educational institutions have shut down in regards to face-to-face classes in North-West Nigeria. Educational sector globally is seen to be shifting towards e-learning in order to cushion the effect of this Covid-19 and rural banditry in some developing countries, similarly, Nigeria is also posed with the challenge of shifting from the traditional teaching method to the e-learning during the Covid-19 and rural banditry. There are numerous challenges paced as a result of the varying degree of preparedness and use of the e-learning in universities which ranges from availability, accessibility and usability of the e-learning tools in the universities as observed by veteran researchers, that is why this study seek to evaluate the Availability, accessibility and usability of electronic-learning tools in north-west Nigeria universities amidst covid-19 and rural banditry.

## **Statement of the Problem**

The temporarily closing of schools at all levels in Nigeria on 19th march, 2020 as directed by federal ministry of education (Nlebem, 2020) and subsequent closing of some educational institutions in north-west geo-political zone, as a measure to control the spread of Covid-19 and rural banditry as a novel challenge which attract the attention of leaders, educationists, researchers and students to look for other substitute to instructions was one of the right directions need to find it alternative. The use of e-learning among the populaces in the country is encouraging and is on daily basis. However, various researches conducted by the researchers like Sing & Chantahien (2008) and Ajayi (2013) showed that e-learning are not been available, accessible and usable for instructions in the Universities in spite of the fact that many academic staff and undergraduate students spend a lot of their precious time on the e-learning without utilizing it in different opportunities' of gathering Information for school work, educational networking, researches and collaborations. E-learning is the only way that can be used during covid-19 and rural banditry to facilitate teaching and Learning. If it continues to be unavailable, inaccessible and not usable to both academic staff and undergraduate students during the period of covid-19 pandemic and rural banditry they may end of being at home doing nothing and they may engage in criminal act, as such there is need to evaluate the availability, accessibility and usability of electronic-learning tools in north-west Nigeria universities amidst covid-19 and rural banditry

## **Objectives of the study**

The study aimed to find out the extent of availability, accessibility and usability of e-learning in universities of North-West Nigeria, amidst covid-19 and rural banditry for teaching and learning, with the following specific objectives:

- I. To investigate the availability of e-learning tools in universities of North-West Nigeria, amidst covid-19 and rural banditry.
- II. To determine the accessibility of e-learning tools in universities of North-West Nigeria, amidst covid-19 and rural banditry.
- III. To find out the extent of usability of e-learning tools in universities of North-West Nigeria, amidst covid-19 and rural banditry.

## **Research Questions**

- I. To what extent are e-learning tools available in Universities of North-West Nigeria amidst covid-19 and rural banditry?
- II. To what extent are e-learning tools accessible in Universities in North-West Nigeria amidst covid-19 and rural banditry?
- III. To what extent are e-learning tools use in Universities in North-West region of Nigeria amidst covid-19 and rural banditry?

## **Methodology**

Survey research design was used in the study, specifically, the cross sectional survey. The selection of the design allowed the researcher(s) to collect data from a representative sample of a large population and use the results obtained to draw inference on the population (Ajayi, 2013). Zubairu (2014) viewed it ,as allowing a group of people or

items to be studied by collecting and analysing data from a reasonable number of respondents or items to be Considered as representative of the entire group. Furthermore, the study used both quantitative and qualitative methods of data collection through the use of quantitative statistics.

The target population of the study were academic staff and the undergraduate students in the 17 public Universities of North-West Nigeria. According to the National Universities Commission as cited by Mogaji (2019) there are a total of 17 (federal and state own) public Universities in North-West, Nigeria. A total of One hundred and seventy-five thousand, nine hundred and twenty-eight (175,928) participants comprising of 10,402 academic staff and 165,526 undergraduate students from seventeen public universities in North-West Nigeria. The distribution of the Population is presented in appendix 1:

Cluster sampling technique was used to select the sample from the population that was adequately a representative sample of the population. The study used two stage clusters, Firstly, stage 1 universities were group into cluster 1,2 and 3 base on the fact that each cluster has same characteristics in their states and shown below

- I. Universities in Kano State + Universities in Jigawa state
- II. Universities in Kastina State + Universities in Kaduna state
- III. Universities in Sokoto State + Universities in Kebbi State+ Universities in Zamfara State.

Secondly, a simple random sampling was used to select the three (3) public universities each representing its cluster out of the seventeen (17) public universities in North-West, Nigeria. The sample drawn was 537, comprising of 506 undergraduate students and 31 academic staff from faculty of education in the three North-West universities, Nigeria for quantitative data collection, as guided by G.Power tools ample size. Out of the sample respondents 39 respondents was used purposively during the interview, these comprised of 30 undergraduate students and 9 academic staff in faculty of education from the three universities selected, 10 undergraduate students and 3 academics staff was interviewed from each university. The distribution of the samples was presented in table 1 and table 2.

**Table 1:** Undergraduate Students and Academic Staff Sample in Universities of North-West, Nigeria. For quantitative Data.

S/N	Name of University	Academic Staff Sample	Undergrad Students Sample	Total Sample
1.	Ahmad Bello University Zaria, Zaria, Kaduna State	19	257	276
2.	Bayero University Kano, Kano, Kano State.	10	225	231
3.	<b>Kebbi State University of Science and Technology Aliero, Aliero, Kebbi State.</b>	<b>2</b>	<b>224</b>	<b>226</b>
	<b>Total</b>	<b>31</b>	<b>506</b>	<b>537</b>

Source: Researcher’s field work, 2022.

**Table 2:** Undergraduate Students and Academic Staff Sample in Universities of North-West, Nigeria. For qualitative Data.

S/N	Name of University	Academic Staff Sample	Undergrad Students Sample	Total Sample
1.	Ahmad Bello University Zaria, Zaria, Kaduna State	3	10	13
2.	Bayero University Kano, Kano, Kano State.	3	10	13

<b>3. Kebbi State University of Science and Technology Aliero, Aliero, Kebbi State.</b>	<b>3</b>	<b>10</b>	<b>13</b>
<b>Total</b>	<b>9</b>	<b>30</b>	<b>39</b>

Source: Researcher’s field work, 2022.

Four instruments were used for data collection; they were questionnaires, for Undergraduate Students and Academic Staff and interview schedules for undergraduate students and academic staff, the instruments were named and Tags as Electronic-learning Questionnaire for Undergraduate Students (ELQUS), as Electronic-learning Questionnaire for Academic Staff (ELQAS), Undergraduate Students Interview Schedule (USIS) and Academic Staff Interview Schedule (ASIS). Questionnaire on evaluation of electronic media availability, accessibility and usability in national open University of Nigeria in North Central zone was adapted for the study. The questionnaire has three sections of A, B, and C. Section A of the instruments deals with the e-learning availability, while Section B concerned with the e-learning accessibility, and Section C focused on e-learning usability. In Section A, the respondents are to tick the blanks where applicable that best reflect his/ her opinion using four (4) points scale of Much Available (MA)=4, Available (A) =3, Few available (FA) =2, Not Available (NA)=1, likewise in Section B the respondents are to tick the blanks where applicable that best reflect his/ her opinion using four (4) points scale of Very Favourable access Policy (VFAP)=4, Favourable Access Policy (FAP) =3, Fairly Favourable access Policy (FFAP) =2, Non access Policy (NAP)=1 and In Section C of the instruments the respondents are ask to tick the blanks where applicable that best reflect his/ her opinion using four (4) points scale of At Least Once Per Week (ALOPW)=4, Once Per Month (OPM) =3, Once Per Year (OPY) =2, Never (N)=1. The second instruments used for data collection were interview schedule; these yielded first-hand information about the availability, accessibility and usability of e-learning tools in universities of North-West, Nigeria. it comprised of 16 questions on e-learning items in the availability, accessibility and usability of Electronic-Learning tools in Universities in North-West region of Nigeria, the questions elicited information from the participants. The 10 Undergraduate students and 3 academic Staff in faculty of education selected from each sampled Universities was interviewed.

The validity of the four instruments (ELQUS, ELQAS, USIS and ASIS) were determined by giving it to experts in the Department of Science Education, Test, Measurements and evaluation unit of Curriculum Department, Faculty of Education, Sokoto State University, Sokoto state, Nigeria for judgements. These experts were given the copies of the instruments, topic of the study, aim and objectives and research questions as guide, to judge the adequacy of the items in the instruments by adding or modify relevant information omitted.

The measure of internal consistency of the ELQUS and ELQAS was determine by the Cronbatch’s Alpha and subjected to Pearson’s product moment correlation co-efficient, the value of 0.76 was obtained and considered good for used in the study. A direct method of data collection was used in the study. The data collected was also, analysed using Statistical Package for Social Science (SPSS) version 20:0. Data was analysed in three stages, which were: availability of e-Learning Tools; accessibility of e-learning tools; and usability of e-learning tools respectively as in the instruments. the study used frequency count and mean to answered the research questions for quantitative data; by using the mean criterion of the 2.5 obtained from four points Likert’s scale as criteria for

accepting or otherwise i.e.  $4+3+2+1/4 = 2.5$ . While, the qualitative data collected from interview schedule was answered through coding system using frequency count and percentage.

### Results

In this section, the research questions were answered by data obtained in the course of the study i.e. questionnaires and interview. frequency count and mean were used to answered research question one, two and three. The summaries of each research questions results were presented in table 3, table 4 and table 5 respectively for quantitative data. Moreover, the three (3) research questions were also answered using frequency count and percentage for qualitative data, the summaries of the results of them were presented in table 6, 7, 8, 9, 10 and 11.

Research question one: To what extent are e-learning tools available in Universities of North-West Nigeria amidst covid-19 and rural banditry?

**Table 3:** Extent of e-learning tools Availability for Instruction in Universities of North-West Nigeria amidst covid-19 and rural banditry

Result from table 3 indicated that the extent of availability of e-learning tools (Computer system, Fax machine, Radio, audio cassettes recorder/player, microphone/speaker system,

S/N	E-LEARNING ITEMS	RESPONSES				mean
		(4) much available frequency	(3) available frequency	(2) fairly available frequency	(1) not available frequency	
1	Computer System	309	203	18	7	3.52
2	Fax Machine	234	291	5	0	3.93
3	Radio	216	269	26	11	3.87
4	Audio cassettes recorder/player	362	141	18	16	3.98
5	Microphone/ speaker System	387	118	0	31	3.97
6	Flash Drive/modem	237	255	9	36	3.98
7	Television	150	280	62	22	3.80
8	Video cassettes recorder/ player	219	274	26	13	3.94
9	Internet connectivity/ Web environment	244	144	40	16	3.28
10	Telephone/intercom	245	190	79	17	3.25
11	CD-ROMs	286	175	51	15	3.90
12	Electronic board	244	144	40	16	3.28
13	Overhead/opaque projector	323	112	56	45	3.33
14	Film strip projector	178	347	2	8	3.30
15	Slide projector	236	187	94	19	3.19
16	Smart/Android phone	120	290	87	34	2.93
	<b>mean of the means</b>					<b>3.28</b>

Flash drive/ Modem, Television, video cassettes recorder/player, Internet

connectivity/web environment, Telephone/intercom, CD-ROMs, Electronic board, Overhead/opaque projector, film strip projector and Slide projector) for teaching and learning in Universities of North-West Nigeria amidst covid-19 and rural banditry were adequately available, because, all the means of the e-learning items was bigger than the mean criterion i.e. 2.50. a further analysis was also done by comparing the mean of means i.e. 3.28 with the mean criterion i.e. 2.50. the overall overview of the data in table 3 shows that a lot of e-learning tools were readily available to the respondents at the universities of north-west Nigeria.

Research question two: To what extent are e-learning tools accessible in Universities in North-West Nigeria amidst covid-19 and rural banditry?

**Table 4:** Extent of e-learning tools Accessibility for Instruction in Universities in North-West Nigeria amidst covid-19 and rural banditry.

S/n	E-learning items	Responses				mean
		(4) very access frequency	favourable policy	(3) favourable access frequency	(2) fairly favourable access frequency	
1	Computer System	2	28	387	118	1.84
2	Fax Machine	84	134	219	100	2.38
3	Radio	192	128	66	144	2.69
4	Audio cassettes recorder/player	266	58	56	153	2.82
5	Microphone/speaker System	195	124	122	96	2.77
6	Flash Drive/Modem	108	378	31	18	3.08
7	Television	265	86	34	150	2.87
8	Video cassettes recorder/ player	222	106	57	152	2.80
9	Internet connectivity/ Web environment	106	82	176	156	2.27
10	Telephone/intercom	245	190	79	17	3.25
11	CD-ROMs	294	87	116	34	3.21
12	Electronic board	82	64	146	243	1.97
13	Overhead/opaque projector	323	112	56	45	3.33
14	Film strip projector	178	347	2	8	3.30
15	Slide projector	79	146	162	148	2.29
16	Smart/Android	237	36	255	9	2.93

phone  
**mean of the means** **2.74**

Result from table 4 indicated that the extent of accessibility of e-learning tools (Computer system, Fax machine, Radio, audio cassettes recorder/player, microphone/speaker system, Flash drive/ Modem, Television, video cassettes recorder/player, Internet connectivity/web environment, Telephone/intercom, CD-ROMs, Electronic board, Overhead/opaque projector, film strip projector and Slide projector) for teaching and learning in Universities of North-West Nigeria amidst covid-19 and rural banditry had favourable access policy, because, the means of the ten (10) out of the sixteen (16) stated e-learning items was bigger than the mean criterion i.e. 2.50. a further analysis was also done by comparing the mean of means i.e. 2.74 with the mean criterion i.e. 2.50.

Research question three: To what extent are e-learning tools use in Universities in North-West region of Nigeria amidst covid-19 and rural banditry?

**Table 5:** Extent of e-learning tools usability for Instruction in Universities in North-West region of Nigeria amidst covid-19 and rural banditry

S/ n	E-learning item	Percentage responses				mean
		(4) at least once per day (alopd) frequency	(3) once per week (opw) frequency	(2) once per month (opm) frequency	(1) never used (nu) frequency	
1	Computer System	23	76	252	184	1.90
2	Fax Machine	18	45	258	215	1.70
3	Radio	231	283	08	15	3.50
4	Audio cassettes recorder/player	205	286	15	31	3.20
5	Microphone/speaker System	125	215	85	112	2.70
6	Flash Drive/Modem	103	187	144	101	2.55
7	Television	228	248	38	23	3.30
8	Video cassettes recorder/ player	125	215	114	83	2.60
9	Internet connectivity/ Web environment	88	96	197	156	2.22
10	Telephone/inter com	157	203	75	102	2.80
11	CD-ROMs	52	77	246	162	2.20
12	Electronic board	60	31	262	180	1.95
13	Overhead/opaq ue projector	163	74	252	48	2.66
14	Film strip	200	43	274	20	2.79



15	projector Slide projector	178	68	236	54	2.69
16	Smart/Android phone	231	74	169	63	2.88
<b>mean of the means</b>						<b>2.60</b>

Result from table 5 shows that the usability of e-learning tools (Computer system, Fax machine, Radio, audio cassettes recorder/player, microphone/speaker system, Flash drive/Modem, Television, video cassettes recorder/player, Internet connectivity/web environment, Telephone/intercom, CD-ROMs, Electronic board, Overhead/opaque projector, film strip projector and Slide projector) for teaching and learning in Universities of North-West Nigeria amidst covid-19 and rural banditry were moderately used by the respondents, because, the means of the eleven (11) e-learning items was bigger than the mean criterion i.e. 2.50. a further analysis was also done by comparing the mean of means i.e. 2.60 with the mean criterion i.e. 2.50. the overall overview of the data in table 5 additionally revealed computer system, fax machine, internet/web environment and projectors had a lower usage in terms of their mean respondents at the universities of north-west Nigeria.

### **Individual Interview**

The individual interview was conducted with undergraduate students and academic staffs in the sampled universities of north-western Nigeria. There are some features of an interview report according to Ismaila (2020), which are: themes and contents; methodology and methods (from designing to interviewing, transcription and analysis); result (the data analysis, interpretation and verification); and discussion.

The target was to shorten all of the data to key themes and topics that can elucidated the research questions; you need to code the material. A code is an expression or a short phrase/word that descriptively captures the essence of basics of your material (e.g. a quotation) and is the first step in the data reduction and interpretation (Ismail, 2020). The codes that were used for this study were: availability X1, X2, X3, X4, X5, X6, X7, X8, X9, X10, X11, X12, X13, X14, X15 and X16 while accessibility and usability Y1, Y2, Y3, Y4, Y5, Y6, Y7, Y8, Y9, Y10, Y11, Y12, Y13, Y14, Y15 and Y16 and Z1, Z2, Z3, Z4, Z5, Z6, Z7, Z8, Z9, Z10, Z11, Z12, Z13, Z14, Z15 and Z16.

Research questions were answered using frequency and percentage. Summary of the analysis was presented in Tables below.

**Table 6:** undergraduate students' opinion on the availability of e-learning tools in universities of north-west Nigeria amidst of covid-19 and rural banditry

S/n	E-learning item	Frequency count	Percentage (%)
1	Available	19	63
2	Non available	11	37
	Total	30	100

Table 6 above shows that the undergraduate students' opinion on the availability of e-learning tools in universities of north-west Nigeria amidst covid-19 and rural banditry there were enough available e-learning tools at the universities in north-west, because 19 respondents representing 63% said there were available e-learning tools, while 11

respondents representing 37% responded to non-available e-learning tools in universities of north-west.

**Table 7:** undergraduate students’ opinion on the accessibility of e-learning tools in universities of north-west Nigeria amidst of covid-19 and rural banditry

S/n	E-learning item	Frequency count	Percentage (%)
1	Accessible	17	56.7
2	Non accessible	13	43.3
	Total	30	100

Table 7 above shows the undergraduate students’ opinion on the accessibility of e-learning tools in universities of north-west Nigeria amidst covid-19 and rural banditry there was high level of accessibility of e-learning tools at the universities in north-west, because 17 respondents representing 56.7% said there was are favourable access policy of e-learning tools, while 13 respondents representing 43.3% responded to non-favourable access policy of e-learning tools in universities of north-west.

**Table 8:** undergraduate students’ opinion on the usability of e-learning tools in universities of north-west Nigeria amidst of covid-19 and rural banditry

S/n	E-learning item	Frequency count	Percentage (%)
1	Used	16	53.3
2	Un-used	14	46.7
	Total	30	100

Table 8 above shows the undergraduate students’ opinion on the usability of e-learning tools in universities of north-west Nigeria amidst covid-19 and rural banditry there was moderate level of usage of e-learning tools at the universities in north-west, because 16 respondents representing 53.3% said there were using of e-learning tools, while 14 respondents representing 46.7% responded to non-usage of e-learning tools in universities of north-west.

**Table 9:** Academic staffs’ opinion on the availability of e-learning tools in universities of north-west Nigeria amidst of covid-19 and rural banditry

S/n	E-learning item	Frequency count	Percentage (%)
1	Available	07	78
2	Not available	02	22
	Total	09	100

Table 9 above shows the academic staffs’ opinion on the availability of e-learning tools in universities of north-west Nigeria amidst covid-19 and rural banditry that there were enough available e-learning tools at the universities in north-west, because 07 respondents representing 78% said there were available e-learning tools, while 02 respondents representing 22% responded to non-available e-learning tools in universities of north-west. Hence, majority of the respondents agreed that there were enough available e-learning tools.

**Table 10:** Academic staffs’ opinion on the accessibility of e-learning tools in universities of north-west Nigeria amidst of covid-19 and rural banditry

S/n	E-learning item	Frequency count	Percentage (%)
1	Accessible	06	66.7
2	Non accessible	03	33.3
	Total	09	100

Table 10 above shows the academic staff's opinion on the accessibility of e-learning tools in universities of north-west Nigeria amidst covid-19 and rural banditry, the result revealed that there was high level of accessibility of e-learning tools at the universities in north-west, because 06 respondents representing 66.7% said there was a favourable access policy of e-learning tools, while 03 respondents representing 33.3% responded to non-favourable access policy of e-learning tools in universities of north-west. So, there was a high level of accessibility of e-learning tools

**Table 11:** Academic staffs' opinion on the usability of e-learning tools in universities of north-west Nigeria amidst of covid-19 and rural banditry

S/n	E-learning item	Frequency count	Percentage (%)
1	Used	05	55.6
2	Un-used	04	44.4
	Total	09	100

Table 11 above shows the academic staff's opinion on the usability of e-learning tools in universities of north-west Nigeria amidst covid-19 and rural banditry, the result signified that there was moderate level of usage of e-learning tools at the universities in north-west, because 05 respondents representing 55.6% said there were using of e-learning tools, while 04 respondents representing 44.4% responded to non-usage of e-learning tools in universities of north-west. This implies that there was moderate level of usage of e-learning tools at the universities in north-west, Nigeria.

## Discussion

Out of the sixteen (16) vital e-learning tools for teaching and learning in universities of north-west assigned as the standards for the study, all were available in all the universities within the sample, this shows that governments are conscious of the significance of e-learning tools to learners' productivity (Ajayi, 2013; Kulal & Nayak, 2020; Muhammad, Maccido & Isma'il 2020; Abdullahi e'tal, 2021; Egede & Bernadette, 2021;). however, most of the respondents were of the view that e-learning tools had favourable access policy in universities of north-west with the exception of computer system, fax machine, internet connectivity/web environment, electronic board and projectors whose had high level of fairly favourable access policy. This access policy of the e-learning tools in the teaching and learning in the universities of north-west portrays a neglect of some important digital role of technology in instruction in universities in north-west during covid-19 and rural banditry and this was in conformity with the findings of Youssef, & Abu-hashem, (2021). There was an evidence of full reliance on obsolete e-learning tools radio, video cassettes recorder/player, television, Telephone/intercom, CD-ROMs, etc. This was in line with Arum, (2015) who observed that even where some universities are privileged to have all the stated e-learning tools, they were not used and that observation opposed the view of Garba, Guga & Yusuf (2016) whose viewed that today's academic staffs are experiencing undergraduate students who are "digital natives" haven grown up with technology as such these undergraduate students have no understanding why technological gadgets like e-learning tools should not be used in instruction universities of north-west amidst covid-19 and rural banditry.

According to Awotunde and Ugodulunwa (2004) evaluation is the determination of the worth of a thing, and also leads to decisions, evaluation is an extensive and incessant effort to inquire into the effects of availability, accessibility and utilization of e-learning

according to clearly defined goals. In line with this, and the representation from the result of the study, was a sincere indication that there was available, no access policy and moderate usages of most of the e-learning tools in universities of north-west with the exception of modern e-learning tools in term of usage, as such the undergraduate students in the universities were prepared and had learnt significant and useful digital skills needed for poverty eradication, job creation and wealth generation. However, the major problems confronting most of the undergraduate students and academic staff in some universities were that of access policy in some modern e-learning like computer system, projectors, electronic board and that of internet connectivity/web environment which limit their usage during teaching and learning.

## Conclusion

Based on the findings, it was concluded that some of the needed e-learning tools for teaching and learning in universities were adequately available. Moreover, there was sufficient evidence from the study signifying that there was a favourable access policy of e-learning tools at the universities in north-west amidst covid-19 and rural banditry and that resulted to usage of once per month and never used during teaching and learning. The shortfall of inadequate use of some of the e-learning tools can be improved upon by suspending accessibility policy and providing steady power supply and engaging academic staffs in a refresher training/ orientation in the use of e-learning tools regularly through workshops/seminars.

## Recommendations

- I. University vice chancellors and head of ICT units should try to consider and suspend accessibility policy in usage of e-learning tools to enhance effective use of e-learning tools and resources in the teaching and learning.
- II. The government should ensure sufficient provision of significant and modern e-learning tools for effective teaching and learning.
- III. There is urgent need for the organization of refresher training/orientation in use of e-learning tools to academic staffs regularly through workshops/seminars for academic staffs.

## References

- Abdullahi, A.Y (e'tal, 2021). The Impact of the COVID-19 Pandemic on Higher Education in Nigeria: University Lecturers' Perspectives. *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 2021, 17(4), 43-66
- Abifarin, M.S. (2015): Modern Approach to Educational Technology. Miclan Associates LTD press, 7IsolaStreet, Egbeda, Lagos, Nigeria.
- Adeoye, I. A., Adanikin, A. F. & Adanikin, A., (2020). Covid-19 and e-learning: Nigeria tertiary education system experience. *International Journal of Research and Innovation in Applied Science (IJRIAS)*. 5, (5), ISSN 2454-612.

- Ajayi, D.W. (2013). An evaluation of Electronic-media availability, accessibility and usability in National Open University of Nigeria in North Central zone. A unpublished Ph.D Dissertation, University of Jos, Plateau State, Nigeria.
- Ali, W. (2020). Online and remote learning in higher education institutes: a necessity in light of covid-19 pandemic. *Higher Education Studies*. Published by Canadian Center of Science and Education, 10, 3. ISSN 1925-4741.
- Awotunde, P. A. & Ugodulunwa, C.A . (2004). *Research Methods in Education*. Fab Anieh (Nig) Ltd, Jos, Plateau State. Nigeria.
- Education partnership (TEP) center and Nigerian Economic Summit Group (NESG) (2020): Survey on the responses of key educational stakes holders in Nigeria and the adoption of learning alternatives by students and parent. Learning in pandemic and learning during covid-19 pandemic.
- Egede, C. & Bernadette, B (2021) lecturers' perception of their competence to teach online during the covid-19 lockdown: a post-training evaluation.
- Hassan, M.N; Aliyu, F.; Aliyu, H.; Maccido, I. & Muhammad, N.D. (2022). EDU 302: ICT in Education a lecture guide to Undergraduate students in Sokoto State University.
- Ibanga, U.A. (2002). *Statistics for social sciences*, Jos: Center for developmental studies.
- Jacob, A. K. & Abdulgafar, A. O., (2020). Mitigating the impact of Covid-19 on the teaching and learning of science in the Nigerian higher education. *International Journal of Research and Innovation in Social Science (IJRISS)*, 4, (6), ISSN 2454-6186.
- Kulal, A. & Nayak, A. (2021). A study on perception of teachers and students toward online classes in Dakshina Kannada and Udupi District. 3. *Asian Association of Open Universities Journal Volume 15(3)*
- Mogaji, E., (2019). Types and Location of Nigerian Universities. *Research Agenda Working Papers*. Vol 2019 No 7 pp 92-103.
- Muhammad, Isma'il & Maccido (2020) Lecturers' awareness and utilisation of Blended Learning for teaching educational courses in colleges of education in Sokoto state, Nigeria. *Journal of Education in Developing Areas (JEDA) Vol. 28, (1) March 2020 ISSN: 189420X*
- Muzaffar, A.W.; Tahir, M.; Anwar, M.W.; Chaudry, Q.; Mir, S.R.; Rasheed, Y. A, (2020). Systematic Review of Online Exams Solutions in E-learning: Techniques, Tools, and Global Adoption. Retrieved from: arxiv 2010.07086 on 22/4/2022.
- National Universities Commission (2015). List of Universities. Retrieved on 23/5/2022 from <http://www.nuc.edu.ng/pages/Universities.asp>, p. 1-3.
- National Universities Commission (2018). Nigeria University System Digest. Retrieved on 23/5/2022 from <http://info.nuc.edu.ng/pages/Universities>.

- Nlebem, A. (2020). FG orders closures of all schools in Nigeria as corona virus spreads. Business day. Retrieved from [http:// businessday.ng/coronavirus/article/fg-order-closure-of-all-school-in-nigeria-as-coronavirus-spread/](http://businessday.ng/coronavirus/article/fg-order-closure-of-all-school-in-nigeria-as-coronavirus-spread/) on 26/5/2022.
- Rufa’i, M.A, (2021). ‘Iam a bandit’ a Decade of Research on Armed Banditry in Zamfara State 15 th University Seminar Presented at Usmanu Danfodiyo University, Sokoto Auditorium, Main Campus, 9<sup>th</sup> September, 2021.
- Schleicher, A., (2020). The impact of covid-19 on education-insights from education at a glance. Published under the responsibility of the Secretary-General of the OECD.
- Singh, U & Chantahien, C. (2008). Availability and Utilization of Educational Media in Secondary Schools in Thailand. Proceeding of international conference of National Association of Educational Media and Technology. International Conference Proceeding Vol. 1.
- Wasagu, M.A. (2016). Human Security and Challenges of Innovative Education. A lead paper presented in Sokoto State University 1<sup>st</sup> International Conference in Education held in Sokoto State University, Sokoto, Sokoto State Nigeria.
- Zayabalaradjane, Z. (2020). COVID-19 Strategies for Online Engagement of Remote Learners. Retrieved on 23 /5/2022 from F1000 Research, 9, 246.
- Zubairu, S. A. (2014). Assessment of availability, accessibility and utilization of information and communication technology (ICT) resources in content delivery among lecturers in federal colleges of education in Nigeria (Published Doctoral Dissertation, Ahmadu Bello University, Zaria, Nigeria).
- Youssef, M.S & Abu-hashem, M.A (2021). Analysing lecturers’ perceptions on traditional vs. distance learning: A conceptual study of emergency transferring to distance learning during COVID-19 pandemic. *Journal of Education and Information Technologies volume 27, pages 3225–3245*

## COMPUTER GAME-BASED TEACHING APPROACH AND PRESCHOOLERS' ACTIVE PARTICIPATION IN LEARNING EARLY YEARS SCIENCE IN PUBLIC PRESCHOOLS IN LAGOS STATE

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### Abstract

*This study investigates the use of a computer game-based teaching approach by caregivers to promote active participation of preschoolers in early years science learning activities in public preschools in Lagos state. The study utilised a descriptive survey research design with a correlational approach and applied a multistage sampling technique. A stratified sampling approach was employed to choose four Local Government Education Authorities (LGEAs) in Lagos State. A simple random selection procedure was employed to choose four preschools from each Local Government Education Authority (LGEA). The researchers employed the purposive sampling approach to choose 7 caregivers from each of the selected preschools. The study utilised two research tools. The instrument's reliability was assessed using the Cronbach Alpha approach, yielding a coefficient value of  $r = 0.74$ . The acquired data were analysed using descriptive statistics and the inferential statistic of Pearson Product Moment Correlation (PPMC) at a significance level of 0.05. The study suggests that introducing a range of computer games that are suitable for the age group, educational, and captivating can enhance the teaching of early childhood science in preschools. This approach can complement traditional teaching methods and accommodate the unique learning needs and interests of preschoolers. The study recommends providing computer games and other modern technology tools that are appropriate for the age group to public preschools in Lagos state. This will facilitate the teaching and learning of early childhood science activities.*

**Keywords:** Computer, Game-Based; Teaching approach; Preschoolers; Active Participation; Early, Years Science Activities.

### Introduction

Integrating early years science activities into a game format is one of the innovative ways used in public preschools to teach early years science concept and activities. This enable preschoolers to actively participate and communicate with the game in order to acquire scientific knowledge and cultivate science inquiry skills. Preschoolers can improve their comprehension of early years science concepts and activities by participating in computer games that enable them to actively engage in real-life events. These activities mostly revolve around the inquisitiveness of preschoolers in the field of early years science inquiry (Hirsh-Pasek, 2020).

Introducing a computer game-based teaching method in preschool education can improve the motivation, engagement and active participation of preschoolers in classroom activities while they learn about science early in life. This pedagogical approach also enables preschoolers' learning of early years science activities that may be useful for them throughout their lifetimes (Priyaadharshini, et al., 2020). Utilising computer game-based teaching strategy is regarded as a sophisticated approach to cultivate the curiosity of toddlers in trending scientific education. This is accomplished by including preschoolers in game-based science activities (Priyaadharshini, et al., 2020). The notion involves the use of computer games as an educational tool and approach to enhance learning and participation by actively involving preschoolers in classroom activities (Li et al., 2021). A phenomenon which is often known as gamification.

Gamification in preschool education is an instructional approach that integrates game components, such as competition, time constraints, badges, points and rewards, into the educational activities to provide engaging and stimulating learning environments (Turan et al., 2016). The goal of gamification is to enhance the motivation, engagement and participation of preschoolers in classroom activities by utilising the natural attraction of games for preschoolers. Therefore, there is a need for skilled design and execution of a computer game-based instructional approach that will enhance the teaching methods of caregivers and the academic achievement of preschoolers in early years science education.

Creating and executing engaging educational games for preschoolers is a commendable action towards incorporating a game-based teaching and learning method in early years science education. Strategically developed computer games provide preschoolers with the opportunity to develop and enhance their own knowledge and abilities while playing (Yu, 2019). Engaging educational games enhance the involvement of preschoolers in early years science learning activities in public preschools to promote creativity, generate curiosity, support discussions and foster a competitive spirit of inquiry.

Computer game-based activities, such as entertaining educational games, have the ability to simulate various real-life activities. These activities can include driving a motor vehicle, playing football, performing addition and subtraction of numbers, identifying and colouring pictures and solving puzzles. By engaging in these activities, preschoolers are able to explore and make decisions in a safe environment without facing any practical or real-life consequences (Toh & Kirschner, 2020). Utilising a computer game-based approach in teaching and learning of early years science activities will introduce essential motivational mechanisms, fostering a learning environment that enhances preschoolers' motivation to engage in classroom activities (Hartt et al., 2020).

Implementing a pedagogical strategy that use computer game-based approach as a medium for teaching and learning early years science and integrating essential game design components such as cooperation, decision-making, and evaluation, positively impacts the degree of involvement of preschoolers in scientific activities conducted in preschool educational settings (Wang et al., 2022). Preschoolers actively and determinedly participate in computer game-based educational activities in the classroom, therefore, caregivers should utilise several approaches to incorporate computer game-based teaching in the early years science classroom for preschoolers, taking advantage of the active involvement, persistence and excitement of preschoolers during science playtime to improve classroom activities. Preschoolers can participate actively in early years science educational events because of their heightened imagination and natural



curiosity about the world around them, leading to high levels of engagement and involvement in early years science learning process. Caregivers and preschoolers can actively engage in computer game-based teaching and learning of early years science activities throughout early years period, which is more successful than the traditional approach to teaching and learning of early years science activities (Hamari et al., 2016; Karram, 2021).

Computer game-based teaching and learning approaches can successfully bridge the gap between theoretical concepts and practical applications in early years scientific education. This method allows caregivers and preschoolers to utilise their gained information in a practical setting, promoting a more thorough educational experience (Barz et al., 2023). The main objective of early years science education is to foster the development of critical thinking skills and scientific inquiry abilities in preschool age children. Preschoolers can participate in computer game-based learning that enable them to grasp essential scientific concepts and build technological skills via interesting and engaging activities. Moreover, these activities promote the growth of teamwork and productivity.

Incorporating narratives, point accumulation and rapid response elements into game descriptions might heighten the active involvement of preschoolers in scientific learning activities during early years science learning activities. Barradas et al. (2020) suggest that these stages offer a valuable option for developing critical thinking and scientific inquiry skills in preschoolers and function as a great means for preschoolers to augment their creativity and problem-solving aptitudes. Caregivers has the capacity to develop cartoons, simulations, interactive stories and games that engage preschoolers in early years science activities aimed at fostering scientific learning during early years science learning. Game-based learning encourages preschoolers to actively participate in classroom activities, using visually attractive interfaces and immersive environments to gain scientific information. Several pedagogical approaches may be utilised to integrate interactive computer game-based strategies into early years science teaching for preschoolers. This technique enables both caregivers and preschoolers to enhance their teaching and learning capacities, while also fostering their active participation in early years science activities and engagement in the science learning process throughout early years (Park et al., 2020; Hooshyar et al., 2021).

While computer game-based teaching of early years science concepts and activities has great promise for learning, the creation of educational games may be very complex and exorbitant. Moreover, there are significant challenges that it faces, including caregivers inadequate knowledge of early years science content, lack of technological proficiency in using computer game-based approach in teaching early years science and insufficient financial resources and inconsistencies in government policies regarding technology use in preschool education, inadequate hardware and software equipment and unequal distribution of modern technology tools leading to a digital divide (Boyle et al., 2016). Computer game-based teaching and learning of early years science in public preschools is an effective technology tool that improves early years science learning by making it more enjoyable, easier and more effective (Boyle et al., 2016; Hafeez, 2022). Implementing a computer game-based teaching and learning technique in preschool education can provide an engaging, exciting and intellectually enriching environment for preschoolers (Hwang et al., 2014).

Research on the use of computer game-based approach in teaching and learning early years science in public preschools, provide significant insights into the current progress in using game-based methods for teaching and learning early years science in public preschools. Research has yielded insights into the use of interactive computer game-based approaches in preschool education, particularly in the domain of instructing and acquiring knowledge in early years science within preschool settings. However, the field of preschool education is always changing, and there is an increasing range of games that can improve preschoolers' knowledge and skills in early years science and scientific inquiry abilities (Kusuma et al., 2021). Computer game-based strategies of teaching early years science enhance the growth of collaborative learning across many skills and concepts, while also fostering critical thinking and teamwork. Preschoolers can acquire understanding of procedural steps, data structures, network systems, scientific inquiry and programming languages by creating and evaluating their own games and simulations. This method is particularly effective in the field of early childhood science, as demonstrated by the research conducted by Kalderova et al. in 2023.

The aim of this study is to tackle the problem of preschool children's low involvement in scientific learning activities. This is mostly caused by the caregivers' weak understanding of early years science and their lack of proficiency in using computer game-based methods in teaching early years science concepts and activities and consequently, the traditional instructional approaches, which frequently depend on repetitive memorization, this is known as rote learning. This problem continues to exist since the traditional instructional approach known as rote learning prevents preschoolers from actively engaging in science learning activities throughout their early years and deprives them of important scientific knowledge, which forms the foundation for future formal science education.

Consequent upon this, preschoolers clearly demonstrated a deficiency in the essential qualities needed for scientific learning activities in the early years, including hand-eye coordination, a willingness to take risks, and problem-solving skills, among others. On this realization, the government took concrete measures to tackle the issue, including supplying new educational computer games to public preschools in Lagos state and conducting capacity building workshops for caregivers. Nevertheless, the desired result has not been achieved. It is against this background that this study seeks to examine the relationship between the use of computer game-based teaching approaches and the extent of active participation of preschoolers in early years science learning activities in public preschools in Lagos state.

### **Objectives of the Study**

- I. To determine the impact of computer game-based teaching approach on preschoolers' active participation in early years science activities.
- II. To determine the role of computer game-based teaching approach on preschoolers' science inquiry skills development.
- III. To determine the place of computer game-based teaching approach in developing preschoolers' aptitude for collaborative learning.

## **Research Questions**

RQ1 – Is there any significant impact of computer game-based teaching approach on preschoolers' active participation in early years science activities?

RQ2 – Is there any significant role of computer game-based teaching approach on preschoolers' science inquiry skills development?

RQ3 – Is there any significant place of computer game-based teaching approach in developing preschoolers' aptitude for collaborative learning?

## **Hypotheses**

H01: There is no significant relationship between computer game-based teaching approach and preschoolers' active participation in early years science activities.

H02: There is no significant relationship between computer game-based teaching approach and preschoolers' science inquiry skills development.

H03: There is no significant relationship between computer game-based teaching approach and developing preschoolers' aptitude for collaborative learning.

## **Methodology**

The study utilised a descriptive survey research methodology using a correlational approach. The research population consisted of carers of preschool-aged children. A total of 112 carers were included in the sample for this study, and a multistage sampling process was used. A simple random selection approach was employed to choose four local government education authorities in Lagos State, namely Alimosho, Amumo-Odofin, Ojo, and Badagry, from a total of 57 local government education authorities. A simple random selection procedure was employed to choose four schools from each Local Government Education Authority (LGEA). The researchers employed the purposive sample strategy to choose 7 carers from each of the schools. The study utilised two research instruments: the Interactive Game-Based Teaching Method and Preschooler's Aptitude for Collaborative Learning Questionnaire (IG\_bTMaPACLQ) and the Interactive Computer Game-Based Teaching Method and Preschooler's Manipulative Skills Questionnaire (IG\_bTLMPMSQ). The instrument's reliability was assessed using the Cronbach Alpha approach, yielding a coefficient value of  $r = 0.74$ . The acquired data were examined using descriptive statistics and the Pearson Product Moment Correlation (PPMC) as an inferential statistic, with a significance threshold of 0.05.

## **Results**

### ***Answers to research questions***

**Research question 1:** Is there any significant impact of computer game-based teaching approach on preschoolers' active participation in early years science activities?

**Table 1:** Showing the Impact of Computer Game-Based Teaching Approach on Preschoolers’ active Participation in Early Years Science Activities

S/N	Items	SA	A	D	SD
1. Computer game-based teaching and learning 3.10 .933	approach have no impact on preschoolers’ active participation in early years science activities.	45 (40.2)	44 (39.3)	13 (11.6)	10 (8.9)
2. Computer game-based teaching and learning 2.75 1.03	method incorporates hands-on experiences that supports preschoolers’ active participation in early years science classroom activities.	31 (27.7)	40 (35.7)	23 (20.5)	18 (16.1)
3. Computer games do not provide positive 1.93 1.09	reinforcement for encouraging preschoolers active participation in early years science activities.	17 (15.2)	12 (10.7)	30 (26.8)	53 (47.3)
4. Computer games with simple language 3.15 .922	and visual clues encourage preschoolers active participation in early years science activities.	47 (42.0)	45 (40.2)	10 (8.9)	10 (8.9)
5. Computer game-based teaching approach 1.88 .965	does not provide inclusive learning environment that inspire preschoolers to active participation in early years science activities.	11 (9.8)	13 (11.6)	40 (35.5)	48 (42.9)
<b>Grand Mean = 2.56</b>					

**Source:** Field Survey, 2024

Table 1 presents the effects of using computer game-based teaching methods on the level of engagement of preschoolers in science activities during early years. The detailed analysis found that computer games with simple language and visual clues encourage preschoolers to actively participate in early years science activities, with an average score of 3.15. However, the use of computer game-based teaching approaches has no impact on preschoolers' active participation in early years science activities, with an average score of 3.10. Additionally, the incorporation of hands-on experiences in computer game-based teaching approaches supports preschoolers' active participation in early years science activities, but to a lesser extent, with an average score of 2.75. It was also observed that computer games do not provide positive reinforcement for encouraging preschoolers' active participation in early years science activities, with an average score of 1.93. Furthermore, the computer game-based teaching approach does not provide an inclusive learning environment that inspires preschoolers to actively participate in early years science activities, with an average score of 1.88.

**Research question 2:** Is there any significant role of computer game-based teaching approach on preschoolers' science inquiry skills development?

**Table 2:** showing the role of computer game-based teaching approach on preschoolers' science inquiry skills development

S/N	Items	SA	A	D	SD	
Mean	St.D					
1.	Computer game-based teaching approach	32	36	20	24	2.67
1.10	develops preschoolers' science inquiry skills	(28.6)	(32.1)	(17.9)	(21.4)	
2.	Good interaction with science equipment occurs	42	26	30	14	
2.85	1.06 among preschoolers' taught with computer games	(37.2)	(23.2)	(26.8)	(12.5)	
3.	Computer game-based teaching approach does not	24	20	36	32	
2.32	1.10 enable preschoolers to make scientific inquiries	(21.4)	(17.9)	(32.1)	(28.6)	
4.	Computer game-based teaching approach makes	55	40	10	7	
3.27	0.87 early years science inquiry very interesting	(49.1)	(35.7)	(8.9)	(6.3)	
5.	Interactive computer game-based teaching approach	12	10	40	50	
1.85	0.97 hinders preschoolers' inquiry skill acquisition in Years Science learning activities	(10.7)	(8.9)	(35.7)	(44.6)	

**Grand mean = 2.6**

**Source:** Field Survey, 2024

Table 2 presents the impact of using computer game-based teaching methods on the development of science inquiry abilities in preschoolers. The analysis showed that using computer games as a teaching method makes science learning in early years more engaging (mean = 3.27). Preschoolers who were taught with computer games also had better interaction with science equipment (mean = 2.85). Furthermore, this teaching approach helped develop the science inquiry skills of preschoolers (mean = 2.67). However, it did not enable them to ask intelligent questions (mean = 2.32) and hindered their understanding of early years science activities (mean = 1.85).

**Research question 3:** Is there any significant place of computer game-based teaching approach in developing preschoolers' aptitude for collaborative learning?

**Table 3:** showing the place of computer game-based teaching approach in developing preschoolers’ aptitude for collaborative learning

S/N	Items	SA	A	D	SD
1.96 0.88	1. Computer game-based teaching approach does not develop preschoolers’ aptitude for collaborative learning.	10 (8.9)	12 (10.7)	54 (48.2)	36 (32.1)
2.99 0.99	2. Computer game-based teaching approach engenders communal learning of early years science among preschoolers.	43 (38.4)	37 (33.0)	20 (17.9)	12 (10.7)
0.82	3. Teamwork among preschoolers is underpinned by computer game-based teaching approach	60 (53.6)	35 (31.3)	13 (11.6)	4 (3.6)
0.90	4. A sense of community is not been promoted among preschoolers by interactive computer game-based approach.	5 (4.5)	18 (16.1)	26 (23.2)	63 (56.3)
1.03	5. Collaborative learning among preschoolers is Facilitated by interactive computer game-based approach.	56 (50.0)	32 (28.6)	10 (8.9)	14 (12.5)

**Grand mean = 2.62**

**Source:** Field Survey, 2024

Table 3 displays the role of computer game-based teaching method in enhancing the collaborative learning skills of preschool children. The detailed analysis found that the use of computer game-based teaching approach supports teamwork among preschoolers (mean = 3.34). It also facilitates collaborative learning among preschoolers (mean = 3.16). However, the computer game-based teaching approach does not effectively develop preschoolers' ability for collaborative learning (mean = 1.96). Additionally, it does not promote a sense of community among preschoolers (mean = 1.68). Furthermore, the computer game-based teaching approach fosters communal learning of early childhood science among preschoolers (mean = 2.99).

**Hypotheses Testing**

H01: There is no significant relationship between computer game-based teaching approach and preschoolers’ active participation in early years science activities.

**Table 4** Summary of Pearson Product Moment Correlation showing the relationship between computer game-based teaching approach and preschoolers' active participation in early years science activities.

Variable Remark	Mean	Std.D	N	r	Sig.
Inclusive learning environment for active participation in classroom activities	12.830	4.555	112	.996**	.000
Computer game-based teaching approach	30.776	11.050			

\*\* correlation is significant at the 0.01 level (2 tailed)

Table 4 presents compelling evidence of a robust and statistically significant positive connection ( $r=.996$ ;  $p<0.05$ ) between the use of computer game-based teaching approach and preschoolers' active participation in early years science activities. This implies that the utilisation of computer game-based techniques is linked to the preschoolers' active participation in early years science activities. The positive association indicates that students actively participate in classroom activities by utilising computer-based game-based teaching techniques, therefore refuting null hypothesis 1.

H02: H02: There is no significant relationship between computer game-based teaching approach and preschoolers' science inquiry skills development.

**Table 5** Summary of Pearson Product Moment Correlation showing relationship between computer game-based teaching approach and preschoolers' preschoolers' science inquiry skills development

Variable Remark	Mean	Std.D	N	r	Sig.
Early years science activities	12.991	4.793	112	.997**	.000
Computer game-based teaching approach	30.776	11.050			

\*\* correlation is significant at the 0.01 level (2 tailed)

Table 5 presents compelling evidence of a robust and statistically significant positive connection ( $r=.997$ ;  $p<0.05$ ) between the use of computer game-based teaching approaches and preschoolers' science inquiry skills development. This implies that there is a correlation between computer game-based activities and preschoolers' science inquiry skills development. The preschoolers' science inquiry skills development during computer game-based teaching approach shows a beneficial relationship. Therefore, null hypothesis 2 is disproven.

H03: There is no significant relationship between computer game-based teaching approach and developing preschoolers' aptitude for collaborative learning.

**Table 6** Summary of Pearson Product Moment Correlation showing relationship between computer game-based teaching approach and developing preschoolers’ aptitude for collaborative learning

Variable Remark	Mean	Std.D	N	r	Sig.
Team work among preschoolers	13.141	4.202	112	.989**	.000
Computer game-based teaching approach	30.776	11.050			

\*\* correlation is significant at the 0.01 level (2 tailed)

Table 6 demonstrates a substantial and favourable correlation between the utilisation of computer game-based teaching approach and developing preschoolers’ aptitude for collaborative learning. The correlation coefficient was found to be 0.989, with a significance level of  $p < 0.05$ . This suggests that the use of computer game-based technique is associated with developing preschoolers’ aptitude for collaborative learning. The presence of a positive association indicates that when preschoolers collaborate as teams, they perform effectively while employing a computer game-based education strategy. As a result, null hypothesis 3 is rejected.

## Discussion

The analysis of hypothesis one reveals a notable positive correlation between the use of computer game-based teaching approach and preschoolers’ active participation in early years science activities. This suggests that the use of computer game-based teaching approach is associated with an inclusive learning environment that promotes preschoolers’ active participation in early years science activities. The correlation suggests that toddlers engage in classroom activities through the use of computer game-based methods, which promote their cognitive growth and facilitate the acquisition of diverse scientific abilities. This aligns with the findings of Boyle et al. (2016) and Hafeez (2022), who assert in their research that the use of interactive computer game-based teaching methods is a powerful technological approach in preschool education. These methods enhance the enjoyment, ease and efficiency of learning, while fostering an inclusive learning environment that encourages active participation of diverse preschoolers in science-related classroom activities during early years science activities.

The analysis of hypothesis two reveals a strong positive correlation between the use of computer game-based teaching approach and preschoolers’ science inquiry skills development. This suggests that there is a connection between using computer games as a teaching approach and the ability of preschoolers’ to develop science inquiry skills. Preschoolers’ comprehension of computer game-based teaching approach and development of science inquiry skills during early years scientific activities in the classroom is indicative of a favourable correlation. This aligns with the findings of Hartt et al. (2020), who argue that using computer game-based approaches to teach early years science activities in preschool education can enhance preschoolers’ development of science inquiry skills.

The analysis of hypothesis three reveals that the null hypothesis is rejected because of the notable positive correlation between computer game-based teaching approach and developing preschoolers’ aptitude for collaborative learning. This suggests that the use of



computer games-based teaching approach is associated with the development preschoolers' aptitude for collaborative learning. The positive correlation indicates that when computer game-based approach is used in teaching preschoolers, they collaborate as teams and actively engage in classroom activities related to early years science. This approach, also referred to as collaborative learning, aligns with the findings of López-Fernández et al. (2021) and Mezentseva et al. (2021). According to these studies, using computer game-based teaching methods has the potential to improve the effectiveness of carers' instruction and enhance preschoolers' academic achievement in early years science activities.

## **Conclusion**

In conclusion, research supports the connection between using computer games as a teaching method for the active involvement of preschoolers in early years science activities. Computer game-based teaching approach have the potential to increase motivation, engagement and the acquisition of concepts, hands-on exploration, cooperation and social connection. By intentionally choosing and incorporating computer game-based activities into early years science curriculum, caregivers can provide a dynamic and engaging learning environment that encourages active involvement and fosters the growth of scientific knowledge and skills in preschoolers.

## **Recommendations**

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

- It is recommended that computer games and other age-appropriate modern technology tools be provided to public preschools in Lagos state for ease of teaching and learning early years science activities.
- Besides, capacity building workshop or professional training programmes are very important and should be organized for caregivers to update their knowledge of computer game-based approach to teaching early years science activities and to develop their manipulative skills on the use of modern technology tools in teaching preschoolers.

## **References**

- Boyle, E. A., Hainey, T., Connolly, T. M., Gray, G., Earp, J., Ott, M., Lim, T., Ninaus, M., Ribeiro, C., & Pereira, J. (2016). An update to the systematic literature review of empirical evidence of the impacts and outcomes of computer games and serious games. *Computers & Education, 94*, 178-192.
- Hafeez, M. (2022). Effects of game-based learning in comparison to traditional learning to provide an effective learning environment: A comparative review. *Contemporary Educational Researches Journal, 12*(2), 89-105.
- Hamari, J., Shernoff, D. J., Rowe, E., Coller, B., Asbell-Clarke, J., & Edwards, T. (2016). Challenging games help students learn: An empirical study on engagement, flow and immersion in game-based learning. *Computers in Human Behavior, 54*, 170-179.

- Hirsh-Pasek, K., Hadani, H. S., Blinkoff, E., & Golinkoff, R. M. (2020). A new path to education reform: playful learning promotes 21st century skills in school and beyond. *Policy Brief*. [https://www.brookings.edu/wp-content/uploads/2020/10/Big-Ideas\\_Hirsh-Pasek\\_PlayfulLearning.Pdf](https://www.brookings.edu/wp-content/uploads/2020/10/Big-Ideas_Hirsh-Pasek_PlayfulLearning.Pdf).
- Karram, O. (2021). The role of computer games in teaching object-oriented programming in high schools code combat as a game approach. *WSEAS Transactions on Advances in Engineering Education*, 18, 37- 46.
- Li, F. Y., Hwang, G. J., Chen, P. Y., & Lin, Y. J. (2021). Effects of a concept mapping based two-tier test strategy on students' digital game-based learning performances and behavioral patterns. *Computers & Education*, 173, 104-293.
- Priyaadharshini, M., Dakshina, R., & Sandhya, S. (2020). Learning analytics: Game-based learning for programming course in higher education. *Procedia Computer Science*, 172, 468-472.
- Toh, W., & Kirschner, D. (2020). Self-directed learning in video games, affordances and pedagogical implications for teaching and learning. *Computers & Education*, 154, 103-912.
- Turan, Z., Avinc, Z., Kara, K., & Goktas, Y. (2016). Gamification and education: Achievements, cognitive loads, and views of students. *International Journal of Emerging Technologies in Learning (IJET)*, 11(07), 64.
- Wang, L. H., Chen, B., Hwang, G. J., Guan, J. Q., & Wang, Y. Q. (2022). Effects of digital game-based STEM education on students' learning achievement: A meta-analysis. *International Journal of STEM Education*, 9(1), 1-13.
- Yu, Z. (2019). A meta-analysis of use of serious games in education over a decade. *International Journal of Computer Games Technology*, 2019, 1-8.

## INFLUENCE OF STAFF TRAINING AND DEVELOPMENT ON STAFF PERFORMANCE MANAGEMENT IN NIGERIAN UNIVERSITIES

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### Abstract

*This paper posits that staff are the key technocrats that stir organizational operations, including universities, for achieving the predetermined goals. Hence, the need to effectively manage their performances by the university managements for excellent performance. Thus, this paper examines the influence of staff training and development on staff performance management in Nigerian universities. After conceptual clarifications, the paper buttresses that staff training programmes equip employees with relevant skills and knowledge that are needed to execute their jobs and enhance their performances as it also helps in realization of institutional goals and upgrade. Moreover, professional training and development of staff is a tool for human resource development, a means of acquiring technical know-how there by boosting staff confidence and leadership potentials. Based on the review, the paper concludes that on-the-job training has positive influence on staff performance, creativity and achievement of organizational goals. The paper suggests that Government needs to augment funding to the institutions, while the management needs to release funds towards adequate training so that the employees will acquire up-to-date knowledge and skills to improve their professional expertise and excel in their job performances so as to achieve the institution's goals.*

**Keywords:** Training, Development, Staff, University, On-the-job training.

### Introduction

In the last two decades, organizations have come to understand that their employees (human resources) are the most important resource and hence they must manage their employees' output and productivity. Proper management of employee performance enables an organization to consistently meet its goals efficiently and effectively. One way of ensuring continued employee performance is through consistent training and development (Chemutai & Khalili, 2022). According to Rodrigues and Walters (2017), the employee's performance influences the bottom line of an organization, and for that reason it is the responsibility of university managers to be aware of the importance of training and developments as it the performance and evaluation of employees. Similarly, Effiong and Effanga (2018) states that to produce quality graduates with employability skills, ability and competence to harness available resources and solve practical problem in Nigeria, the university system must be efficient and the efficiency of a university is

greatly anchored on the competence of the academic staff which is dependent on their professional development. They further buttress that professional development refers to the activities aimed at acquisition of new knowledge and skills for effective job delivery.

Paul and Audu, (2019) contend that, to prepare workers to perform their tasks as desired, organizations must provide training so as to optimize their employees' potentials. This is because, employees are the most valuable asset of any society or institution as they can establish or break a company or institution's reputation and can adversely affect profitability or the realization of set goals. According to them, there is an increasing number of countries, regions and higher educational institution across the world that are now involved in the competition for academic excellence. This trend implies that globally competitive universities can be observed in both developed and developing countries.

Several studies have been conducted on the effect of staff training and development on employee's performance, however, the effect of training and development on staff performance management in universities has not received serious attention among writers. This paper therefore intends to bridge this literature gap.

### **Conceptual Clarifications**

This section examines the concepts of training, management, performance management, university and On-the-job training. These are expatiated thus:

The concept of training has received numerous interpretation among academic scholars. For instance, Effiong and Effanga (2018) state that training is a planned and systematic type of activity (s) which are aimed at knowledge creation and the management of such knowledge to produce better output. Based on this, re-training results in enhanced level of skilled knowledge and competency that are necessary to perform work effectively and efficiently. Similarly, Paul and Audu (2019) defined training as the efficient preparation and growth plans targeting at improving the employee's performance. According to them, training bridges the gap between the current performance and the standard desired performance. They contended that training could be given through different methods such as job coaching and mentoring, peer co-operation and participation.

According to Herjajanto (2023) the level of employee's performance is determined by varieties of factors including features of training. Training may provide workers with new abilities to use in their work. They admitted that training is a vehicle for developing human resources for this challenging period of globalization that is full of challenges, training cannot be ignored. They further hypothesized that in order to bring about rapid changes in knowledge, technology and even the way academic work is being conducted and also demand of high-quality performance demanded by consumers of high education, high education institutions must redefine themselves and in essence that the institutions or faculty must either face obsolescence or continually be participating in development activities.

Chandhary and Baskar, (2016) state that training and development programs are a means of upgrading institutions by developing the valuable Human Resources so as to achieve institutional goals that are necessary to survive in the rapidly changing environment. Training and development are not only able to enhance the skills and ability of employees but are also able to enhance their behavioral traits and personalities. It is regarded as a tool for human resources development. It has immense potential in transfer and utilization

of technical know-how, leadership development, organizing people, formation of self-help groups and empowerment of individuals. All human resource development activity is meant to either improve performance on the present job of the individual, train new skills for new job or a new position in the future and general growth for both the individual and organizations so as to be able to meet the organization's current and future objectives (Paul & Audu 2019). There are generally two methods that an organization may select for such training and development skills of the employees, these are on the job training given to employees while taking their regular studies at the same working venue, and off the job training involves taking employees away from their usual work environment which gives the trainees the opportunity to concentrate on their studies. Model of on-the-job training includes, but not limited to, job rotation and transfer coaching and mentoring. While off the job training may consist of teaching or coaching by moral experienced people (Paul & Audu, 2019).

## **Management**

The concept of management has been defined in different ways and also it has been defined by different scholars. For instance, Gulati, et al. (2017) perceived management is the act of working with and through a group of people to accomplish a desired goal and objective in an efficient and effective manner. Robbins and Coulter (2016) described management is the coordinating and overseeing the work activities of others so their activities are completed efficiently and effectively (Robbin & Coulter 2016). The concept has further been described as the planning, organization, leading and controlling of other human resources to achieve organizational goal efficiently and effectively (Jonas & George, 2018, p.5). Management is defined as the pursuit of organizational goal efficiently and effectively by integrating the work of people through plaining, organizing, leading and controlling the organizational resources (Kininki & Williams 2018, p.5). In addition, Kelly and Grundei in (2019) propose the following new definition, which take in to consideration all aspect previously discussed. Management is a steering influence on market production and/or resource operation in an organization and its units that may address both people and non- people issues and is exerted by multiple organizational actors through either anticipatory norm- setting (Constitutive strategic management) with the aim of achieving the unit objectives to manage a unit is synonyms with " directing or leading" it.

Management skills are essential in operational efficiency as it's needed for every sector. Excellence in education also requires an effective management system. (Ali et al., 2021). Higher education institutions run under the patronage of institutional heads, who manage both teachers and non-teaching employees as well as student for teaching purposes. This act is referred to as educational management in which the authority absorbs human and material resources to monitor, prepare, formula strategies and implement the framework of the educational system (Shimin, 2018). On the other hand, Taylor et al., (2020) see educational management as universal, including goal setting, plan formulation, personal supervision and encouragement, action coordination and control, goal achievement and evaluation of joint effort to achieve these goals. According to Al- Hammadi (2019) the overall goal of management is to establish, maintain, encourage, promote, and effectively carryout the excellent and efficient teaching as well as learning. Practicing management literally in the education system reflect on academic results of students as their moral behavior which are directly related to growth and internal development of the human system for moving forward.

## **Performance Management**

Performance management can be defined as a continuous process of setting objectives, assessing progress, and providing feedback to ensure that employees are meeting organizational goals and expectations. It involves setting clear performance expectations, regularly monitoring and evaluating performance, providing feedback and coaching, and rewarding or recognizing performance achievements. One definition of performance management comes from the Society for Human Resource Management, which states that it is art of creating a work environment or setting in which people are enabled to perform to the best of their abilities (SHRM, 2021). Another definition comes from Armstrong and Baron (2004), who describe performance management as a process which contributes to the effective management of individuals and teams in order to achieve high levels of organizational performance. Performance management is a critical function in managing employee performance and driving organizational success. By providing regular feedback, support, and recognition, organizations can help employees achieve their full potential and contribute to the overall success of the organization.

## **Concept of University**

Generally speaking, high education is a set that constitute a university and therefore university is a sub-set of high education. Higher education covers a wide range of higher learning institutions including the university (Alemu 2018). He also stated that a university is a higher learning institution that brings men and women to a high level of intellectual development, professional in the art and sciences and in the traditional professional disciplines, promotes high-level research. A university is a source of universal knowledge and highly skilled human power for the profession (Alemu, 2018). High education also refers to as post-secondary or tertiary education in college of education, monotechnic, polytechnic, university and those institutions offering corresponding courses (Federal Government of Nigeria, 2014). Considering the above definition by the Federal government of Nigeria, University is an institution of higher education. state that university education shall make optimum contribution to national development intensifying and diversifying its programmes for the development of higher education level manpower within the context of the needs of the nation. The university management plays a central role in the organization and administration of a university. It consists of various leaders who are jointly responsible for the strategic direction education development and management of the university (Fejoh &Adesanwo,2021).

## **On-the-job training. (OJT)**

Some tasks are easier to learn by working alongside someone. OJT teaches the skills, processes and knowledge that learners need to perform their jobs in the environment where they are working. Learners observe, ask questions and finally perform the task first with the guidance of experts and eventually independently. Need for training arises whenever there is a gap between desired and the actual performance of the employees. The modern era is witnessing rapid change in the domain of information technology. For any modern enterprises, Humans Resources (HR)are considered one of the most valuable company assets thus, there is a very strong Nexus between effective Human Resources management (HRM) practice and subsequent organizational performance (Timsal et al., 2016). Human resource development (HRD) has started to use on-the-job training as a tool for increasing employees' satisfaction, it is including the responsibility of the senior

management of an institution to understand not only the apparent but also the “hidden” needs of the employees (Timsal et al., 2016). There are two types of training, on-the job, and off-the job. The primary difference between the two, is that in the case of on-the job training employee’s learning takes place in his actual place of work and while doing his actual job, whereas the off- the job training is conducted as a remote location which is away from employees normal working environment (Timsal et al., 2016).

Training methods could be classified as cognitive and behavioral approaches. Cognitive methods provide verbal or written information, demonstrate relationship among concepts, or provide the rules for how to do something. These types of methods can also be called off-the job training methods. On the other hand, behavioral methods allow trainee to practice behavior in real or stimulated fashion. They stimulate training through behavior which is best for skills development and attitude change. These methods can be called on the job training method. Thus, both methods can be used to change attitude either behavioral or cognitive.

The purpose of on-the job training is to provide employees with task specific knowledge and skills in work area the knowledge and skills presented during on-the job are directly related to job requirements. Job instruction technique, job rotation, coaching, and apprenticeship all common form of on-the-job training methods. (Alipour et al., 2016).

### **On-The-Job Training Methods**

The purpose of the on-the-job training session is to provide employee with task-specific knowledge and skills in work area. The knowledge and skills presented during on-the-job are directly related to job requirements. Job instruction technique, job rotation, coaching and apprenticeship training are the common forms of on-the job training methods. Fully on-the-job training theoretically does not involve any off-the-job training.

- I. Job Instruction: Training is a structured approach to training, which requires trainees to proceed through a series of steps in sequential pattern. The technique uses behavioral strategy with a focus on skill development, but there are usually some factual and procedural knowledge objectives as well. This type of training is good for task-oriented duties such as operating equipment. The instructor or supervisor prepares a job breakdown on the job, while watching an experienced worker perform each step of the job. Job instruction technique consists of four steps, preparation, present, try out and follow up.
- II. Job Rotation: is the systematic movement of employees from job to job or project to project within an organization, as a way to achieve various different human resources objectives such as: simply staffing jobs, orienting new employees, preventing job boredom or burnout, rewarding employees, enhancing career development, exposing employees to diverse environments. Excellent job rotation program can decrease the training costs while increases the impact of training, because job rotation is a hand on experience. Job rotation makes individuals more self-motivated, flexible, adaptable, innovative, eager to learn and able to communicate effectively. Job rotation may be especially valuable for organizations that require firm-specific skills because it provides an incentive to organizations to promote from within.

- III. Coaching: is the process of one-on-one guidance and instruction to improve knowledge, skills and work performance. Coaching is becoming a very popular means of development, and often includes working one-on-one with the learner to conduct a needs assessment, set major goals to accomplish, develop an action plan, and support the learner to accomplish the plan. The learner drives these activities and the coach provides continuing feedback and support. Usually, coaching is directed at employees with performance deficiencies, but also used as a motivational tool for those performing well. Coaching methods solve precise problems such as communication, time management and social skills.
- IV. Apprenticeship: is one of the oldest forms of training which is designed to provide planned, practical instruction over a significant time span. Apprenticeship was the major approach to learning a craft. The apprentice worked with a recognized master craft person.
- V. Mentoring: Mentoring is a one-to-one relationship between a mentor (an individual with expertise and experience) and a mentee (an individual who is new to a job). The relationship goes beyond telling the mentee how to do a task, to offering advice, and providing insight into why the task is important to the organization. These relationships can be assigned by leadership when a new manager is hired into a department or organization, or they can be self-selected by an individual when they feel a need to learn more. The relationship lasts until both the mentor and mentee feel it is no longer mutually beneficial. Depending on the training plan, this could be a few weeks, months, or years. Building a mentoring program should include framework determining how long the relationship lasts, securing participation from all involved, matching both mentor and mentee, empowering both individuals, and providing feedback.

### **Importance of Staff Training and Development on Performance Management in University**

The following points justify the role of staff training and development on performance management in universities:

- I. Training and Development programmes aim at improving the effectiveness and efficiency of Human resource of an organization. It's a tool for human resource development. In any educational institution we have material, financial and human resources, it is the human resource that oversee the development or after resources and therefore enhance management of the universities (Chemutai & Khalil 2020).
- II. Training and Development provide for management Developmental programmes which are design for people from academic and cooperate world where they get opportunity to interact and share their viewpoint.
- III. It provides a platform where the management get state of art concepts and application with new insight which provides help in their career enhancement.
- IV. Orientation programmes and refreshers courses provide an avenue where young and in experience staffs are made aware various issues patterning work place. While refresher course provide opportunity for the staffs to exchange experience with peer and learn mutually from each other, it helps to keep the staffs up to date



about the latest in their subject and technology which will enhance management (Herjajanto 2023).

- V. It has the potential to transfer and utilization of technical know-how, leadership development, organizing people, formation of self-help, mobilization of people as well as resources, empowerment of Individuals, entrepreneurship development.
- VI. Training programmes not only develop employees, but also the organization to also the organization to make full usage of their human resources in favor of acquiring competitive advantage (Paul & Audu, 2019).
- VII. Training and Development provide growth in both individual or the institution so as to be able to meet organization current and future objections.

### **Challenges Affecting Staff Training and Development**

Scholars such Ajayi and Okhankhaele, (2019) identified some factors that affect training as follows:

- I. Working conditions and insufficient resources (kum et al., 2014, Nmadu and Khalil 2017)
- II. Corruption/ mis-appropriation according to Lamido (2013), corruption in the country has eaten deep into various sectors, it didn't spare the educational sector including tertiary institution that misappropriate money.
- III. Difficulty in accessing training programme
- IV. Poor assessment of training need: performance and appraisal are mostly employed to access the trainees that deserve further training base on the performance indicators. But personal prejudices and biased always result in selection of employees that does not deserve training.
- V. If training is too costly when compared to its short term returns on investment, firms may perceive it to be failure and unacceptable nonetheless, the long term pay-off may be rewarding (Kum et al., 2014).
- VI. When employee is not held answerable to the use of content on their training effort will be in vain if not support by line management.
- VII. Training and development program will not be successful if feedback is not provided when firms to fail to assess training by making feedback available. Employees will not be able to know the extent of success of the program (Kum et al., 2014).
- VIII. If after training employees fail to transfer what they have learn to there working environment so as to improve performance, the training will be valueless. (Kum et al., 2014).

### **Suggested Solutions**

This paper come up with the following recommendation:

- I. Government needs to release adequate funds to the institutions, while the management need to release enough funds towards adequate training so the employees will acquire current knowledge, skills and attitude for attainment of institutional goals.
- II. Learners need to be informed about the importance of training to them personally and to the institutions.
- III. Training should be provided when there is performance gap or growth gap.
- IV. Feet back should be provided.
- V. The content should be appropriate and proper teaching-learning methods are put in to operation.
- VI. There should be systematic method of measurement and evaluation.
- VII. Management should identify employees with performance gap or challenges.

### **Conclusion**

Human resources in any organization have become vital and are being treated as human capital and therefore, their effectiveness and capabilities need to be developed and be up to date with current information, skills, and knowledge necessary to perform their duties. On- the- job training is a tool for increasing employees' capability, it's the responsibility for seniors' management of an institution to understand not only the apparent but also the hidden need of the employees. Investment in people by developing and maintaining the required skills is crucial part of organizations strategy for the future, management performance is depended upon the performance of the organization work force. Base on the literature reviewed in this paper there is clear indication that on-the-job-training has positive effect on managers' creativity, achieving organization goals and management of universities..

### **References**

- Ajayi, M. O. & Okhankuele, O. T. (2019). Effect of Training on the Performance of University Administrative Staff in Nigeria. *International Journal of Technology and Management Research*. 3(2), 12-25.
- Alemu, S. K. (2018). The Meaning, Idea and History of University/Higher Education in Africa: A Brief Literature Review. *Forum for International Research in Education*, 4(3), 210-227.
- Alhammadi, A. (2014). An Investigation into the Effectiveness of Higher Colleges of Technology Quality Programme in the United Arab Emirates. PhD Thesis, University of Glamorgan.
- Armstrong, M. (2006). *A Handbook of Human Resource Management Practice*. Kogan Page Publishers.
- Armstrong, M., & Baron, A. (2004). *Managing Performance: Performance Management in Action*. Chartered Institute of Personnel and Development.

- Chaudhary, N. S. & Bhaskar, P. (2016). Training and Development and Job Satisfaction in The Education Market. *Journal of Resources Development and Management* 16(1), 23-35.
- Chemutai, L. P. & Khalili, O. E. (2022). Influence of Staff Training and Development on Academic performance of Lecturers at Rongo University, Kenya. *International Academic Journal of Social Sciences and Education* 2(3), 74-93.
- Cole, G, A, & Kelly, P. (2015). *Management- Theory and Practice* (8<sup>th</sup> Edition). Cengage Learning.
- Effiong, U. O. & Effanga, E. M. (2018). Professional Development and Lecturers' Job Effectiveness in Universities in South-South Nigeria. *Journal of Education and Practice*, 9(2), 23-29.
- Federal Republic of Nigeria (2014). *National Policy on Education*. NERDC.
- Fejoh, J. & Adesanwo, E. (2021). Impact of tertiary Education Trustfund (TETFUND) Interventions on Institutional Peace of Olabisi Onabanjo University, Ago-Iwoye, Ogun State. *Journal of Varna University of Economics* 65(1), 120-135.
- Herjajanto, T. (2023). The Impact of Job Training, Education and Work Motivation on Employee Performance. *Journal of Economy, Accounting and Management Science*. 4(2), 34-41.
- Jones, G. R. & George, J. M. (2018). *Contemporary Management* (10<sup>th</sup> Edition): McGraw-Hill.
- Kaehler, B. & Grundei, J. (2019). *HR Governance: A Theoretical Introduction*. Springer.
- Kinicki, A. & Williams, B. K. (2018). *Management-A Practical Introduction* (8<sup>th</sup> Edition). McGraw Hill.
- Kum, F.D Cowden., R. & Karodia, A. M. (2014). The Impact of Training and Development on Employee Performance: A Case Study of Consulting, *Singaporean Journal of Business, Economics and Management Studies*. 3(3) 72-105
- Lamido, S. (2013). Nigerian's corruption trend disastrous, destructive. *The Nation March*, p53.
- Nmadu, T., & Khalil, S. (2017). Human resources training: challenges and prospects in tertiary education institutions in Nigeria. *Journal of Education and Social Science*, 6(2), 45-65.
- Ololube, N. P., Uriah, O. A., & Dudafa U. J. (2014). The Role of University Management in Sustainable National Development Through Innovation and Entrepreneurial Nosiness. *International of Educational Foundations and Management*, 2(1), 13-24.
- Onyango, J. W., & Wangoike, D. M. (2014). Effect of Training on Employee's Performance: A Case Study of Health Workers in Siaya County, Kenya. *European Journal of Material Sciences* 1(1), 11-16.

- Paul, G. D. & Audu, S. L. (2019). Effects of Training of Academic Staff on Employee Performance in Federal Polytechnics, Nigeria. *Journal of Engineering Technologies and Management Research*, 16 (9), 112-117.
- Rodriguez, J. & Walters, K. (2017). *The Importance of Training and Development on Employee Performance and Evaluation*. <https://www.researchgate.net/publication/332537797>
- Salehi, M. and Shahnava, A. (2019). A Study on the Job Training Effectiveness: Empirical Evidence of Iran. *International Journal of Business and Management*, 4(11), 34-45.
- Schunk, D. H. & Dibeneditto, M. K. (2020). Motivational and Social Cognitive Theory. *Contemporary Education Psychology* 60, 101-112.
- Shimim, T. I. (2018). Measuring Service Gap of Higher Education in Bangladesh: A Comparative Study Between Public University and Private University. *International Journal of Science and Business* 2(3), 491-502
- Society for Human Resource Management. (2021). *What is Performance Management?* Retrieved from <https://www.shrm.org/resourcesandtools/tools-and-samples/how-to-guides/>
- Taylor, M. LA Jolla, C. & Jane (2020). A Mixed Method Study Explaining the Emergence of Leadership Skills in Special Education Administration. *SELL Journal* 5(11), 55.
- Timsal, A. Awais, M. & Shoaib, O. (2016). Job Training and its Effectiveness: An Employee Perspective. *South Asian Journal of Banking and Social Sciences*, 2(1), 23-32.
- Williams, C. (2018). *MGMT 10- Principles of Management (10<sup>th</sup> Edition)*. Cengage Learning.

## EVALUATION OF EARLY CHILDHOOD EDUCATION CURRICULUM AND UNDERGRADUATE STUDENTS' ACQUISITION OF ENTREPRENEURIAL SKILLS FOR LIFELONG LEARNING

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### Abstract

*This study evaluated 'Evaluation of Early Childhood Education Curriculum and Undergraduate Students' Acquisition of Entrepreneurial Skills for Lifelong Learning. The study adopted a correlational survey research design. 1342 undergraduate students of early childhood education in tertiary institutions in Lagos State University (LASU) and Lagos State University of Education (LASUED) constitute the population of the study, through which 134 students were sampled for the study which is 10% of the total population. The instrument use for data collection was a self-developed four point scale questionnaire titled "Evaluation of Early Childhood Education Curriculum and Undergraduate Students' Acquisition of Entrepreneurial Skills for Lifelong Learning Questionnaires" (EECECUSAESLLQ) developed by the researcher and validated by research experts with the reliability coefficient of 0.84. Data from the research questions were tested using Pearson Product Moment Correlation (PPMC) at 0.05 level of significance. The findings of the study among others revealed that adequate provision of materials/facilities improves the development of entrepreneurship skill acquisition among undergraduate students of early childhood education in tertiary institutions. It was concluded that adequate provision of materials/facilities improves the development of entrepreneurship skills acquisition among undergraduate students in tertiary institutions. It was recommended to mandate the inclusion of entrepreneurial skill development into the curriculum of early childhood education across all levels and skill acquisition areas for students' development should be funded or adequately supplied by the government.*

**Keywords:** Evaluation, Early Childhood Education, Curriculum, Entrepreneurship Skill, Acquisition, Undergraduate Students, Tertiary Institution

### Introduction

It is important to note that almost half of Nigeria population is made up of youths. Many youths are entering the labour market every year. Government at various levels has carried out series of programmes to address youth unemployment so that graduates of tertiary institutions will be self-employed after graduation. To this end, the government through the Federal Ministry of Education makes entrepreneurship education one of the compulsory general study courses for undergraduates across the country. This is a

positive step in the right direction that helps to inculcate in the youths the spirit of entrepreneurship. This development will not only address the problem of unemployment and under-employment but will also ensure adequate entrepreneurial human capacity for national development.

The essence of entrepreneurship education is to build in the undergraduate students of early childhood education, entrepreneurship spirit and culture through the courses taught in the early childhood department. The Federal Government of Nigeria (2014) in the National Policy on Education made it clear on the need for functional, relevant, practical and acquisition of appropriate skills and development of competence as equipment for individuals to live in and contribute to the development of the society. To create an understanding of basic business issues, creative work attitude and an entrepreneurial skills among undergraduate students of early childhood education in tertiary institutions in Lagos State. Dike and Effanga (2020), opined that entrepreneurship is a process of change where innovation is the most vital function of the entrepreneur which is very essential to assist the undergraduates in their quest to start their own business instead of waiting for a white collar job from the government as we all know that all the graduates of ECE will not end up in classroom.

In view of the above, entrepreneurship was introduced into the curriculum of tertiary institutions to prepare its recipients for relevancy on graduation. This is not different from the universities in Lagos State as department of early childhood education has some courses that could develop undergraduate students entrepreneurial skills. These courses include: Puppetry in early childhood education and Children's Literature.

Many studies have been conducted with corporate concepts and approaches to defining entrepreneurship. According to Aliyu, Dang & Makson (2021) entrepreneurship is the ability of some people to take risks and combine factors of production in order to produce goods and services. Entrepreneurship facilitates prosperity of individuals, states, regions and nations. Entrepreneurship has established non-negotiable impact on the socio-economic development of the society. Economically, entrepreneurship invigorates resources and promotes jobs creation through the formation of new businesses. Thus, transforming competencies into skills is the root of entrepreneurship which invariably raises productivity and increases wealth of nations as entrepreneurship concerns itself with skill acquisition.

Samlarts and Zerbinati (2016) opined that entrepreneurship education raises some attitudes and behaviours in the overall economic activities of individuals who have interest in the infrastructural development, wealth and job creation in their nation. The objective of early childhood education entrepreneurship centre in tertiary institution is for the undergraduate students of early childhood education to acquire both theoretical knowledge and practical skills for self-employment after graduation.

Oluka and Onyebuanyi (2017), indicate that the place of skill acquisition cannot be over emphasized in the rapid development of education, technology and other sectors of the economy. Skill may be seen as an excellent product of training combined with relevant ideas in carrying out specific tasks. Onoh and Onyebuanyi (2017), see skill as the ability to do something well, usually gained through training or experience. Entrepreneurial skills are best appreciated when acquired through formal education as it matches theoretical knowledge with practical skills.

Nevertheless, it is discouraging that entrepreneurship irrespective of its place in preparing undergraduate students of early childhood education for life long career, active and contributing members of the society has appeared to be non-functional in meeting with the stated objectives. This is evident as most graduates of entrepreneurship education display poor skill acquisition in their places of assignment or duties. This may be as a result of lack of capacity development programmes for teachers, availability of inadequate materials and facilities, lack of well equipped resource centres in early childhood education department, poor supervision of students during practical classes among others. Therefore, the study sought to evaluate early childhood education curriculum and undergraduate students' acquisition of entrepreneurial skills in tertiary institutions in Lagos State.

Undergraduate students can study a wide range of subjects, including early childhood education, liberal arts, sciences, business, engineering, and more. During their undergraduate studies, students take a variety of courses in their chosen field of study as well as general education requirements. They may also have the opportunity to participate in internship, research projects, study abroad programmes, and other extracurricular activities. However, upon completion, of their undergraduate degree, students may choose to enter the workforce or continue their education by pursuing a graduate degree or decide to establish their own small or medium scale business.

Early childhood education is the earliest level of education from birth to age five. It is the foundation upon which every other level of education is built on. It is also informal kind of education that takes place in a formal setting. Early childhood education first and foremost deals with part of the children's development in terms of character, physical, cognitive, linguistic, artistic, social, emotional, spiritual, self-discipline, self concept and self-reliance. The Federal Government of Nigeria (2014), sees early childhood education as the care, security, stimulation, protection both physically and spiritually given to children age 0 to 5 years in crèche, nursery and a year in kindergarten before entering primary level of education. Education at all levels has been seen as an instrument for total transformation. This transformation may take place in an individual's mind first and noticed when the individual's level of reasoning has been improved and relevant to the society. Thus, education is an effective instrument of positive change in the society and a fundamental social institution for transmitting basic knowledge including values, norms, skills and culture to the young ones in the society ( Sassenberg & Michael 2019).

Atsumbe (2012) perceive education as the vital instrument for social and economic mobility at the personal level and an instrument for the transformation of the society at the national level. Amaele, Wosu and Ejire (2011) see education as a total development of the individual child through acceptable methods and techniques according to his ability and interest to meet up the needs of the society and for individuals to take their rightful place and contribute equally to the enhancement of the society. Ololube and Egbezor (2021) state that education is the process by which children, youths and adults learn abilities, attitudes and other forms of behaviour which are positive values to the society in which they live. Education is therefore, a valuable investment towards the production of human capital resources in a nation. Education generally is acquired at different levels including early childhood but not limited to tertiary institution.

Federal Republic of Nigeria (2014), described tertiary education as the education given after secondary schooling years in colleges of education, polytechnics, monotechnics and

universities, including those institutions offering correspondence courses, which provide the students the opportunity and potentials to contribute optimally to national development by:

- I. intensifying and diversifying its programme for the development of high level manpower within the context of the needs of nation;
- II. making all professional course contents to reflect on national requirement;
- III. making all practicals courses compulsory for all students;
- IV. some courses should be made compulsory for all students to offer as general study courses such as information technology (IT) and entrepreneurship skills
- V. making entrepreneurship skills acquisition a requirement for all Nigerian universities.

Entrepreneurship skills can enhance students' adaptability and flexibility in their careers. Whether they choose to start their own early childhood centres or work as a caregiver in an established early childhood school, the skills acquired through entrepreneurship can be valuable in their career prospects. Entrepreneurship skill acquisition course is often housed in general studies programmes in many institutions and taught by those who do not possess basic training in entrepreneurship education and therefore lack the skills to impart the required knowledge effectively. Only the trained teaching personnel that can understand and impart entrepreneurial subject matter in an inspiring manner that can develop entrepreneurial minded students who will meet the nation's economic goals

Oluka & Onyebuanyi (2017), stated that entrepreneurship skills acquisition offers numerous benefits to undergraduate students of Early Childhood Education (ECE) which will help to develop their mindset that fosters innovation and creativity. This can be particularly valuable in the field of early childhood education, where new technologies and solutions are constantly being developed. Entrepreneurship often involves identifying and solving complex problems. In acquiring entrepreneurship skills, undergraduate students of early childhood education can enhance their ability to analyze challenges and come up with effective solutions, which can open up opportunities for collaborations and future career prospects.

### **Statement of the Problem**

In Nigeria, the rising unemployment has helped to increase the need for entrepreneurial skills acquisition starting from the undergraduate student of early childhood education. The development of a nation's economy depends mostly on the quality of skilled undergraduate students in tertiary institutions who will be trained and are ready to establish and continue with such skills later in future. The acquisition of entrepreneurial skills by undergraduate students involves acquiring competencies beyond traditional learning methods. These skills enable students to become more resourceful, innovative, creative and self-employed, which can have long-term benefits for their growth and development.

The problem of this study underscores the need for the evaluation of Early Childhood Education Curriculum and acquisition of entrepreneurship education in tertiary institutions in Lagos State to have in-depth knowledge of courses taught that could



development entrepreneurial skills acquisition in early childhood education. How these opportunities will make the individual students to be a productive entrepreneur, creative, innovative, enlarge the economy and increase personal freedom is an issue of concern. Hence, this study will examine the early childhood education and acquisition of entrepreneurial opportunities by undergraduate ECPE students in public tertiary institutions in Lagos State.

### **Objectives of the Study**

The following objectives are as listed below:

- I. evaluate the extent puppetry in early childhood education curriculum aids undergraduate students' acquisition of entrepreneurial skills in tertiary institutions in Lagos State.
- II. evaluate the extent children's literature in early childhood education curriculum enhance undergraduate students' acquisition of entrepreneurial skills in tertiary institutions in Lagos State.

### **Research Questions**

The study is guided by the following research questions:

- I. To what extent does puppetry in early childhood education curriculum aids undergraduate students' acquisition of entrepreneurial skills in tertiary institutions in Lagos State?
- II. To what extent does children's literature in early childhood education curriculum enhance undergraduate students' acquisition of entrepreneurial skills in tertiary institutions in Lagos State?

### **Methodology**

A descriptive survey research design was used for the study. The population of the study comprised 1342 undergraduate students of early childhood education in tertiary institutions in Lagos State University (LASU) and Lagos State University of Education (LASUED). 134 students were sampled for the study which is 10% of total population. Simple random sampling technique was used to select 67 students from each of the departments. A self-structured instrument was used title "Evaluation of Early Childhood Education Curriculum and Undergraduate Students Entrepreneurship Skills Acquisition in Tertiary Student Questionnaires" (EECECUSESQAQ). Cronbach alpha was used to check the reliability of the instrument and the consistency level at  $r = 0.84$ . Descriptive statistics of frequency count, mean, standard deviation and criterion mean was used to analyse the research questions and inferential statistics of Pearson Product Moment Correlation (PPMC) and t-test were used to test the formulated hypotheses at 0.05 level of significance.

## Results

### Demographic of the respondents

Variables	Frequency		
			Percentage (%)
Gender	Male	58	43.3
	Female	76	56.7
	<b>Total</b>	<b>134</b>	<b>100</b>
Age	15 – 20	34	25.4
	20 – 25	48	35.8
	25 – 30	33	24.6
	35 - 40	19	14.2
	<b>Total</b>	<b>134</b>	<b>100</b>
Year of Study	2021/2022	42	31.3
	2022/2023	45	33.6
	2023/2024	47	35.1
	<b>Total</b>	<b>134</b>	<b>100</b>

Table 1 shows the demographic information of the respondents as follows: Gender distribution; Female undergraduate students are the majority which accounted for 56.7% and male undergraduate students accounted for 43.3%. Age distribution reveal that undergraduate students between the age of 20 – 25 years are the majority which accounted for 35.8%, follows by 15 – 20 years which accounted for 25.4%, 25 – 30 years accounted for 24.6%, 35 – 40 accounted for 14.2%. Years of study reveals that 2023/2024 academic session are the majority 35.1%, follow by 2022/2023 accounted for 33.6% and 2021/2022 accounted for 31.3%.

### Answers to research questions

**Research question 1:** To what extent does puppetry in early childhood education curriculum aids undergraduate students’ acquisition of entrepreneurial skills in tertiary institutions in Lagos State?

**Table 2:** shows that puppetry in early childhood education curriculum aids undergraduate students' acquisition of entrepreneurial skills in tertiary institutions in Lagos State

S/N	Items	SA	A	D	SD	Mean	St.D
1.	There are adequate puppetry materials in your department for students to make use of during practical lesson.	43 (32.1)	50 (37.3)	30 (22.4)	11 (8.2)	2.93	0.93
2.	Puppetry materials enhance entrepreneurship skill acquisition among undergraduate students of early childhood education.	20 (14.9)	77 (57.5)	30 (22.4)	7 (5.2)	2.82	0.74
3.	Puppetry in early childhood education is a course taught and it is compulsory for all students.	33 (24.6)	68 (60.7)	23 (17.2)	10 (7.5)	2.92	0.84
4.	My school offer puppetry course and a well equipped resource room for practicals.	31 (23.1)	80 (59.7)	15 (11.2)	8 (6.0)	3.00	0.76
5.	Students participate actively in puppet practical during practical lesson in your school.	24 (17.9)	11 (8.2)	30 (22.4)	69 (51.5)	1.92	1.14
<b>Grand mean =</b>		<b>2.71</b>					

Table 2 shows that puppetry in early childhood education curriculum aids undergraduate students' acquisition of entrepreneurial skills in tertiary institutions in Lagos State. The detailed analysis revealed that my school offer puppetry course and a well equipped resource room for practicals = 3.00), there are adequate puppetry materials in your department for students to make use of during practical lessons (mean = 2.93), puppetry in early childhood education is a course taught and it is compulsory for all students (mean = 2.92), puppetry materials enhance entrepreneurship skill acquisition among undergraduate students of early childhood education (mean = 2.82) and Students participate actively in puppet practical during practical lesson in your school (mean = 1.92).

**Research question 2:** To what extent does children's literature in early childhood education curriculum enhance undergraduate students' acquisition of entrepreneurial skills in tertiary institutions in Lagos State?

**Table 3:** showing that children’s literature in early childhood education curriculum enhance undergraduate students’ acquisition of entrepreneurial skills in tertiary institutions in Lagos

S/N	Items	SA	A	D	SD	Mean	St.D
1.	The resource room is conducive for students to participate in practical lesson.	31 (23.1)	80 (59.7)	15 (11.2)	8 (6.0)	3.00	0.76
2.	Children’s literature/Music and Dance is offered in my school	24 (17.9)	11 (8.2)	30 (22.4)	69 (55.1)	1.92	1.14
3.	It exposes students to different areas of entrepreneurship skills needed.	23 (17.2)	61 (45.5)	26 (34.3)	4 (3.0)	2.76	0.76
4.	Children’s literature/Music and Dance equip students’ practical learning culture which help them later in life.	35 (26.1)	73 (54.5)	25 (18.7)	1 (0.7)	3.05	0.69
5.	Children’s literature/Music and Dance build strength and self-reliance in undergraduate students of early childhood education	41 (30.6)	70 (52.2)	16 (11.2)	8 (6.0)	3.07	0.80
<b>Grand mean =</b>		<b>2.76</b>					

Table 3 shows that children’s literature/music and dance in early childhood education curriculum enhances undergraduate students’ acquisition of entrepreneurial skills in tertiary institutions in Lagos State. The detailed analysis revealed that children’s literature/music and dance build strength and self-reliance in undergraduate students of early childhood education (mean = 3.07), children’s literature equip the students’ practical learning culture which help them later in life (mean = 3.05), the resource room is conducive for students to participate in practical lesson (mean = 3.00), it exposes students to different areas of entrepreneurship skills needed (mean = 2.76) and Children’s literature/music and dance is offered in my school (mean = 1.92).

## Discussion

The findings made in the analysis of research question one shows that adequate provision of materials improve the development of entrepreneurship skills among undergraduate students of early childhood education in tertiary institutions in Lagos State. This is true because adequate provision of materials will ensure effective practical exercise during teaching and learning activities as this will help the undergraduate students to have adequate materials to learn as a result develop in them the capacity that will help the society at large. It is however, necessary to make available materials that will equip and prepare the undergraduate students of early childhood education to be self-employed. This is in concordance with the findings of Dike and Effanga (2020) who stated that schools should explore, practice, attend an event and have visible learning resources where students will develop their capacity in the learning activities which all the undergraduate students of early childhood education may participate to acquire knowledge and skills required to become an entrepreneur. Hypothesis 1, the t-test result in table 5 shows that there is a difference between male and female undergraduate students acquisition of entrepreneur skills ( $t = -13.77$ ;  $df = 132$ ;  $P < 0.05$ ). This then means that female undergraduate students have higher mean score in their acquisition of entrepreneur

skills (30.60) than male undergraduate students (10.06). Therefore, the null hypothesis 1 is rejected. This implies that the status of the respondents have no significant difference in the mean ratings regarding how adequate provision of materials improves the development of entrepreneurship skill acquisition among undergraduate students of early childhood education in tertiary institutions in Lagos State.

Research question 2 revealed that appropriate supervision of students during practical lesson can improve entrepreneurship skill acquisition among undergraduate students of early childhood education in tertiary institutions in Lagos State. This is absolutely true as appropriate supervision ensure that students are checked into the resource room for practical activities, materials distributed to them with guide on the use of the materials and identification of problem areas to ensure effective time management and general safety of the students and to ensure that all the students participate in the practical activities. This finding is in line with Hoque, et al (2020) who opined that supervision of instruction potentially improves classroom practices and contributes to students' success through the professional growth and improvement of teachers. It simply shows that there is a significant positive relationship between undergraduate students' level of study and their acquisition of entrepreneurial skills in early childhood education. ( $r=.995$ ;  $p<0.05$ ). This implies that undergraduate student's level of study has a correlates with students acquisition of entrepreneurship

## **Conclusion**

In conclusion, undergraduate students who get comprehensive entrepreneurial education in tertiary institution have a heightened potential for attaining future success. If students are equipped with entrepreneurial abilities throughout the period of schooling years, there is a greater probability that they will embark on their own entrepreneurial endeavours later in future. This exposure to entrepreneurship is likely to influence their career choices, leading them towards entrepreneurial paths which will help to develop the society at large.

## **Recommendations**

Based on the findings of this study, the following recommendations were made to bring about an improvement in the development of entrepreneurship skill acquisition in tertiary institutions in Lagos State.

- I. It is recommended that entrepreneurial skill development should be included in the curriculum of early childhood education, spanning across all educational levels.
- II. The skill acquisition areas for students should be funded or adequately supplied by the government with state-of-the-art resources to facilitate skill development and future proficiency in undergraduate students of early childhood education.
- III. It is recommended that the curriculum of early childhood education should include that all universities offering ECE should have an established entrepreneurship skill acquisition centres.

- IV. It is recommended that students should be certificated on the areas of entrepreneurial skill acquisition apart from the general certificate that will be awarded as a graduate at the end.

## **References**

- Aliyu, A.A., Dang, E.I. & Makson, M.B. (2021). Influence of Economics Teachers Attitude and Academic Performance of Senior Secondary School Students in Bauchi zone, Bauchi State. *Kshire Journal of Education*. 2(2); 298-305.
- Amaele, S., Wosu, J.I., & Ejire, A.N. (2011). *History of Education from Ancient to the Contemporary Era, the Global and Nigeria Perspectives*. Port Harcourt: Harey Publicationscoy.
- Atsumbe, B.N., Raymond, E., Igwe, C.O. & Atsumbe, J.A.(2012). Repositioning Vocational and Technical Education for Effective Manpower Production in Nigeria. *Journal of International Organisation of Scientific Research* . 1(4); 1-6.
- Dike, B.W. & Effanga, O.J. (2020). Implementation of Entrepreneurship Education for Self-Reliance in Public Secondary Schools in River State. *International Journal of Institutional Leadership, Policy and Management*. 2(2); 440-459.
- Federal Republic of Nigeria (FRN; 2014): *National Policy on Education, Revised*, Lagos NERDCPress.
- Hoque, K.E., Kenayathulla, H.B.B, Subramaniam, M.V.D/O & Islam, R. (2020). Relationship Between Supervision and Teachers' Performance and Attitude in Secondary School in Malaysia. *SAGE Open Journal*. 1-11.
- Ololube, N.P. & Egbezor, D.E. (2021). A Critical Assessment of the Role/Importance of Non-Formal Education to Human and National Development in Nigeria: Future Trends.
- Oluka, S.N. & Onyebuenyi, P.N. (2017). Skills Required for Effective Utilization of Solar Energy for Sustainable Self Employment of Electrical/Electronics Technology Education Graduates in Enugu Urban. *International Scholars Journal of Arts, Humanities and Social Sciences*. 5(3); 234-240.
- Onoh, B.C.E.C. & Onyebuenyi, P.N. (2017). Electrical Installation and Maintenance Skill Needs of Technical College Graduates for Job Creation and Self-reliance in Enugu State. *Journal of Science and Computer Education (JOSCED)* 3(3); 223-233.
- Samataris, V.S. & Zerbinati, S. (2006). Do Entrepreneurship Programme Rise Entrepreneurship Intention of Science and Engineering Students? *Journal of Business Ventures*. 22(4); 20-27.
- Sassenberg, K. & Michael, L.W. Vlieg (2019). *Social Psychology in Action: In Evidence Based Interventions from Theory to Practice*.

## ACHIEVING GENDER EQUITY FOR SUSTAINABLE DEVELOPMENT: THE CHALLENGES FOR SCHOOL ADMINISTRATORS

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### Abstract

*The current economic and financial downturn has created much concern over its effect on the achievement of sustainable development. The lack of attention to achieving gender equality will not only slow down development but will jeopardise all efforts. While progress is observed in ensuring gender balance in education, which is a key instrument for human emancipation, access to resources, employment opportunities, and representation in decision-making levels are key areas that can transform the lives of women worldwide and contribute to the achievement of developmental needs of a nation. Yet, despite this increasing awareness everywhere, women and girls today face gender-based discrimination. By contrast, where women and girls are treated as inferior to men and boys, a vicious circle of limited education will create undesirable situations that will impede meaningful development. The trust of the paper is to unravelled the barriers to ensuring gender equality in the attainment of secondary education and the challenges and strategies that school administrators can implore to address the situation. The paper concluded with suggestions; one of which is for government(s) to organize enlightenment campaigns to create better awareness for society to understand the importance gender equality.*

**Keywords:** Gender Equality, Administrative Strategies, School Administration

### Introduction

Educating girls achieves even greater results. When girls go to school, they tend to delay marriage, have fewer but healthier children, and contribute more to family income and national productivity. Women's participation in politics and public sector economic activities falls below that of their counterparts, often due to a lack of education for girls. National Democratic Institute (2016) reported that in the past 20 years, women have doubled their global numbers in parliaments, from 11 to 22 percent. Seventeen percent of ministers globally are women, and in 2015 there were 18 women as heads of state or government. Women's participation in politics is socially transformative. Education is a key strategy for gender equality and women's empowerment, yet millions of women around the world are denied access to education (Menon-Sen, 2005). Previous research (Hill & King, 1993; Klasen, 2003; Loncove, 2008) pinpoints the reasons for investing in women's education and shows how the low level of literacy, not only hurts women's lives but also the lives of their children and on their country's economic development (Hill & King, 1993; Klasen, 2003).

Global Education Monitoring Report, (2020) revealed that female enrolment accounted for 55% of the total increase in primary and secondary enrolment between 1995 and 2018, growing by 180 million, from 469 million to 649 million. According to the report, gender differences persist in learning outcomes and subject choices. School-based factors partly explain these differences. There are also social, cultural, and economic forces that structure different expectations, aspirations, and performances for girls and boys, women and men.

Research also shows that illiterate women have high levels of fertility and mortality, poor nutritional status, and low earning potential. 1991 census figures, it is evident that about 60 % of the male population is literate and only 40 % of the female population is literate. The literacy rate among females is low. A woman's lack of education also hurts the health and well-being of her children, especially where the primary responsibility for child-rearing and home-making lies with the mother. When mothers are educated, they are more capable of nurturing their children and are less frequently ill than those who are not educated (Floro & Wolf, 1990; Hill & King, 1993; Nussbaum, 2000; Brighouse & Unterhalter, 2002; Klasen, 2003; Chaabouci, 2006).

### ***Definitions of Terms and Concepts***

Gender is a social and cultural construct, that distinguishes differences in the attributes of men and women, and accordingly refers to the roles and responsibilities of men and women. Gender-based roles and other attributes, therefore, change over time and vary with different cultural contexts. The concept of gender includes the expectations held about the characteristics, aptitudes, and likely behaviors of both women and men (femininity and masculinity)

Gender equity is the process of being fair to men and women. To ensure fairness, measures must often be put in place to compensate for the disadvantages that prevent women and men from operating on an even playing field. Gender equality means that women and men have equal conditions, treatment, and opportunities for realizing their full potential, human rights, and dignity, and for contributing to (and benefiting from) economic, social, cultural, and political development.

Gender equality is, therefore, the equal valuing by society of the similarities and differences of men and women, and the roles they play. It is based on women and men being full partners in their homes, community, and society. Gender equity is one means of achieving gender equality.

Gender equality in education would imply that girls and boys are ensured and offered the same chances and treatment in access, process, and outcome of education of good quality and which is free from any stereotypes (UNESCO, 2009)

Sustainable development is about finding better ways of doing things, both for the future and the present. A sustainable development approach can bring many benefits in the short to medium term. The concept of sustainable development aims to maintain economic advancement and progress while protecting the long-term value of the environment; it “provides a framework for the integration of environment policies and development strategies” (United Nations General Assembly, 1987). Sustainable development implies the fulfillment of several conditions: preserving the overall balance, respect for the environment, and preventing the exhaustion of natural resources. For this work, it implies



the sustainable management of the use of resources within the school, and its rational management of male and female students in secondary schools for equal opportunities.

### ***Gender Equality and Education for Sustainable Development***

Until women and men have equal opportunities to participate in public and private life, as community members, citizens, decision-makers, and leaders, we will not be living in a sustainable, fair world for all. Gender equality and women's rights are both a goal and a means of achieving sustainable development. School administrations should strive towards the achievement of gender equality and encourage girls to accord the girl child priority of sustainable development. Improvements in girls' education have not translated into reduced gender gaps in the labor market or women's equal ownership and control over economic resources, and the gender gap in earnings remains pervasive across the globe

Education is only one of the areas of social policy behind the breaking down of gender inequalities. The concept of equality between men and women was set out in the Universal Declaration of Human Rights in 1948. Since then it has been foregrounded and elaborated on in several international agreements, most prominently the Convention on the Elimination of all Forms of Discrimination Against Women (CEDAW) in 1979, the Beijing Platform for Action in 1995, the UN Security Council Resolution 1325 in 2000 on women, peace and security.

### ***Role of School Administrators in Gender Mainstreaming in Schools***

Gender mainstreaming is the ultimate process in efforts towards achieving gender equality in education or any other sector. Until a country succeeds in reaching the goal of mainstreaming gender fully into education (as well as other fields), specific efforts are needed to reach that stage. Different countries are at different stages of gender mainstreaming, and almost all are far from achieving it fully successfully. Program objectives are more likely to be reached if the interests and experiences of both women and men are taken into account at all stages of the programming process. The needs and interests of all intended beneficiaries are more likely to be satisfied in this way (UNESCO, 2009)

Norms and dominant ideas about appropriate roles and activities for men and women can be reflected in school curricula and learning materials, and differential treatment of teachers towards girls and boys. In this way, education systems can perpetuate or reproduce existing gender stereotypes (Durrani, 2008; Stromquist, 2006)

Such stereotypes in education may be an important factor behind continued segregation in the labor market. A rising number of girls are completing secondary education and passing exams, but this has not led to the elimination of 'horizontal' segregation in the labor market, and there is a tendency of men and women to pool in different sectors of employment, often with different levels of status, remuneration, and security. According to the ILO, horizontal segregation decreased until the 1990s, but since then it has been rising again (ILO, 2012 ILO, 2016)

However, school lessons that include critical reflection on norms around masculine and feminine roles can help to break down such stereotypes. For example, targeted initiatives can challenge gender stereotypes about particular school subjects like science and maths. Also, school programs that support students in examining their perceptions about gender can lead to more equitable of domestic labor. Raising consciousness of gender equality,

and developing participants ‘relational resources - the interpersonal skills they use in relationships, meant that women were able to negotiate a new sharing of responsibilities within the home (Murphy-Graham, 2009).

A growing body of research has shown school-related gender-based violence to be a widespread and pervasive problem, which undermines gender equality in education (UNESCO, 2015). For example, a survey carried out by ICRW in India found that violence is an integral part of the schooling experiences of young adolescents, especially boys (Achyut et al., 2011). The study found that two-thirds of boys ages 12-14 in a cluster of low-income schools had experienced at least one form of violence in the last three months at school. Physical violence and emotional violence were common, affecting 61% and 49% of boys, respectively. Although fewer girls than boys reported experiencing any form of violence (42%), the rates for physical and emotional violence were still high (38% and 26%, respectively). Studies have revealed similar figures in other countries across the globe (Barker et al, 2012). School Administrators can be central to preventing and addressing violence, and has the potential to encourage students to question existing gendered behaviors, through reflective tasks, questioning, and critical thinking.

However, schools can be a site for behaviors that also reinforce existing norms and behaviors that sanction gender-based violence. For example, girls may be subject to verbal and physical sexual harassment by male students or teachers; and bullying in schools is often directed at children perceived as transgressing norms of masculinity or femininity (Parkes, 2015). Corporal punishment may be used to enforce such norms – to ‘toughen’ boys, for instance, or to teach girls to be submissive (Morrow and Singh, 2015; Nandita et al, 2014). This issue is increasingly pressing in a world in which insecurity and violent conflict have sadly become more commonplace, both locally and internationally.

What is also important is the value of education in providing girls with confidence, insights, and networks to challenge gender inequitable norms and power balances that are associated with violence. Girls’ increased confidence to speak out may likely be masking possible reductions in the amount of violence taking place (Parkes and Heslop 2013).

Gender may intersect with other forms of difference or disadvantage and result in stigmatization. For example, girls and boys may be stigmatized, excluded, and denigrated in schools when they are perceived as flouting norms about gender and sexuality (Youdell 2005; Dunne 2007). Interventions in schools have addressed homophobic bullying in schools by combining interactive teaching with young people reflecting on their values, beliefs, and stereotypes, with whole-school approaches that strengthen school systems and teacher interventions to tackle and prevent bullying (Mitchell et al 2014).

From the opinions and empirical studies done, the school administrator has a lot of responsibilities in achieving gender equity. Being the leader of the school lies the task of ensuring that every child is protected as he/she stands proxy for the parents.

### ***Intervention Models for School Administrators***

USAID Report on Office of Women in Development by the EQUATE Project, Management Systems International (Prime Contractor) in 2008 identified the following intervention models in achieving gender equity in secondary schools;

- Train teachers to understand how their perceptions or expectations of male and female students may influence how they assess students' progress, mark examinations, and provide feedback.
- Include an assortment of question types (prose, charts, pictures, tables, etc.) when developing test, examination, or assessment questions to respond to the diversity in students' learning styles.
- Use various question types (multiple choice, essay, short answer, etc.) and weigh the test items to ensure that students with different learning styles have equal opportunities to succeed.
- Balance classroom assessment methods to evaluate group and individual work using verbal and written evaluation tools.
- Review existing tests, examinations, and assessments to determine whether the examples and language used are free of gender bias and stereotypes. Remove any gender-specific content and ensure that examples reflect a balance in girls' and boys' experiences.
- Raise parents' awareness of their rights and responsibilities in education and of the importance of schooling for boys and girls.
- Train communities in monitoring access and quality through parent-teacher associations and school management committees, ensuring that women are part of their management.
- Increase school safety and decrease violence by maintaining safe and secure latrines; protecting girls on their way to and from school; abandoning corporal punishment; training teaching staff and students to prevent violence; and enforcing teacher codes of conduct.
- Undertake annual classroom studies to monitor teachers' interactions with boys and girls to ensure equitable student treatment

### ***Supervisory Models for School Administrators on Teachers for Gender Equity in the Classroom***

- Train teachers to define their roles as mentors and facilitators and not as instructors and knowledge experts aiming to disseminate information
- As a facilitator, the teacher should ensure that the physical and social environment of the school promotes healthy relationships between boys and girls
- Sitting arrangements and all activities should as far as possible be done in mixed groups in co-educational schools and single-sex, it should cut across class, caste, region, and faith.
- Equal participation of boys and girls in the teaching-learning process must be ensured

- To ensure greater participation of girls, participatory activities like- role play, problem- solving, and quiz, etc must be adopted in the teaching of languages, social science, and science
- Allocation of classroom duties should reflect gender neutrality. Boys and girls should participate equally in maintaining cleanliness, observing classroom decorum, decorating the class, and conducting routine classroom chores
- The teacher must also entrust the responsibility of organizing classroom activities equally to both sexes
- To develop effective oral communication skills, reading, and recitation should be jointly assigned to boys and girls with correct pronunciation, voice modulation, and expressions
- The teacher should be able to identify slow learners and organize appropriate remedial classes for them. – In the teaching-learning process, special emphasis must be given to sharing of examples of women achievers who have contributed to different fields. This will help in attitudinal reconstruction
- The use of visual aids like pictures and puppets, depicting women working in fields along with men, in hospitals as doctors and nurses, sharing household chores with men, etc. can also help to create gender inclusion and parity
- In the transaction of subjects like mathematics, sciences, social science, and languages, care should be taken to include examples of both boys and girls, men and women drawn from different walks of life so that the message of equal capability gets highlighted
- The classroom culture should be built in a manner that interactions between boys and girls reflect mutual respect. The classroom ethos should be made open and supportive so that both boys and girls feel free to share their personal experiences without apprehension
- The concept of equality of sexes may be explained by elaborating on the intelligence and capabilities of girls and women. The teacher must also ensure equal participation of boys and girls in activities like drawing, painting, music, and dance (Srivaster, 2016)

### ***Derivatives of Gender Equity***

The paper highlighted the following educational implications:

**Political Participation and Emancipation:** Education can affect a woman's political participation and engagement through imparting skills that enable her to participate in democratic processes.

**Skill Acquisition:** Literacy, and the critical reflection skills that a good quality education should provide, are necessary tools for engaging in both the social and political life of an individual

**Social Participation:** Educated women are more likely to participate in civic life and to advocate for community improvements; and numeracy enables individuals to question and critique government figures, strengthening processes of accountability.

**Building Self-Confidence:** Substantive equality in education supports organizing around women's rights, by encouraging critical reflection on gender inequalities, building confidence to speak out about injustice, and helping to foster social and political empowerment. At the same time, women's organizing is needed for progress in education; recent studies have demonstrated the important role of women's activists in holding governments to account to national and international commitments and pressing for policy changes for gender equality

**Economic Empowerment:** Education can lead to increased economic activity but not necessarily improved opportunities and decent quality work. In Ghana, for example, despite increases in women's education and female labor force participation, women's wage employment stagnated.

Unemployment for women rose, as did informal economic activity and self-employment, although more years of education increased the chances of securing wage employment (Sackey, 2005).

## **Conclusion**

Quality, retention, and achievement are essential elements of an education strategy designed to ensure that boys and girls maximize their full potential. As the Gender Equality in Education Framework indicates, addressing issues of access is insufficient to ensure that boys and girls receive the maximum benefit from their education. Getting children into school is crucial; ensuring that they stay in school, learn, and achieve requires more. It is indeed a role that both parents and school administrators school collaborate to bridge the gap between educational opportunities for male and female students in secondary schools

## **Suggestions**

The paper, therefore, suggested thus:

- I. School administrators should identify and address gender issues immediately if it is observed
- II. School administration should be mindful of enrolment issues which is the starting point of gender discrimination by ensuring enrolment opportunities for both sex
- III. Analyze how specific educational programmes and policies impact girls and boys differently, taking into account different roles, responsibilities, needs, and interests and addressing them during the project design process.
- IV. Integrate gender awareness components into pre-and in-service teacher training.
- V. Incorporate gender considerations into activities of curricula implementation and learning materials.

- VI. School administrators should identify and report on indicators such as girls' and boys' net and gross enrolment, gender parity in enrolment, equality in educational outcomes, and girls' and boys' completion rates.
- VII. Make interventions for girls more effective by integrating them into a coherent overall strategy for education reform.
- VIII. Develop practical tools to support programming staff in designing, implementing, reporting on, and evaluating programs that address equitable access and quality from a gender perspective
- IX. The government should build more schools for girls to improve the number of those admitted into the school

## **References**

- Achyut P., Bhatla N., Khandekar S., Maitra S., and Verma R.K. (2011) Building support for gender equality among young adolescents in school: Findings from Mumbai, India (New Delhi: International Center for Research on Women).
- Bank, J.B. (1997). Introduction: Some paradoxes of gender equality in schooling. Boulder: Lynne Rienner Publishers.
- Barker, G. et al (2012) 'Boys and education in the Global South: Emerging vulnerabilities and new opportunities for promoting changes in gender norms', *Thymos: Journal of Boyhood Studies*, 6(1-2), 137- 150.
- Brighthouse, H. & Unterhalter, E. (2002). Primary goods, capabilities, and the development target for gender equality in education. Retrieved January 2016 from <http://www.Edmunds.cam.ac.uk/Wvhi/Nussbaum>
- Chaabouni, B. & Bouhamed, H. (2006). What good education for girls? Retrieved April 5, 2008
- Dunne, M. (2007) 'Gender, Sexuality and Schooling: Everyday Life in Junior Secondary Schools in Botswana and Ghana', *International Journal of Educational Development* 27, 499- 511. from [www.agora.forwomeninscience.com](http://www.agora.forwomeninscience.com)
- Durrani, N. (2008) 'Schooling the "other": the representation of gender and national identities in Pakistani curriculum texts', *Compare*, 38(5), 595-610
- Floro, M. & Wolf, J. M. (1990). The economic and social impact of girls' primary education in developing countries. US agencies for international development. Washington, DC Hill,
- M. In A. & King, E. M. (1993). Women's education in developing countries: Barriers, benefits, and policies. World Bank. Hopkins University Press. Baltimore and London. author.
- Hill, M. A. & King, E. M. (1993). Women's education in developing countries: Barriers, benefits, and policies. World Bank. Hopkins University Press. Baltimore and London.

- ILO (2012b) 'Indigenous women workers: with case studies from Bangladesh, Nepal, and the Americas', ILO Working Paper 1/2012 (Geneva: ILO).
- Klasen, S. (2003). The impact of gender inequality in education and employment on economic growth in the Middle East and North Africa. Lamanna, University of Munich.
- Loncove, J.A. (2008). Growth, girls' education, and female labor: a longitudinal analysis. 41(2)45. Retrieved April 5, 2008, from [www.proquest.umi/pqdweb?index](http://www.proquest.umi/pqdweb?index)
- Menon-Sen, K. (2005). Taking action: achieving gender equality and empowering women. Gender disparity in primary and secondary education. MDG Report Retrieved January 3, 2009 from [www.unmimmenniumproject.org/documents/gender~omplete.pdf](http://www.unmimmenniumproject.org/documents/gender~omplete.pdf)
- Mitchell, M., et al. (2014) 'What works in tackling homophobic, biphobic and transphobic (HBT) bullying among school-age children and young people? Evidence review and typology of initiatives' NatCen: Government Equalities Office.1-29.
- Morrow, V. and Singh, R. (2015) 'Children's perceptions of punishment in schools in Andhra Pradesh, India', in (ed.) Gender Violence in Poverty Contexts: The Educational Challenge (London: Routledge).
- Murphy-Graham, E. (2009) 'Constructing a new vision: Undoing gender through secondary education in Honduras', *International Review of Education*, 55: 503-521.
- Nandita, B., Achyut, P., Khan, N. and Walia, S. (2014) Are Schools Safe and Gender Equal Spaces? Findings from a baseline study of school-related gender-based violence in five countries in Asia (Washington D.C. / Plan International).
- National Democratic Institute (2016) Retrieved on 12th March 2016 from <https://www.ndi.org/what-we-do/gender-women-and-democracy>
- Parkes, J. (ed.) (2015) *Gender Violence in Poverty Contexts: The Educational Challenge* (London: Routledge).
- Parkes, J. and Heslop, J. (2013) *Stop Violence Against Girls at School: A Cross-Country Analysis of Change in Ghana, Kenya and Mozambique* (London: Action Aid International).
- Rufa'I, R. A. (2000): "Gender inequality in education as revealed by the 1991 census data: implication to curriculum planning". *Journal of Research in Special Education*. 4 (3) 251- 266
- Sackey, H.A. (2005) 'Female labor force participation in Ghana: the effects of education'. AERC Research, Africa Economic Research Consortium, Nairobi. 150
- Stromquist, N. (2006) 'Gender, Education and the Possibility of Transformative Knowledge', *Compare*,36 (2), 145-161.

- Srivaster, G.(2016). Retrieved 24th April 2017From  
[http://www.ncert.nic.in/departments/nie/dws/modules/RMSA\\_Module.pdf](http://www.ncert.nic.in/departments/nie/dws/modules/RMSA_Module.pdf)
- UNESCO (2015) Gender and EFA 2000-2015: Achievements and Challenges (Paris: UNESCO). UNESCO (2009) Promoting Gender Equality in Education: Bangkok Asia and Pacific Regional Bureau
- USAID, (2008). Management Systems International (Prime Contractor). Report Development of Office of Women in Development by the EQUATE Project,
- World Bank (1995b). Priorities and strategies for education: a World Bank review. Washington, D.C.



## THE ROLE OF ZAMFARA COMPREHENSIVE AGRICULTURAL REVOLUTION PROGRAMME IN PROMOTING FOOD SECURITY IN THE STATE

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### Abstract

*The purpose of this paper is to examine the role of Zamfara comprehensive agricultural revolution programme (ZACAREP) in achieving food security in Zamfara State. ZACAREP was created with an emphasis to identify, and plan agricultural activities and methods that would be suitable for the development of Agro-based economy. The paper identified ZACAREP as a government policy to address food insufficiency in Zamfara state with a view to reducing poverty rate which stood at about 73,98% (Sasu, 2022). The paper enumerated some steps the government of Zamfara state took towards promoting food security in the state such as conduct of benchmark survey which was aimed at identifying the gap that exists between what obtains in the present and the achievable potentials that can be attained in the future, capacity building aimed at training over 10000 participants, granting of up to 5-10 million naira loans through the banks for various categories of farmers, provision of logistics to frontline extension staff worth 2.8million on monthly basis among others. The paper went further to outline some challenges facing ZACAREP in promoting food security in the State to include among others banditry, cattle rustling and kidnapping. The paper suggested that Zamfara State government should increase its support to farmers in the areas of modern agricultural technologies and innovations, step-up efforts to address the insecurity issues to ensure security of food in the State.*

**Keywords:** ZACAREP, Food, food security, challenges

### Introduction

Agriculture in its natural sense is the life supporting activity that keeps the society on the wheel of progress and mainstay of most progressive societies. The survival of any society to a large extent depends on agriculture. Agriculture focuses on food production, cultivation of crops and raising of livestock for sustainability of any society. Achieving food security in any society depends on how committed such society is towards the well-being of her members. Food is one of the basic needs of every human being. Not only is more food needed by individuals, quality and nutritious food is needed by individuals to live, stay health and enjoy a happy and productive life (FAO, 2022). The right to food is recognized in the 1948 Universal Declaration of Human Right (UDHR Article 25(1) as

part of the right to adequate standard of living and is enshrined in the 1996 International Convention on Economic Social and Cultural Rights (United Nations Human Right (UNHR), 2019). The convention proclaimed that all human being, regardless of race, colour, sex, language, religion, nationality, birth or other status, have the right to adequate food and to be free from hunger. (FAO, 2022)

According to the World Food Summit as cited by United States Agency for International Development (USAID) (2023), food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food required to live healthy life. Achieving food security has become a top priority of many nations including Nigeria. Many organizations such as Food and Agriculture Organization (FAO), World Food Programme (WFP), International Fund for Agricultural Development (IFAD), and World Health Organization (WHO) are collaborating with different governments with the aim to alleviate hunger, reduce the population of malnourished people and achieve global food security(Matemilola & Elegbede, 2017).

In the context of this write up, food security refers to a condition where farmers in Zamfara State produce adequate food for all the population, and the population has access to adequate means (resources) to acquire foods, and utilize them to reach a state of nutritional well-being. Comprehensive Agricultural Revolution Programme is an agricultural policy of the Zamfara State government which is aimed at improving productivity and enhances food security. ZACAREP was commissioned in 2004 and it is still in existence. Its major emphasis is to identify and plan agricultural activities and methods that would be suitable for the development of agro-based economy focusing on implementation strategies using agricultural technology by local farmers to improve productivity and enhance food security in the local communities (Zamfara State Government, 2021). It has the following objectives according to Sani, (2018):

- a) Increase crop production by small and medium scale farmers of Zamfara through the dissemination of improved and proven crop-based technology,
- b) Crop intensification through the promotion of animal traction technology to facilitate area expansion of cultivable land, reduction in drudgery and enhanced sustainable increase in food production,
- c) Routine seasonal capacity building of frontline extension staff along with resourceful farmers to develop quality extension staff for effective technology transfer,
- d) Promoting development of farmers association for linkages to saving and loan services, input supply and output marketing,
- e) Introducing cost-reducing, labour-saving agro-processing technologies suitable for micro-enterprise development with priority on identifying new income generating opportunities for women,
- f) Promoting the establishment of private sector enterprises that will serve the smallholder farmer sector, especially for inputs (improved seed, fertilizer and agrochemicals), marketing and value-adding,

- g) Increasing meat production through the provision of full package of bulls, rams, goats etc., feeds, drugs and mineral salt with improved livestock feed management technology to farmers,
- h) Improvement of the nutritional status of rural populace through the dissemination of improved food processing and utilization techniques.

Zamfara State is known for its agricultural potentials. It's an agrarian state that prides itself as the home of agriculture with a slogan "Farming is our pride" About 82% of her population are living in rural areas and depending on agriculture as a means of livelihood (Chonoko, 2022). However the agricultural sector is mostly small and medium scale with majority of the farmers having small land holding (Sani 2018). According to Sani (2018), traditional foods such as millet, soya bean, maize and other cash crops such as cotton are produced in the State. Given the role of agriculture in stimulating the economic growth and development of Zamfara State, the government recognizes that investing in agriculture can increase crop production and promote food security. The Zamfara Comprehensive Agricultural Revolution Programme (ZACAREP) was therefore created to bring about a total revolution of the agricultural sector so as to increase food production and promote food security in the State. Creating the agency, government envisaged that high economic growth rate is possible when agricultural production is significantly increased, and higher output will directly reduce hunger and bring down cost of foods (Sani, 2018). Another postulation that encouraged the establishment of ZACAREP is that it is community driven, and relies on the participation of private sector and lead investment in production activities. It is also technology-driven with government playing a leading role in the agricultural development efforts (Zamfara State Government, 2021). Therefore, the vision of ZACAREP was indeed timely and all important to a State whose poverty rate stood at 73.98% with 6th position in the poverty ladder of states in Nigeria (Ekott, 2023).

### ***Promoting food security***

The first activity that was implemented in the programme towards promoting food security was the conduct of Bench mark survey. This is because, for any agricultural development programme to succeed, requires a careful planning based on accurate information on what is on ground. It was therefore imperative to establish a bench mark survey so as to allow for the identification of the gap that existed between what obtains at present and the achievable potentials that can be attained in the future which serves as criteria for monitoring the programme's efficiency. After the conduct of the survey, activities were mapped out to achieve the objectives of the programme which include capacity building which trained about 560 technical supervisors, 320 field agricultural staff and training of about 10,000 target farmers. The objective of this train-the-trainer training was to orient the participant towards managing the programme. There was also training on organization and strengthening of farmers' cooperative and field agricultural staff for better management operations Furthermore, there was crop-based technology training which trains about 360 farmers on crop-based technologies, in order to improve their farming technologies. Stakeholders' workshop was also conducted in the State capital involving suppliers and service providers. After the training, some reputable companies were identified which resulted in the procurement and distribution of improved seeds, fertilizers and agro-chemicals to farmers at a subsidized prices.

(Comprehensive Agricultural Revolution Programme (ZACAREP: Working Document for Agriculture, UD).

Under the ZACAREP programme, credit facilities were granted to farmers of different categories. In some it was in form of cash and kind such as, fertilizers, improved seeds, and agrochemicals, money for labour and insurance cover which benefited about 6000 farmers. Another category of farmers, 142000 in number, received 2 bags of fertilizer to pay back after harvesting their crops. On the other hand, the medium and large scale farmers were granted loans ranging from 1-5 million to 5-50 million respectively but with stringent conditions attached, one of which was to open account with a deposit of 25% of their total amount required and belonged to farmers groups.

There was also provision of logistics to frontline extension staff. The government in order to ensure that effort made did not encounter any hitch, provided all the requirements for staff in terms of mobility, for example, 320 motorcycles were provided to field officers at a subsidized price, payment of over 2.8 million on monthly basis to field officers as project allowance, provision of working materials such as spring balance, measuring tapes. Others are ropes, extension bags, rain coats, rain boots and spraying equipment (Zamfara state government, 2020). The government provided enough money for supervisors and adequate arrangements were made for them to monitor the various activities that promote food increase in the state.

In the area of marketing strategies, there was a buy-back arrangement where the government agreed to buy what is left in case of any bad market from the farmers produce. In order to ensure the success of ZACAREP in promoting food security in the State, government involved traditional rulers as the chairmen of ZACAREP committee in their districts. The entire loans disbursed were guaranteed by traditional rulers and chairmen of the Local government areas. This was to ensure timely return of the loans to allow other farmers opportunity to access such loans.

Looking at the programme, it is evident that appreciable progress had been made in the area of food security in the state, since there are increase in crop production and income of farmers from 12-15% at the initial stage and 48-60% in the subsequent years, cultivation of additional 56,000 hectares of farm land for crop production, a lot of youths in the rural areas were also gainfully employed on farms to provide the needed labour for farm operations. About 420 frontline extension staff received training to improve their technology extension delivery approach with a total of 10,000 farmer groups formed as against 1000 at the beginning with a projection of about 40,000 farmer groups in three years. However this does not mean that there were no challenges.

### **Challenges**

The significant roles that ZACAREP played in promoting food security, was met with certain challenges. Such challenges include among others, animal traction technology. Animals used for this technology is a special breed that requires special attention in terms of maintenance. The cost of maintenance is high; huge amount of money is needed to feed and maintain the animals. In addition, the case of cattle rustling and armed banditry have affected the breeding and training of animals for farm; hence they are in short supply. Zamfara State Emergency Management Agency, reported by Chinoko (2022) that about 548,502 animals were rustled from the 14 LGA of Zamfara State while about 14,404 persons kidnapped from 2021 to 2022. Income generating opportunities for

women was difficult to achieve due to cultural influences. Majority of the women are in purdah, therefore could not participate fully in agricultural activities. Many researches have shown that women in purdah often have reduced access to credit extension services and agricultural training programmes and disruption in knowledge transfer. This is a setback to agricultural development in the state (Musa, 2018). Furthermore, routine seasonal capacity training and re-training of frontline extension staff for effective technology transfers suffered a setback due to poor funding as a result of the prevailing economic hardship in the country, this led to the short supply of quality extension workers. Political and ideological differences and corrupt practices also constitute major challenges to the programme. Inability of farmers to re-pay loan was another concern which emerged due to stoppage of farming activities and closure of farmer's market. Means of livelihood of so many farmer beneficiaries in the state reduced and many farmers could not meet up in their financial obligations to repay loans collected through ZACREP(ZACAREP: Working Document for Agriculture, UD). Some participants relocated to other states and some to neighboring countries such as Chad, Niger, and Benin republic due to insurgency (Nuhu, 2019). Others are late disbursement of loans to farmers. When loans are disbursed late, such loans will not be utilized for agricultural purposes again. Added to this is giving loan to non-genuine farmers. All these will certainly contribute to food insufficiency in the state.

### **Conclusion**

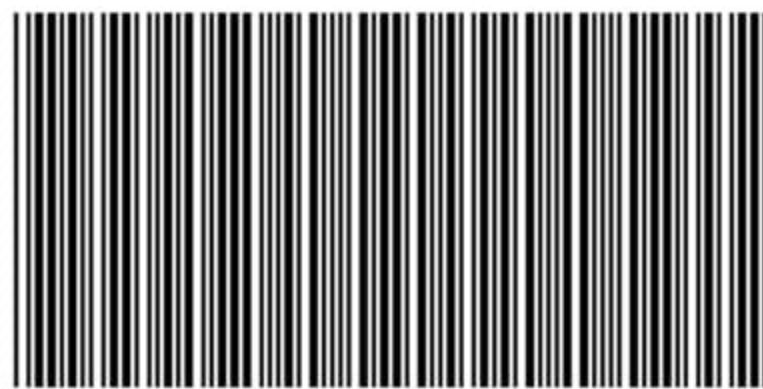
Achieving food security has become a top priority of many nations including Nigeria. Food security entails a condition where farmers in Zamfara State produces adequate food for all the population at all times, and the population have access to adequate means (resources) to acquire food and utilize them to reach a state of nutrition well-being. Zamfara State being an agrarian state with its agricultural potentials needs to preserve the process and products so that food will be available and at the same time affordable at all times. The sustained effort of Zamfara State government through ZACAREP in promoting food security will improve food production, crop intensification; promote development of farmers association for linkage to saving and loan services, input supply and output marketing and other benefits in the state. Of course these are possible if all the highlighted challenges are ameliorated.

### **Suggestions**

Realizing the importance of securing food for use as at when due. The writer suggests that government of Zamfara state, should increase its support to farmers in terms of provision of necessary modern agricultural technological innovations that can improve agricultural development and promote food security in the state in the areas of improved varieties of crops, capacity building and provision of financial services to farmers. Furthermore, security issues should be handled with utmost importance because food security is not possible with human and environmental insecurity. Also government policies on agriculture should be a continuous one so as to avoid politicizations of issues to the detriment of the populace.

## **References**

- Chonoko, H. (2022). Armed banditry and food security in Nigeria, An assessment of North-west geopolitical zone in perspectives. Abuja: National Defense College, Nigeria.
- Dansadau, Y. (7th July, 2020). Why some agricultural polices cannot work. in Nigerian, Tribune.
- Ekott, N. (March, 6th 2023). 2.5 million People to face food insecurity in Nigeria. Retrieved on 30th June, from [www.premiumtimes.ng.com](http://www.premiumtimes.ng.com).
- Food and Agricultural Organisation (2022). The state of food security and nutrition in the world 2022. Transforming food systems for food security, improved nutrition and affordable healthy diets for all. FAO <https://doi.org/10.4060/cc0639en>
- Matemilola, S. & Elegbede, I. (2017). The challenges of food security in Nigeria. Open Access Library Journal, 4, 1-22.
- Nuhu, A. R. (2019). Armed banditry, kidnapping and cattle rustling in Zamfara State, Nigeria: a way forward: Being a paper presented at a joint meeting on the security situation in Zamfara State: a way forward at the Defense Headquarters, Abuja, Nigeria, on 24th April, 2019.
- Musa, A. (2018). Crop intensification (definition, objectives, advantage). Retrieved on 3rd July 2023, from: <https://agriculturistmusa.com/crop-intensi%EF%AC%81cation/>
- Sani, H. (2018). Profitability of soybean production by small holder farmers in Nigeria: impact of an agricultural programme Zamfara state, Nigeria. International Journal of Agricultural science and Research, 8 (2), 59-79.
- United Nations Human Rights (UNHR) (2019). Universal declaration of human rights. Retrieved on the 20th October, 2023 from [www.un.org](http://www.un.org).
- United States Agency for International Development (USAID) (2023). Agriculture and food security from <https://www.usaid.gov/agriculture-and-food-security> on 23rd October, 2023
- Zamfara State Government, (2021). Budget performance report, 2021, quarter4. <https://accountantgeneral.zm.gov.ng/images/documnts/zamfarastatefourthquarterbudgetperformance.perf>. April 10th, 2024.
- Zamfara Comprehensive Agricultural Revolution Programme(ZACAREP). Working Document For Agriculture.



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