ASSOCIATION OF SCIENCE EDUCATORS ANAMBRA (ASEA)

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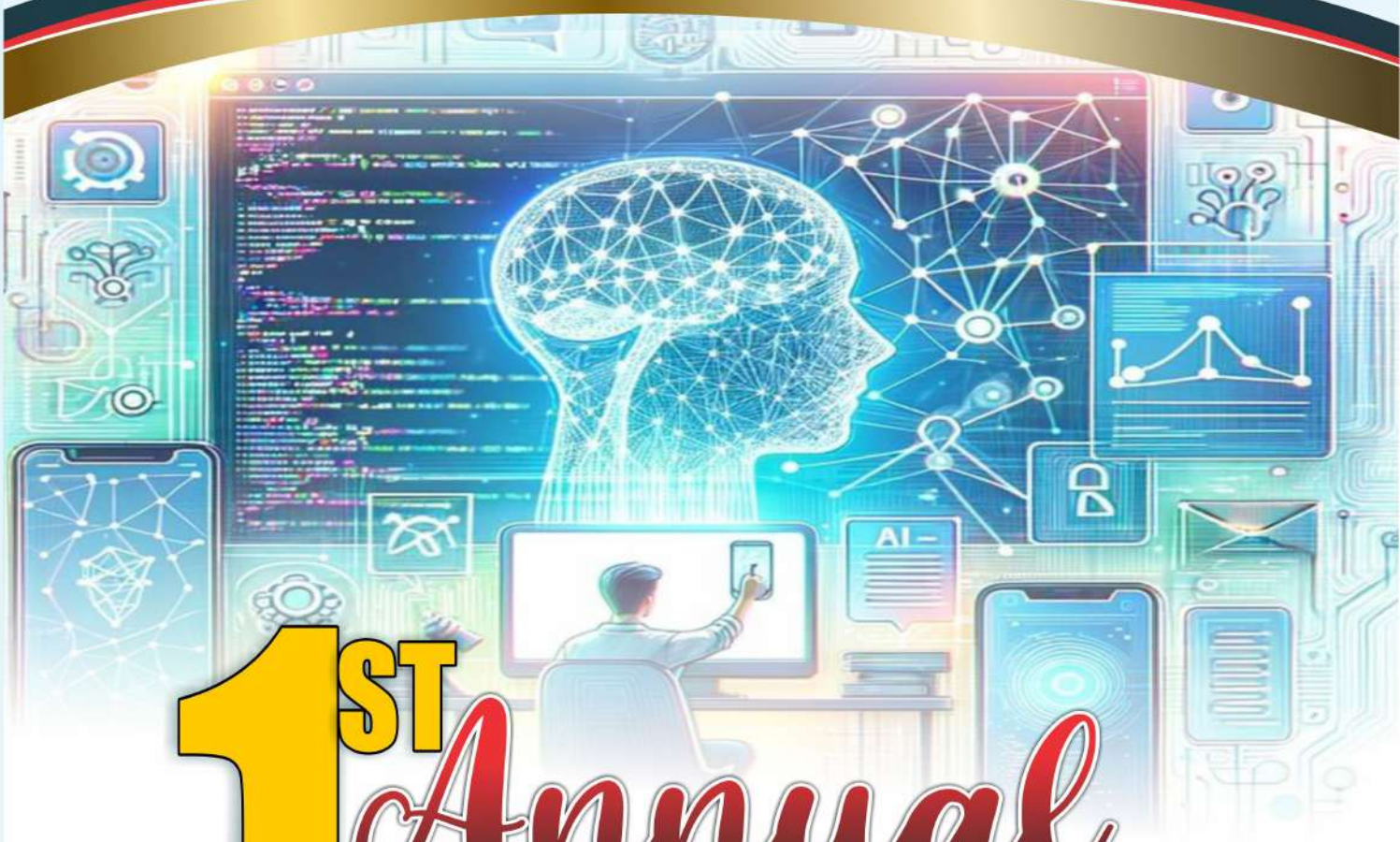
SCIENCE EDUCATORS AND DIGITAL LITERACY IN THE 21ST CENTURY



1ST Annual CONFERENCE

PROCEEDINGS 2025

Editor
Prof. Josephine N. Okoli

SCIENCE EDUCATORS AND DIGITAL LITERACY IN THE 21ST CENTURY
Editor
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ASSOCIATION OF SCIENCE EDUCTORS ANAMBRA (ASEA)

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

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

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- 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
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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 Universitry, Awka,
Anambra State, Nigeriascience

ADDRESS OF THE ACTING PRESIDENT OF ASSOCIATION OF SCIENCE EDUCATORS ANAMBRA (ASEA), DR. JOHNBOSCO O.C. OKEKEOKOSISI, 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. Ikokwu

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 Igwebuike 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 12

ASSESSMENT OF DIGITAL LITERACY OF COMPUTER TEACHERS IN THE UTILIZATION OF COMPUTER AIDED INSTRUCTION IN TEACHING DATA PROCESSING IN ANAMBRA SCHOOLS

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Abstract

The study assesses the level of digital literacy of teachers in the Utilization of computer aided Instruction (CAI) in the teaching and learning of data processing in public secondary schools in Awka South Local Government Area of Anambra State. The population of the study consisted of 986 of both teachers and students from 19 public secondary schools in the Awka South L.G.A. The sample size consists of 307 respondents which was drawn from291 students and Sixteen (16) teachers from ten (10) public secondary schools that offer data processing in the Awka South L.G.A using Null Histage technique. Sixteen (16) items questionnaire with reliability index of 0.78 established using the Cronbach-alpha formula. Three research questions and one null hypothesis guided the study. The mean and standard deviation scores were used to analyze the research questions while the t-test was used to analyze the hypothesis at 0.05 level of significance and degree of freedom 1.96.The findings show that computer aided instructional approach though was perceived to have positive influence in teaching and learning of data processing by the respondents, its use in teaching is still faced by a number of challenges such as lack of knowledge of computer and operational skills, and in some cases nonfunctional computer laboratories among others. The study recommended that education institutions should incorporate in their programmes, computer courses targeted at producing teachers who should be computer literate enough to move with technology driven instructional delivery in secondary schools in our quest for digitalization of teaching and learning among others.

Keywords: Digital literacy, Utilization, Computer Aided Instruction

Introduction

The rapid proliferation of information and communication technologies (ICT) has significantly changed the educational landscape globally (Thang & Wong, 2010). The advent of computer based learning has necessitated the shift in instructional methods from traditional methods to computerized methods of instruction in developed nations. In Nigeria, computers are used not only as a means of helping schools for analyzing data, it is also a pervasive tool toward optimizing student's learning.

Computer science education as it was stipulated by the National Policy on Education (2013) in Nigeria is one of the vocational subjects in the secondary schools and data processing is one of the subject area under computer science. The aim and objectives of the Federal Government in this

pre-vocational subject mostly is that at the end of nine years of passing through it students should possess an appropriate level of literacy, numeracy, communication, manipulative and problem solving skills in order to be employable and useful to oneself and the society at large. According to Obiakor, (2019), the use of computer in our educational sector is a growing phenomenon. The use of Computer Assisted Instruction in Education requires in-depth knowledge of digital literacy both in theory and practical skills since schools are sweeping along on the incoming tide of new teaching techniques, the old methods used in teaching and learning of computer science are becoming increasing inadequate. The integration of technology in education has revolutionized the way the teaching and learning to take place. Computer Assisted instruction (CAI) has emerged as a vital tool in enhancing the learning of computer science. However the effectiveness of CAI depends on the digital literacy of science educators.

The Integration of CAI in the teaching learning process has been adopted through the use of computers and other technological gadgets for curriculum content delivery. Computer could be accessed individually or as a group unlike in a conventional classroom where students are lumped together irrespective of their individual differences and class size. The use of CAI in teaching is a relevant and functional way of providing education to learners in order to assist them develop the required capacity for the world of work. Computer Aided Instruction (CAI) is a very powerful instructional technique in the teaching and learning process because CAI provides an interaction between an individual learner and the computer just as it happens in the tutorial system between the teacher and the individual learner, and is able to display the instructional material to the individual student (Olagunju, 2013). It is an important instructional strategy for teachers as it facilitates the learning by providing individualized instruction, effective interaction with the learner and immediate feedback. More importantly, it provides text, graphics, audio, visual, pictures, animation and simulation in the same media to students (Olagunju, 2013). CAI has taken a prominent collaborative position as a tool for various creativities in education. It is equally serving as a catalyst in modifying teaching and learning activities to the advantage of both teachers and learners in the learning environment. There is an urgent need for a paradigm shift from conventional teaching to a practical demonstration such that, when appropriate content matches appropriate strategies, students and teachers will benefit immensely (Alade, 2011). The use of Computer Aided Instruction in sciences especially computer science would encourage exposure and capacity building in understanding, skills, knowledge and access to information in the technology world. Such capacity building will encourage social technological relevance and sustainable development of the country. There are now several CAI packages on different subjects. It is obvious that the current trend in research all over the world is the use of computer facilities and resource to enhance students' learning. This may be the reason why Handelsman, Ebert-May, Bruns & Chang (2014) opined that "many exercises that depart from traditional method are now readily accessible on the web, even though teachers do not use these facilities. They further showed that the interactive approaches to lecturing significantly enhance learning but the effectiveness of utilization of CAI is dependent on the digital literacy of the teachers who are the vehicle through which education is transmitted.

Digital literacy refers to the learners' skills in searching for information on the internet browser and operating various software tools (Buckingham, 2010; Law *et al.,* 2018). Digital literacy is not only just understanding how to use technology but also knowing the benefits of the tools and when

to utilize them (Alexander et al., 2016), having the capability to organize information, and critical and creative thinking skills (Law et al., 2018). There are twenty aspects related to digital literacy as follows: information research and retrieval, information evaluation, learning resources, utilization tools, data transmission, information communication, social responsibility, authorization of digital information, choosing appropriate computing devices, systems analysis, system design, tools development, programming, security of data and the information, security of financial and personal identity, administration of the database, data management, networking, computer technology; photography and digital video (Nelson *et al.*, 2017). Digital literate teachers with internet access have higher chances of improving knowledge and skills for the benefit of their students (Enyedy, 2014). The efficiency of schools in ICT depends on the competency of teachers. This also influences the competence of the students. Digital literacy exhibited by the teachers measures the level of knowledge and skill, their professional training and development attained and their level of digital skills integration and usage (Okenyuri, 2016; Olatunji & Kolawole, 2008).

Statement of the Problem

The performance of students in computer studies / data processing is a major concern to computer educators. This could be seen from sessional state examinations result analysis of computer studies / data processing from 2021 -2024 and WACE Chief examiners report on data processing subject of 2021 -2024. This could be attributed to teachers use conventional approach to instruction. Other reasons attributed to low achievement include epileptic power supply, functional computer laboratories, lack of motivation on the part of teachers and so on. The researchers seek to examine the usefulness of CAI in teaching data processing despite its outstanding positive effect to instructional activities.

Purpose of the Study

The purpose of this study is to assess the digital literacy of computer teachers in the utilization of CAI in teaching data processing in Anambra State. It specifically which to find out will also examine:

1. How computer aided instruction has been utilized in teaching and learning data processing.
2. The influence of computer aided instruction in teaching data processing
3. The factors that militate against effective use of computer in teaching data processing in Anambra State

Research Questions

The following research questions guided the study;

1. How has CAI been utilized in teaching and learning of data processing?
2. What are the influence of CAI in teaching data processing?
3. What are the factors militating against the use of CAI in teaching data processing?

Hypothesis

$H0_1$: There is no significant difference in the mean rating of teachers and students on how computer aided instruction has been utilized in teaching and learning of data processing.

Methodology

The research design adopted for this study is a descriptive research survey type. The study was carried out in public senior secondary schools in Anambra State. Purposive sampling was used to select Awka South L.G.A out of 21 L.G.A in the State. Awka South L.G.A is located in Anambra

State which is situated in the South East geopolitical zone. The total Population of this study is nine hundred and eighty six (986) which comprises of all the sixteen (16) data processing teacher and all the SS11 students offering data processing in public senior secondary schools in Awka south L.G.A. Data processing is an elective subject, out of nineteen schools in Awka South L.G.A, only ten schools are offering computer studies therefore other schools are not part of the population. Null Histage techniques was used to select a sample size of (291) students and 16 teachers making it a total of three hundred and seven (307) respondents. The instrument used for data collection was a structured questionnaire. Sixteen (16) items questionnaire was administered to 307 respondents. The questionnaire was validated by three (3) experts: one (1) expert from the school of measurement and evaluation and (2) expert from school of sciences. The corrections made by these experts were incorporated in the production of the final questionnaire for quality assurance. The questionnaire is made up of two sections, A and B. Section A contains preliminary information from teacher and students while section B contains items arranged in a four point Likert scale as follows: Strongly Agreed (SA) - 4 points, Agreed (A) -3 points, Disagreed (D) - 2 points, Strongly Disagreed (SA) -1point.The instrument was administered to ten public senior secondary schools in Awka South L.G.A of Anambra Sate. The researcher distributed a total number of 307copies of the question to the respondents and collected them on the spot in order to ensure 100% return while Mean, Standard deviation and T- test was used for data analysis.

Results

Research Question 1: How has CAI been utilized in teaching and learning

Table 1: Summary of Mean Response Scores on How CAI has been Utilized in Teaching data processing Schools

		TEACHERS			**STUDENTS**		
S/N	**ITEMS**	**$\bar{X}$**	**S.D**	**REMARK**	**$\bar{X}$**	**S.D**	**REMARKS**
1	Teachers make use of computer while teaching computer studies always	1.7	0.7	Reject	2.5	1.1	Accept
2	Teachers make use of projector while teaching computer studies always.	1.8	0.7	Reject	2.4	1.1	Reject
3	The students makes use of computers in the computer laboratory while learning.	1.9	0.7	Reject	2.9	1.11	Accept
4	Students use drill and practice while learning computer science	2.8	1.1	Accept	2.3	1.1	Reject
5	Teachers use simulation software while teaching computer science.	2.1	1.0	Reject	2.4	1.1	Reject
	Grand mean and standard deviation	**2.06**	**0.44**		**2.5**	**0.23**	

Table 1 shows the mean response scores of the teacher and students on the use of CAI in teaching of data processing in the schools. The Table shows that for item 1 with mean response score of 1.7 the teacher did not agree that computer facilities are used always in every lesson. However, with just 2.5 the students accepted that their teachers use computer facilities for teaching. However, the variance in their group opinion is higher than variance in opinion among the teachers.

Also for item 4 with mean score of 2.8 and variance measure of 1.1, the teachers agreed that time are not sufficient for computer practical in schools. In their contrary opinion, the students with mean score of 2.3 did not accept that time on the time table is insufficient for computer practical

lessons. Generally, with cluster mean score of 2.06 and small measure of variance in opinion of teachers did not agree with most of the items on the table. In the same way, with smaller measure of variance in opinion (.23) the students accepted most of the items with boarder line mean score of 2.50.

Research Question 2: How does computer aided Instruction (CAI) influence the teaching of data processing

Table 2: Summary of Mean response scores of teachers and students on how computer aided instruction (CAI) influence teaching of data processing

		TEACHERS			STUDENTS		
S/N	ITEMS	X	S.D	REMARS	X	S.D	REMARKS
6	Effective use of CAI facilitates the teaching of computer science	3.4	0.5	Accept	3.5	0.5	Accept
7	Use of CAI in teaching certain computer science topics, helps the teacher in classroom management	2.9	1.06	Accept	3.2	0.7	Accept
8	When CAI is not properly planned and implemented, normal lesson flow can be disrupted	3.2	0.8	Accept	3.2	0.8	Accept
9	CAI makes students over dependent on technology	3.1	0.9	Accept	2.9	1.1	Accept
10	Use of CAI makes the teaching of computer concept real and interesting	2.7	1.1	Accept	3.1	0.9	Accept
11	Use of CAI in teaching of computer science enhances teacher competency	3.0	1.03	Accept	3.2	0.8	Accept
	Grand Mean and Standard Deviation	**3.05**	**0.24**		**3.2**	**0.2**	

From Table 2, the mean responses of the teachers and students on the influence of CAI are presented. All the items have mean acceptance scores greater than the critical value of 2.50. Hence both the teachers and students considered all the items as possible influence of the use of CAI in teaching of data processing in the schools. For both teachers and students, item (6) had the highest mean score of 3.4 and 3.5 for teachers and students respectively and with lowest measure of variance in opinion.

Research Question 3: What are the factors militating against the effective use of CAI in teaching and learning data processing

Table 3: Summary of Mean Response Scores on the factors Militating against the Effective Use of CAI in Teaching and Learning Data Processing.

		TEACHERS			STUDENTS		
S/N	ITEMS	$\overline{X}$	S.D	REMARKS	$\overline{X}$	S.D	REMARKS
12	There is adequate power supply during the teaching and learning of computer	1.6	0.5	Reject	2.1	1.04	Reject
13	There is adequate number of computer science software	1.6	0.6	Reject	2.3	1.1	Reject

	packages for teaching and learning						
14	Most computer set in the computer laboratory are not functional	3.2	0.8	Accept	2.8	1.1	Accept
15	Internet facilities in the computer laboratory are effective	2.1	1.02	Reject	2.8	1.1	Accept
16	Network services are always available during computer lessons	1.8	0.8	Reject	2.4	1.1	Reject
	Grand Mean and Standard Deviation	**2.06**	**0.7**		**2.48**	**0.3**	

Data in Table 3 show likely factors that militate against effective use of CAI by the classroom teachers in teaching data processing in schools. With mean response scores of 1.6, 1.6, 2.1 and 1.8, the teachers did not agree that schools have adequate supply of power, adequate provision of software packages for teaching computer science that internet facilities are available in the computer laboratories and that network services are always available during computer lessons respectively. Similarly, the students with mean response scores of 2.1, 2.3 and 2.4 did not agree that there is adequate power supply, adequate provision of number of software packaged for teaching computer and that network services are always available during data processing lessons. They also agreed that most computer sets in the laboratories are not functional.

$H0_1$: There is no significant difference in the mean response scores of teachers and students on how effective CAI has been utilized in teaching computer science in the schools.

Table 4: Summary of t-test Analysis of Uses of CAI in Teaching Computer

Group	No	Mean	SD	df	t-Cal	t-Crit	Decision
Students	291	2.06	0.44	305			
					69.84	1.96	Reject null
Teachers	16	2.5	0.23				hypothesis

Decision Rule:

Reject the hypothesis if the calculated t-statistic is greater than t-tabulated value (1.96) at 0.05 level of significance and degree of freedom 305.

In Table 4, the calculated t-value of 69.84 is greater than t-critical value of 1.96 at significant value 0.05 and degree of freedom 305. The null hypothesis of no significant difference in mean response scores of the teacher and students was rejected. This suggests that the mean response score of the teachers (2.5) was significantly different from the students mean score (2.06). Teachers have more reasonable understanding of how CAI can be effectively used to improve the teaching of data processing in the schools.

Discussion

Computer Aided Instruction approaches has some positive effective influence on teaching of computer science in secondary schools. From the findings as revealed from the analysis of data in

table one; CAI facilitates the teaching of computer science. This is achieved as the CAI helps the computer teacher in effective classroom management by improving the competency of the teacher. This makes the teaching of computer concepts real and interesting. The present findings agree with Jesse (2012) in a study that revealed that CAI improved the performance of secondary school students in Kenya schools in science. This is also in line with the findings of Charagu (2015) that CAI enhances achievement in Chemistry concepts among Kenga secondary school students.

This study also revealed how computer teachers make use of CAI in their respective schools in teaching of computer science concepts and practical lessons. Some of the computer teachers still teach computer science in the conventional classrooms without computer sets and projectors even the respondents agreed that time constraints is not significant factor that impacts on the discharge of their duties. The study also revealed that in schools where computer laboratories exist, these are not readily accessible to the students for their private studies. The poor use of CAI in schools as revealed in the present study is likely to agree with the view expressed by Yusuf et al (2013) that most school teachers lack the skills to fully utilize technology in curriculum implementation as they prefer the traditional chalk and duster approach which is still the dominant pedagogy in the schools.

The study also revealed that a number of factors militate against effective use of CAI in the secondary schools. Some of these factors as expressed by the respondents include, non-functional computer laboratories, restricted access to computer laboratories where they are in existence, irregular power supply, inadequate provision of relevant computer software packages for teaching and learning etc. there is no doubt that these factors individually and collectively have potential of negatively influencing the teaching and learning of computer science in the secondary schools. This agrees with the views of Okebukola (2017) that Nigeria does not only lack in information and technology infrastructure, but also lacked the human skills and knowledge to fully integrate CAI into the education system. The findings is not different from Ogiegbunam and Iyamu (2015) that a formidable obstacle to the use of CAI in Nigerian schools is infrastructure deficiencies.

Recommendations

On the basis of the findings of this study and need to check the impact of the educational implications, the following recommendations are passionately made:

1. Institutions that prepare teachers especially for our primary and secondary schools should incorporate in their programmes acquisition of practical skills for the plan and implementation of CAI.
2. Ministries of education, State Education Commission and local education authorities should see it as a matter of importance to always organize regular workshops for serving teachers on the use of CAI in schools.
3. Government should as a matter of meaningful impact in education subsidize acquisition of personal computers by all teachers. This will enable teachers engage in private practices and preparation of lessons.
4. Regular power supply to schools should not only be made regular but can be subsidized to ensure that computer laboratories are functional and accessible to both teachers and students.

Conclusion

This study investigated influence of computer aided instruction (CAI) in teaching data processing in in Anambra State schools. The findings from the analysis of data collected, shows that CAI has

a number influence on the teaching and learning of data processing in the secondary schools. It can be conclusively observed and hereby expressed that CAI approaches is still not popular among teachers and secondary school students in the area covered by the present study. The study hereby revealed that CAI approaches is still not effectively embraced by most teachers who are more convenient with analog conventional methods of teaching most of the time devoid of practical demonstration of concepts and facts. Furthermore, CAI approaches though perceived to effective in improving teacher competency and enhances students' performance and achievement, is still not utilized by most teachers in schools due to lack of knowledge and skills in computer and information technology.

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