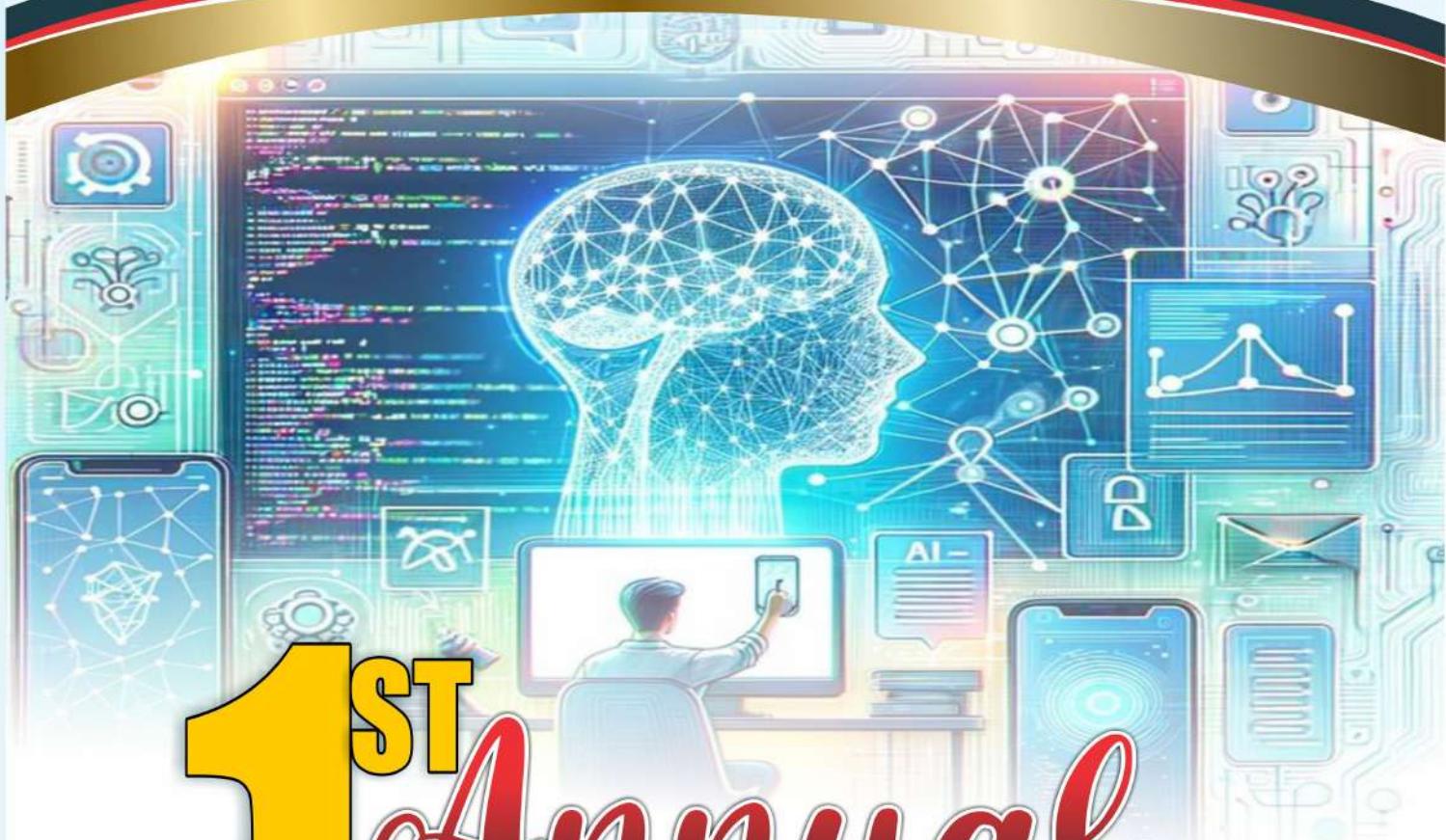




ASSOCIATION OF SCIENCE EDUCATORS ANAMBRA (ASEA)

<https://jisepublications.org>

**SCIENCE EDUCATORS AND DIGITAL LITERACY
IN THE 21ST CENTURY**



1ST
Annual
CONFERENCE
PROCEEDINGS 2025

Editor
Prof. Josephine N. Okoli

ASSOCIATION OF SCIENCE EDUCATORS ANAMBRA (ASEA)

**THEME: SCIENCE EDUCATORS AND DIGITAL LITERACY IN THE 21ST
CENTURY**

1ST ANNUAL CONFERENCE PROCEEDINGS, 2025

10- 12th July, 2025

Editor

Prof. Josephine, N. Okoli

Printed in Nigeria by:



Love Isaac Consultancy Services
No 1 Etolue Street, Ifite Awka, Anambra State, Nigeria
+234-803-549-6787, +234-803-757-7391

© ASSOCIATION OF SCIENCE EDUCATORS ANAMBRA (ASEA). All rights reserved

Published in June, 2025

ISBN: 978-978-695-937-5

TABLE OF CONTENT

Members of Conference Planning Committee	v
Local Organizing Committee (LOC)	v
Programme of Events	v
Meritorious Awardee of Dr. Samuel Alfayo Boh	vi
Foreword	viii
Preface	ix
Presidential Address	x
Keynote Presentation	1
Lead Paper Presentation	11
Paper 1	26
Digital Literacy Competence as a Predictor of Secondary School Students' Achievement in 21st Century Mathematics Classroom	
<i>Emekastandhope I, Dr. Njoku, Celestine</i>	
Paper 2	35
Effectiveness of Digital Literacy Skills in Personalized Learning of Preservice Mathematics Teachers: Implications for Achievement	
<i>Dr. Ogoke, Chinemeze James, Dr. Otumegwu Tina Uchenna, Achugamunu, Pius C, Uguru Ndubuisi Okon</i>	
Paper 3	44
Staff Level of Awareness on the use of Google Scholar as Learning Resource in Colleges of Education	
<i>Dr. Johnbosco O.C. Okekeokosisi, Kate C. Okoh</i>	
Paper 4	50
Utilizing Digital Literacy Tools as Panacea to Effective Teaching and Learning in Secondary Schools in Orumba South Local Goverment Area	
<i>Anaekwe Grace. U, Okoye Nestor E.</i>	
Paper 5	57
Physical and Health Education and Digital Literacy in The 21st Century	
<i>Ahueansebhor Emmanuel, Ayito, Victor Effiom, Urom, Rademene Emmanuel</i>	
Paper 6	67
Exploring the Virtual Learning Environment in the Teaching and Learning of Biology for Enhanced Students' Outcome.	
<i>Dr. Blessing Ifeoma Okafor, Chukwuma C. Ekechukwu</i>	
Paper 7	75
Assessing the Effectiveness of Online Platforms in Education for Teaching and Learning for Sustainable National Development	
<i>Doris N. Akhator, Inaya Adesuwa</i>	
Paper 8	84
Effects of Science Video Instructional Strategy On Students' Academic Achievement in Chemistry Among Secondary Schools in Yenagoa Metropolis, Bayelsa State	
<i>Dr. Moses John Billy</i>	
Paper 9	95
Internet of Things Enabled Smart Environmental Monitoring System Based on the Espressif System 32 Microcontroller	
<i>Udeze Jireh Chukwuma</i>	
Paper 10	107
Digital Literacy and Teachers' Effective Teaching of Mathematics	

in Public Secondary Schools in Oron Local Government Area of Akwa Ibom State, Nigeria	
<i>Dr. Ekpenyong Effiong Ibok, Dr. Raymond Ogbebe Ogar, Nene Amos Williams</i>	
Paper 11	117
Digital Literacy and Utilization of Educational Technologies among Basic Science Teachers in Anambra State: Implications for Effective Science Teaching	
<i>Prof. Okoli Josephine Nwanneka, Christian-Ike, Nwanneka Oluchukwu</i>	
Paper 12	127
Assessment of Digital Literacy of Computer Teachers in the Utilization of Computer Aided Instruction in Teaching Data Processing in Anambra Schools	
<i>Ibe Perpetual Nwakaego, Engr. Ololo Emmanuel Chimezie, Dr. Eze Irene Febechi, Mokwe Nkiru Celine</i>	
Paper 13	136
Contemporary Economic Realities and the Sustainability of Academic Programmes in Secondary Schools in Okpe Local Government Area, Delta State	
<i>Dr. Perekeme Peresuode, Okoye Grace Nwakaego, Onyeka Patience</i>	
Paper 14	145
Digital Assessment of School Climate and Its Predictive Influence on Chemistry Achievement among Secondary School Students in Imo State	
<i>Akanazu, Grace O., Dr. Akanazu, Eze C.</i>	
Paper 15	154
Effects of Google Classroom on Students' Achievement in National Business Certificate (NBC) Year 11 Accounting Students of State Technical Colleges	
<i>Chika M. Okonkwo</i>	
Paper 16	165
Physical and Health Education and Digital Literacy in The 21st Century	
<i>Dr. Ofordum, Maryann Chigozie, Obijekwu, Olivia Ogechukwu</i>	
Paper 17	168
Collaboration Between Science and Physical and Health Educators in Promoting Digital Health Literacy	
<i>Omeje Chigozie Sabina, Ogbonna Marachi Samuel</i>	
Paper 18	177
The Use of Video Analysis in Sports in The 21st Century: Advantages and Disadvantages	
<i>Dr. Theresa Nkiru Uzor, Dr. Anthonia Chinyere Uwa</i>	
Paper 19	185
The Influence of Digital Literacy on Students' Scientific Inquiry Skills: Educators' Perspectives in Orumba South Local Government Area, Anambra State	
<i>Okoli Nneka Chigozie, Nwankwo Glory Ure, Agbasi Obioma Lucy</i>	
Paper 20	195
The Impact of Pictures and Videos as Digital Tools in Teaching Physics in the Nigerian Education System	
<i>Atuluku Grace Ikoojo, Okpaneje Onyinye Theresa</i>	
Paper 21	200
Empowering Chemistry Educators with Digital Literacy for 21st Century Classrooms	
<i>Akubue Prince Chidi, Ezeabasili Peter Ikechukwu, Onukwube Sunday Ikechukwu</i>	

MEMBERS OF CONFERENCE PLANNING COMMITTEE

Dr. Moses, John Billy (Chairman)

Science Education Department
Faculty of Education, Niger Delta University
Wilberforce Island, Bayelsa State.

Ahueansebhor Emmanuel

Human kinetics and Sports Science Department
Faculty of Science Education,
University of Calabar,
Calabar - Nigeria.

Akanazu, Eze C.

Department of Chemistry
Alvan Ikoku Federal University of Education, Owerri,
Imo State, Nigeria

Dr. Ofordum Maryann C.

Physical and Health Education Department
Federal College of Education (Tech) Umunze,
Anambra State, Nigeria

Ass. Prof. Esther B. Enaregha (Sec.)

Isaac Jasper Boro College of Education Sagbama
Bayelsa State, Nigeria

Dr. Njoku Celestine

Department of Mathematics and Computer
Science Education, University of Calabar Cross
River
State, Nigeria

LOCAL ORGANIZING COMMITTEE

Mrs. Amaka Grace (Chairman)

Physical and Health Education Department
Federal College of Education (Tech) Umunze,
Anambra State, Nigeria

Ogbonna Marachi Samuel (Sec.)

Physical and Health Education Department
Federal College of Education (Tech) Umunze,
Anambra State, Nigeria

Usan Peter

Chemistry Department
Federal Technical College, Awka,
Anambra State, Nigeria

PROGRAMME OF EVENTS

- Opening Praying
- Chairman's Opening Remark
- Breaking of Kola nut
- Welcome Address by the acting President of the Association
- Keynote Presentation by Prof. Cecilia O. Ekwueme
- Lead Paper Presentation by Prof. Telima Adolphus
- About the Electronic Book / Unveiling of Book Chapter – E-Book launch
- Item 7
- Meritorious Award
- Paper Presentations

MERITORIOUS AWARD

CITATION OF Dr SAMUEL ALFAYO BOH



It is my pleasure and singular honour to be called upon to read a citation on one of the eminent Doctor that the family of Alfayo has ever produced.

People are not chosen for their comfort, they most often to prepare for a life of self sacrifice and even sufferings on behalf of other. And most often their calling is not for privilege but for service. Whichever prism you use in view him, Dr Samuel Alfayo Boh a class teacher of high repute, a man of integrity and fear of God, sacrifices and service for the betterment and advisement of humanity.

May, 18, 1969 marked the beginning of the steadily progressive son of Boh colored mother and the Shongomite father. This account of this childhood and youth in Gombe State shows the prince he had to pay for such a birth. It did not take long before he was revealed as a man of vision and mission as every step he took in both early life and now was clogged with success, and a wide breath of accomplishment.

Dr.Samuel Alfayo Boh spends is early life in Boh with his parent. He attended Boh primary school from 1976 to1984 exposed his qualities as a gifted child enable him to proceed to Government Science Secondary School Kaltungo 1984 to 1987,Teachers College Gombe 1988 to 1990 the exceptional this qualities made way for him to enlist to College of Education Azare 1993 where he bagged National Certificate in Education (NCE) while in Azare, he was elected parliamentary student union 1994 to 1995 session and thereafter in the year 1987, he proceeded to famous University of Maiduguri Borno State and had a Bachelor of Education and passed with flying colours in 2000. Diploma in World Evangelism Mission Training Institute in Borno State in 1999. In 2001, the indefatigable Samuel was drafted in to the National youth service scheme in Tsafe, Zamfara State his service witnessed a continued story of one success after another like the Nehemiah of the Holy Bible. As a man who fully understand what benefits education could bring his way when tapped. Dr Samuel did not hesitate to define where he was headed for in that direction. In 2004, he gain admission to University of Maiduguri, Borno States as an intelligent

student, he graduated in 2008 with Master of Education in Curriculum and Instruction (M.ED). Diploma and Certificate in computer 2009. In the year between 2013 to 2016 he bagged Masters in Guidance and Counseling in Theological Seminary College Kaltungo in Gombe State. Moreover, the influence this celebrated academia exerted on him equipped him to master the techniques of research, the canons of interpretation and reconstruction of academic research, the craft and skills involved and teacher – students relationship in 2010 he proceeded to one of the best University in Nigeria University of Nigeria Nsukka in Enugu State and come out with Doctor of philosophy (Ph.D) in Curriculum and Instruction.

A man with a formidable profile charismatic personality, Dr Samuel is indeed an achieve per excellence he has not only carved a niche for himself, but has also made name and reputation in Nigeria. He has always impacted positively in the lives of everyone he meets. He has also shown high sense of professionalism and dedication to the service of humanity. On several occasion Samuel has interrupted his travels to attend to civilian, accident victims and he has truly saved a lot of lives.

Dr. Samuel Alfayo Boh started his civil service career as a classroom teacher; he had a little starting with the noble teaching profession. In 1996 he took appointment with Boh primary school, Labeke primary school in 1997, Kulishin primary school 1999, Pivotal Teachers Training Programme Lapan in 1999. In 2000 He moved to Government Day Secondary School Boh. In 2000 Tutor Senator T.U. Wada Educational Emancipation Scheme. Presently, lecturer with Federal University Kashere, in the Department of Educational Foundations

Dr. Samuel is a versatile personality of note and a man of many parts. He is fondly referred to as sport, Author and a born teacher of good repute. In his romance with great academics, he has received more than twenty awards, member of many associations, he has presented more than thirty academic papers in both international and national journals, he has published Ninety journals, sixteen book chapters, he has written eight books, presently chairman board of governors Jim Collis Kufai, fellow members of more than seven associations, former permanent commissioner sports commission Gombe State, chairman and secretary of many association, He is happily married to Mrs. Abigail Samuel and blessed with many children.

Having described himself as an enterprising person who has excellence attached to his name, Dr Samuel Alfayo Boh evinces a friendly disposition towards his students. He is a strong advocate of treating students with understanding and affection, Dr. Samuel incontestably mentors, counsels, reprimands, sympathizes and assists his young and old alike. Some of his students describe him as a luminous teacher whose passion for academic scholarship is infectious and whose pedagogical principle skills and friendly disposition are so admirable and endearing that attendance at his lectures is always high and far outstrips most others.

Ladies and gentlemen, Dr. Samuel Alfayo Boh is a small figure on the physical appearance. It is my great honour and privilege to call on this academic repute, erudite, scholar, indefatigable and inspirational mentor, community lover, and motivator ardent love of Shongomite culture and humanist to graciously joint the chairman and other for the formal presentation of this fabulous awards to acknowledge to celebrate his hard word, disciplines, kindness, humanness and commendable role he is playing in the academic careers and character-building

FOREWORD

It is with profound pride and optimism that I write this foreword to the maiden Book of Conference Proceedings of the Association of Science Educators Anambra State a timely and significant academic documentation that captures the robust engagements, research contributions, and transformative ideas presented at the 1st Annual Conference of the Association, scheduled for July 10, 2025, in Awka, Anambra State, Nigeria.

The conference, with the theme “Science Educators and Digital Literacy in the 21st Century,” could not have come at a more opportune moment. In an age where digital transformation is rapidly redefining education, economy, and society, the role of science educators in equipping learners with not only scientific knowledge but also digital competencies has become more critical than ever. The conference offered a strategic platform for scholars, researchers, policy makers, and practitioners to interrogate, share, and shape new pedagogical paradigms that incorporate digital literacy into the fabric of science education.

In his address of welcome, the Acting President of ASEA, Dr. Johnbosco O.C. Okekeokosisi, delivered a compelling call to action. He set the tone by acknowledging the historical importance of the event and the noble mission of ASEA to champion science education across Anambra State and beyond. His words reflected a clear vision of collective progress, innovation, and institutional synergy. Most notably, Dr. Okekeokosisi emphasized that digital literacy in science education is not merely about embracing technological tools but about empowering both educators and learners to critically engage, create, and transform scientific knowledge for societal advancement.

This compilation of conference proceedings is more than a record of presentations—it is a testimony to the enduring commitment of Nigerian science educators to adapt to global educational trends. With insightful keynote and lead paper presentations by eminent scholars such as Prof. Cecilia O. Ekwueme and Prof. Telima Adolphus, participants were exposed to a breadth of ideas, models, and classroom innovations. These contributions are now immortalized in this volume, accessible to researchers, policymakers, and education stakeholders worldwide. The articles by contributors are of quality standard and intimately related to the conference theme.

The proceedings are also a celebration of collective effort. Dr. Okekeokosisi rightly acknowledged the contributions of past leaders of STAN, the Executive Principal of Igwebuike Grammar School, the Local Organizing Committee, and institutional partners who ensured the success of this pioneering event. Their efforts reflect a shared belief in the transformative power of science education when driven by vision, collaboration, and strategic digital integration.

This book also symbolizes the maturity and forward-thinking disposition of ASEA. With its proceedings published online in the Association’s official website (www.jisepublications.org), ASEA is setting a benchmark for academic visibility, accessibility, and global relevance. The initiative aligns perfectly with the conference theme—leveraging digital platforms for knowledge dissemination.

As readers engage with the rich content within this publication, it is my hope that they find not only knowledge but also inspiration to further the cause of digital transformation in science education. May this volume serve as a resource, a reference, and a rallying point for continued innovation, research, and excellence in digital literacy, science teaching and learning.

Prof. Marcellinus C. Anaekwe
manaekwe@noun.edu.ng
National Open University of Nigeria,
Abuja.

PREFACE

Digital literacy in the 21st century is crucial for science educators to effectively teach and prepare students for a rapidly evolving scientific and technological world. Science educators must embrace digital tools and resources to enhance their teaching methods and foster students' scientific literacy, critical thinking and problem-solving skills. This includes leveraging online platforms, using educational technologies and digital content to create engaging and meaningful learning experiences.

In this conference proceedings efforts has been made towards promoting the use of digital tools in science education.

Prof. Josephine N. Okoli

Science Education Department

Nnamdi Azikiwe University, Awka,

Anambra State, Nigeriascience

ADDRESS OF THE ACTING PRESIDENT OF ASSOCIATION OF SCIENCE EDUCATORS ANAMBRA (ASEA), DR. JOHN BOSCO O.C. OKEKEOKOSI, AT THE OPENING CEREMONY OF THE 1ST ANNUAL CONFERENCE HELD IN AWKA, ANAMBRA STATE, NIGERIA ON 10TH JULY, 2025

Theme: “Science Educators and Digital Literacy in the 21st Century”

Distinguished Guests,

Mother of the Day, and Executive Provost of the Federal College of Education (Technical), Umunze, Prof. Tessy O. Okoli

Past and Immediate Past Chairmen of the Anambra State Chapter of the Science Teachers Association of Nigeria (STAN), Prof. C.V. Nnaka, Dr. Christiana U. Ezenduka Past and Immediate Past Secretary of the Anambra State Chapter of the Science Teachers Association of Nigeria (STAN), Dr. Chinwe B. Njelita, Mr. Kingsley N.C. Ezeokeke

The Executive Principal of Igwebuike Grammar School, Awka, Mrs. Amaka Ifebili

Our Esteemed Keynote and Lead Paper Presenters, Profs: Cecilia O. Ekwueme, Telima Adolphus

Meritorious Awardee, Dr. Samuel Alfayo Boh

Representatives of Educational Institutions, Pharm. Adauzoh C. Joe-Obasi

The Conference Planning Committee

The Local Organizing Committee (LOC),

My Fellow Science Educators,

Ladies and Gentlemen.

It is with deep humility and immense pleasure that I stand before you today as the Acting President of the Association of Science Educators Anambra (ASEA), to welcome you all to this historic gathering — the **1st Annual Conference** of our noble Association, taking place here in the vibrant capital city of Awka, Anambra State.

This moment marks a milestone in the life of our Association and in the educational landscape of our dear state. Today, we have gathered not just to deliberate on academic issues, but to collectively reflect on and shape the role of science educators in a rapidly changing digital world. The presence of each one of you here is a testament to your dedication to the advancement of science education in Nigeria, and in particular, in Anambra State.

Let me begin by extending heartfelt gratitude to our **Mother of the Day**, the erudite and distinguished **Executive Provost of the Federal College of Education (Technical), Umunze**, for honoring our invitation. Your presence is a great source of inspiration, and we are immensely grateful for your unwavering support towards science and technical education in the state. The Host and Board of Directors, Prof. Josephine N. Okoli, Prof. Isaac N. Nwankwo, Prof. M.C. Anaekwe

Chairman of the occasion Ass. Prof. Peter I.I. Ikoku

To the **Past Chairman and Immediate Past Chairman of Anambra State STAN**, we salute you. You laid the foundation for excellence and integrity in science education upon which ASEA continues to build. We are proud to carry forward the torch of progress you lit. Your legacies continue to motivate and guide our mission as science educators.

We also sincerely appreciate the **Executive Principal of Igwebuik Grammar School, Awka**, for the enormous and selfless support towards the successful hosting of this conference. Your generosity and logistical assistance have played a crucial role in bringing this vision to reality. We are proud to host this conference within your institution, and we thank you for embracing the ASEA family.

Special thanks also go to our **Keynote and Lead Paper Presenters**, whose scholarship and insight will surely enrich our understanding of the conference theme: *“Science Educators and Digital Literacy in the 21st Century.”* You are the thought leaders that will help us navigate this complex but exciting intersection between pedagogy and technology.

Meritorious Awardee, **Dr. Samuel Alfayo Boh**, whose contributions to teaching and learning in tertiary institutions lead to the foundation of our members.

The **representatives of educational institutions**, both public and private, we acknowledge your partnership and presence. Your contributions, ideas, and institutional support are essential in sustaining quality science education. Together, we can foster a generation of scientifically literate citizens equipped for the demands of the 21st century.

Let me also specially recognize the tireless efforts of the **Local Organizing Committee (LOC)**. You have worked round the clock, attending to logistics, communications, hospitality, and a host of behind-the-scenes responsibilities. This conference would not be possible without your selfless commitment. I say, “Well done!”

This conference has its theme **“Science Educators and Digital Literacy in the 21st Century”**. The theme is very apt considering the fact that we are in the digital age. Thus, the committee on conference looked inward to provide this conference theme for science educators to understand, educate, re-educate, write and deliberate on the effective use of digital tools – technologies in our present time for effective instructional delivery. Participants will be taken through hands-on and minds-on activities in various sessions and they will find the conference package very rewarding. I invite you to pay attention during keynote address to be presented by Prof. Cecilia O. Ekwueme, the Dean Faculty of Science Education, University of Calabar, Cross-River State, Nigeria. Your continuous attention is also needed during the lead paper presentation of Prof. Telima Adolphus of Rivers State University, PortHarcourt, Nigeria.

To all **participants** – educators, researchers, students, policy makers – thank you for making out time to be here. Your presence signifies hope for the future of science education. I urge you to make the most of this gathering by networking, exchanging ideas, and exploring new strategies to embed digital literacy in science classrooms and curricula.

As we delve into this conference theme, let us remember that digital literacy is not just about the use of devices or softwares. It is about empowering both teachers and learners to navigate, create, and critically evaluate digital content. It is about transforming science education into an interactive, engaging, and accessible experience that prepares our students for global competitiveness. We must rise to this responsibility with courage, collaboration and innovation.

As we officially declare this conference open, let us do so with a shared sense of purpose and vision. Let us reflect deeply, discuss intelligently and leave this gathering better equipped to build a technologically savvy and scientifically vibrant society.

Ladies and Gentlemen, it may interest us to note that this young growing association has an online Journal, Electronic Book (e-book) and Conference Proceedings. The E-Book and Conference Proceedings were hosted online at the association's website (jisepublications.org) for its visibility. It is obvious that this association has come to stay. To God be the glory.

Once again, I welcome you all to the 1st Annual Conference of the Association of Science Educators Anambra (ASEA). May our deliberations be fruitful, and may the bonds we forge here today grow stronger for the benefit of science education in our state and beyond.

Thank you, and God bless you all.

Dr. Johnbosco O.C. Okekeokosisi

Federal College of Education (Tech) Asaba,
Delta State, Nigeria
Acting President, ASEA
10th July, 2025

PAPER 3

STAFF LEVEL OF AWARENESS ON THE USE OF GOOGLE SCHOLAR AS LEARNING RESOURCE IN COLLEGES OF EDUCATION

¹John Bosco O.C. Okekeokosisi, ²Kate C. Okoh

^{1,2}Computer Education Department,

^{1,2}School of Secondary Education (Science),

^{1,2}Federal College of Education (Technical), Asaba, Delta State, Nigeria.

Abstract

This study sought to examine staff level of awareness on the use of google scholar (GS) as learning resource in colleges of education. The study was a descriptive survey carried out in state colleges of education in south-east region of Nigeria with the population of 623 college of education academic staff. Simple random sampling techniques balloting without replacement were used to select only state colleges from the region. Purposive sampling were employed to select 3 out of 5 state colleges in the south east geo-political zones. Questionnaires were issued out to respondents. One hundred and fifty (150) fully filled questionnaires were returned. Mean ratings were used in data analyses. The findings revealed that all are not aware of GS as learning resource. The study recommends among others that governing council of colleges of education should adopt the use of Google Scholar (GS) for assessment rather than manual assessment.

Keywords: Staff Level of Awareness, Google Scholar, Learning Resource

Introduction

Before the civilization of man, man had been acquiring knowledge, information, facts, and ideas on how to survive and develop his environment. This lead to provision of a place for documentation of ideas, information, facts and knowledge for consultation, transfer of knowledge for easy retrieval and acquisition of knowledge for willing learners. A place where collection of resources, often include books, periodicals, and digital materials, organized and maintained for use is called library.

Olubiyo (2022) defined library as a learning centre where both the faculty and students depend heavily for information is necessary in pursuing their individual and collective goals for knowledge acquisition. It is a building, an instructional and self-development centre which operate as an integral part of the entire environment that is conducive and charming environment for students to learn. It equally help learners to cultivate good study habits that must be the topmost priority of any developed country. Monu, Bambose and Okunnu (2020) points that the general goal of library is to acquire and provide information needs for its users. Such can be accessed through books, periodicals, printed and non-printed materials. This separate place for study or for book keep are not seen as ideal place since information gardened for a particular purpose are not properly disseminated to the users. Thus the invention of Information and Communication Technology (ICT) in the mid of 20th century to the other modern means of documentation, fast, easy access and retrieval of information, ideas and knowledge.

Google scholar (GS) is modern means of documentary and information retrieval that utilizes cloud computing infrastructure. It is 21st century invention of Alex Verstak and Anurag Acharya in 2004. Their goal was to improve access to scholarly literature - documentary by making it easier for researchers to find and access academic information. Panda and Kushwaha (2023) described

Google Scholar as a major search engine that includes full-text journal articles, technical reports, and preprints theses in addition to indexing. It uses a variety of methodologies, including the page rank algorithm to gather data on the citation impact of individual articles, researchers or scientific-scholarly journals. Van Noorden (2014) further added that google scholar (GS) is a cost-free, and unsurpassed entry point or modern library for scholarly literature - documentary on the web for anyone with an interest. This search engine- database for documentary is seen as transformation in library that possess the following features; citation tracking, breadth of coverage, free and accessible, focus on scholarly resources, link to full text and related articles, user-friendly interface, open access, integration with libraries (Neuhaus, Neuhaus, Asher & Wrede, 2006). It equally provide a wide and comprehensive search for academic literature across various disciplines.

Studies conducted by Zientek, Werner, Campuzano and Nimon (2018), Panda and Kushwaha (2023) portal GS as an innovation that place a burden on researchers to stay current with advances in ICT. Those studies conducted were not empirical studies rather on the use of google scholar for research and research dissemination, google scholar's contribution to scholarly pursuits: A comprehensive overview. The study is similar to the present study since it researched on the uses of google scholar and google scholar contribution but differs to the present study.

The advent of awareness has made quite a good number of people to receive education on emerging technology through different teaching - learning strategies, attending of seminars, workshops and conferences (Obiadazie & Okigbo, 2018). Awareness raises consciousness and knowledge about events or objects and its benefits like technology. It is seen as central determinant of users' attitude towards any technology and an important factor that determines usage of various ICT in the digital environment. Information is meaningful and useful only if users are aware of its availability at the time it is needed (Haruna & Mabawonku, 2004). Awareness of GS can be directly linked to its use because one has to be aware that something exist before making use of it. Any cloud computing infrastructure which users are not aware of may not be properly used. A researcher who is not aware of google scholar may be deterred from using them ignorantly. Therefore, what is fundamental to the provision of google scholar is creation of user awareness. Thus, the level of awareness of GS usage by college of education academic staff in Nigeria is not yet established hence the need for the present research.

Statement of the Problem

Despite the relevance of google scholar (GS) to research, under development of our country and government low contribution to education could be attributed to nonchalant attitude of college of education academic staff - researchers towards research, lack of interest and zeal for self- develop. This affects all levels of education in Nigeria. Thus, the usefulness of google scholar in satisfying information and research needs of the research students and researchers – academic staff as a whole, the lingering effect associated nonchalance and willingness to acquire new knowledge is affecting the level of graduates institutions of learning are producing. Similarly, there have been limited studies conducted to examine the level of college of education academic staff awareness on the use of google scholar as academic resource documentary in Nigeria colleges of education.

Purpose of the Study

The purpose of this study is to investigate;

1. staff level of awareness on the use of GS as learning resource in colleges of education

Research Question

The research question guided the study;

1. to what extent are staff level of awareness on the use of GS as learning resource in colleges of education?

Methodology

This research study employed descriptive survey. The study was carried out in south-east Government Colleges of Education in Nigeria. South-east region has 5 states. Each state may have one federal and one state college of education or both. The population consisted of 623 College of Education Academic Staff present at their emergency congress of various chapters in the south-east region. Simple random sampling techniques balloting without replacement were used to select only state colleges in south east geo-political zones out of the six geo-political zones in Nigeria. South east zone has 5 state colleges which all were accredited and approved to admit students for Nigeria Certificate in Education (NCE) and they are all affiliated to universities for degree awarding. Thus, purposive sampling were employed to select 3 out of 5 state colleges in the south east geo-political zones. The selected colleges - institutions of higher learning were established with the regulation of minimum standards as specified by National Commission for Colleges of Education (NCCE) amended Act of 1993. The Emotional Self-Awareness Questionnaire (ESQ) known as emotional self-awareness was developed by Kyle D. Killian in 2011 was adapted for the study. The adapted questionnaire was titled “Staff Level of Awareness on the use of GS as Learning Resource in Colleges of Education (SLAGSLRCE)” were validated by experts. The validated instrument was made up of two sections. Section A contains the introductory aspect of what is expected of the respondents and four point likert scale of the instrument. The scale ranges from Strongly Agree (SA) - 4 points, Agree (A) – 3 points, Disagree (D) - 2 points and Strongly Disagree (SD) - 1 point to elicit responses based on the staff level of awareness on the use of GS as learning resource in colleges of education. Its reliability indices were established to be 0.82 using Cronbach Alpha. The instrument were administered to College of Education Academic Staff during their COEASU congress (meeting) by research assistants and the researchers. The administered instrument were collected few minutes before their dismissal. Already collected instrument were handed over to the researchers on the spot. Data were analysed using mean ratings. A criterion mean rating of 2.50 was used for decision taking. 2.50 and above were regarded as strongly agree (SA) on awareness while below 2.50 were regarded as disagree (D) on awareness.

Result

Research Question 1: To what extent are staff level of awareness on the use of GS as learning resource in colleges of education?

Table 1: Staff Level of Awareness on the use of GS as Learning Resource in Colleges of Education

S/N	Awareness of Google Scholar (GS)	SA	\bar{X}	A	\bar{X}	D	\bar{X}	SD	\bar{X}	Grand \bar{X}	Remark
1	I am aware of GS	33	4.5	112	1.3	1	1	4	37.5	0.3	Low level
2	I can make use of GS	7	21.0	2	75	89	1.7	52	2.9	0.7	Low level
3	I make use of GS via a library	8	18.7	33	4.5	109	1.4	0	0	0.2	Low level
4	I access GS via other medium	0	0	8	18.8	57	2.6	85	1.8	0.2	Low level
5	I use GS for research purposes – documentary	18	8.3	41	3.7	2	75	89	1.7	0.6	Low level
6	GS provide prompt update	19	7.8	14	10.7	38	3.9	79	1.9	0.2	Low level
7	Author profile view	14	10.7	19	7.8	38	3.9	79	1.9	0.2	Low level
8	Multidisciplinary nature	10	15	58	2.6	21	7.1	61	2.5	0.2	Low level
9	GS provide a good number of search results	33	4.5	112	1.34	4	37.5	1	1	0.3	Low level
10	GS provide more full text articles	18	8.3	89	1.7	2	75	41	3.7	0.6	Low level
11	GS search results contain relevant articles only	52	2.9	89	1.7	2	75	7	21.4	0.7	Low level
12	Search results can be saved in any format	8	18.7	85	1.8	0	0	57	2.6	0.2	Low level
13	Advanced search facility	14	10.7	65	2.3	61	2.4	10	15	0.2	Low level
14	Citation tracking	10	15	12	12.5	62	2.4	66	2.3	0.2	Low level
15	Bibliometric indicators	15	10	97	1.5	30	5	8	18.8	0.2	Low level
16	Journal title search	0	0	5	30	18	8.3	127	1.2	0.3	Low level
17	Author search	3	50	59	2.5	17	8.8	71	2.1	0.4	Low level
18	Subject search	57	2.6	4	37.5	16	9.4	73	2.1	0.3	Low level
19	Keyword search	9	16.7	10	15	22	6.8	109	1.4	0.3	Low level
20	Title search	2	75	9	16.7	24	6.3	33	4.5	0.7	Low level
Cluster Mean										0.4	Low level

Table 1 gives judgment of the respondents on twenty items relating to GS awareness based on their experience. Mean rating of each staff responses along with the cluster mean points at strongly disagree (SD) on awareness level of staff on GS as learning resource. This indicates that the extent to which staff of colleges of education are aware of GS is low since each staff at the college had a mean rating below 2.50 which is the acceptable cut-off mean. Again, the cluster mean is 0.35 shows a general low level of awareness on GS as learning resource.

Discussion

The results demonstrate that all respondents strongly disagree that they are aware of Google Scholar (GS) as learning resource. This finding is in accordance with the findings of Kavitha (2022) on awareness and utilization of google scholar among research scholars in Periyar University, Salem. Kavitha's research work still shows that 40% of participants were very familiar with google scholar. The percentage of participants that were very familiar with google scholar is below average. Hence, the research conducted by Kavitha (2022) is related to the findings of the present study. The use of google scholar in research is one of the innovations that came up through technology. Awareness is essential for effective technology integration in education. It offers researchers – scholars various opportunities to do their work seamlessly if the packages are eventually adopted (Adelena & Ishola, 2020). Hamid and Asadi in Tella, Oyewole and Tella (2017) opined that scholars are becoming more aware of the quantity of scholarly papers searchable by Google; they are increasingly relying on Google for finding scholarly literature. Zientek, Werner, Campuzano and Nimon (2018) added that google scholar makes researchers and students to stay current with trends in research. It supports wilder coverage of articles and free access of research works. The fact that Google Scholar usually meets the information needs of the research might be the reason for its popularity but respondents in this study are not aware.

This low level of awareness of Google Scholar by staff in an institution could be attributed to the management. Obiadazie and Okigbo (2021) in their study pointed out that institutions level of awareness and usage of digital or technological tools lies on the sensitivity and exposure of the management of the institution. Management is the institutional backbone and the determinant of the societal growth and development. Therefore, the study of Obiadazie et al is similar to the present study

Conclusion

The rapid growth of technology and its advancement in digital age has changed the traditional method of research, its storage, retrieval and dissemination of scholarly information. Since it retrieves data from a range of resources, facilitates wider circulation of research works, citation tracking, research scholars could make use of it as a dependable tool for exhaustive information search on any topic. It equally helps to identify individual research works if uploaded online. Thus, the present study underlines the need for giving research scholars (COEASU) awareness about GS in scholarly community.

Recommendation

In the light of the findings revealed in this study, the following recommendations include;

1. Governing council of colleges of education should adopt the use of Google Scholar (GS) for assessment rather than manual assessment.
2. Organization of conferences, workshops and seminars for COEASU by NCCE and professional associations like Association of Science Educators Anambra (ASEA) and

Science Teachers Association of Nigeria (STAN) would create awareness for indexed journals.

3. Appointments of managers – governing council of colleges of education should be willing individuals that desires to learn always. This will promote the awareness and information driven level of staff in colleges of education.

References

Adelana, O.P. & Ishola, A.M. (2020). Assessment of teachers' awareness and proficiency in utilization of information and communication technology (ICT) packages in classroom instruction. *AJB-SDR*, 2(2); 121-130.

Haruna, I. & Mabawonku, I. (2004). Information needs and seeking behaviours of legal practitioners and the challenges to law libraries in Lagos, Nigeria. *Library Review*, 33, 69 – 87.

Kavitha, E.S. (2022). Awareness and utilization of google scholar among research scholars in Periyar University, Salem. *International Journal of Humanities and Social Science Research*, 8 (6); 132 -134.

Monu, J. O. , Bamgbose , A. A. & Okunnu, H. O. (2020). Effective Use of Library and its Impact on Students' Study Habits in Selected Universities in Lagos State, Nigeria. *Library and Information Science Digest*, 13 (6); 74 -84.

Neuhaus, C., Neuhaus, E., Asher, A., & Wrede, C. (2006). The Depth and Breadth of Google Scholar: An Empirical Study. *Portal: Libraries and the Academy*, 6(2); 127-141.

Obiadazie, R. E. & Okigbo, Ebele C. (2018). Awareness of cloud computing services by non-science undergraduate students in Anambra State. *SEJRSD*, 4 (2); 73 -96.

Obiadazie, R. E. & Okigbo, E. C. (2021). Extent of Use of Cloud Computing Services by Non-Science Undergraduate Students in Universities in Anambra State. *AJSTME*, 7(1); 67-74

Olubiyo, P. O. (2022). Use of Library as a correlate of undergraduate students exploration of library materials in Adeyemi College of Education, Ondo, Nigeria. *Library Philosophy and Practice* (e journal). Retrieved on 18th May, 2025 from <https://digitalcommons.unl.edu/libphilprac/7023>

Panda, S. & Kushwaha, V. (2023). Google Scholar's Contribution to Scholarly Pursuits: A Comprehensive Overview. In B. Partap and N. Joshi. *Digital transformation in libraries and information centres*. New Delhi: Today and tomorrow's printers and publishers.

Tella, A., Oyewole, M. & Tella, A. (2017). An analysis of perceived usefulness of google scholar by the post graduate students of the university of Ilorin Nigeria. *South African Journal of Information Management*, 19 (1); 1-9.

Van Noorden, R. (2014). Google Scholar pioneer on search engine's future. *Nature*. Retrieved on 18th May, 2025 from <https://doi.org/10.1038/nature.2014.16269>

Zientek, L.R., Werner, J.M., Campuzano, M.V. & Nimon, K. (2018). The use of google scholar for research and research dissemination. *New horizons in adult education and human resource development*, 30 (1); 39 – 46.