

**International Society of Comparative Education, Science and
Technology (ISCEST), Nigeria
10th Annual International Conference & 4th Virtual Conference
29 November – 01 December 2023**

**Conference Programme
Wednesday 29 November 2023 (Day 1)**

11:40 - 11:45	Announcement of readiness for the Opening Ceremony
11:45 - 11:50	Introduction of His Excellency, Ambassador Godknows Boladei Igali by Professor Steve Azaiki
11:50 - 12:00	Remarks and opening of Conference by His Excellency, Ambassador Godknows Boladei Igali, Pro- Chancellor, Federal University of Technology, Akure, Ondo State, Nigeria
12:00 – 12:05	Welcome Address by the President, ISCEST Nigeria, Professor Nedie Patience Akani, Professor of Environmental/Public Health Microbiology, Rivers State University, Nigeria
12:05 – 12:35	<p>Goodwill Messages</p> <ol style="list-style-type: none"> 1. Professor Professor Barclays Ayakoroma, Vice Chancellor, University of Africa, Toru Orua, Bayelsa State (5 minutes) 2. Professor Chioma Blaise Chikere, Professor of Environmental Microbiology and Biotechnology, Department of Microbiology, Faculty of Science, University of Port Harcourt, Rivers State, Nigeria 3. Dr Renaldo Scott, University of Pennsylvania, USA (5 minutes) 4. Professor Kishan Devani, International Public and Political Figure (5 minutes) 5. Professor I.K. Dabipi, University of Maryland Eastern Shore, Maryland, USA (5 minutes) 6. Dr. Ugochi Adaku Okengwu, Ag, HOD Computer Science Department Coordinator of OWSD UNIPORT Branch
12:35 – 12:40	Remarks & Introduction of Keynote Speaker by Professor Steve Azaiki OON, Founding President, ISCEST Nigeria
12:40 – 13:10 Keynote	Keynote Address by the Guest of Honour Prof. Dr. Dileep Kumar M. is the Vice Chancellor and Full Professor of Business Management at Hensard University in Toru Orua, Bayelsa State.
13:10 – 13:15	Vote of thanks by Professor Matthew Wegwu, Vice President, ISCEST Nigeria
13:15 – 13:20	Conference updates by Dr John Nwokocha

Wednesday 29th November 2023 (Day 1)

Session Chair: *Dr Gertrude Shotte, Middlesex University, UK*

13:25 – 13:30	<i>Dr Gertrude Shotte, Middlesex University, UK</i> Introduction to session
13:30 – 14:00 Keynote 1	<i>Prof. Ewelina K. Niemczyk, North West University, School of Professional Studies in Education</i> Keynote: Shaping Sustainable Society through Comparative Education
14:00 – 14:10	Discussion/Q&A following keynote
14:10 – 14:40 Keynote 2	<i>Prof. Godwin N. Isitor, Ugo Resorts and Health Farms Ltd. Idumute Quarters, Ekwuoma, Ika NE, Delta State, Nigeria.</i> Keynote: Production And Utilization Of Highly Fertile Organic Compost For Integrated Farming, Based Mostly On Aquaculture Effluent
14:40 – 14:50	Discussion/Q&A following keynote
	Closing remarks.

Thursday 30th November 2023 (Day 2)

Session Chair: *Dr Gertrude Shotte, Middlesex University, UK*

10:00 – 10:05	<i>Dr Gertrude Shotte, Middlesex University, UK</i> Introduction to session
10:05 – 10:35 Keynote 3	<i>Professor Ogbonna F. Joel, Africa Representative Of (Nrep, Usa) & Honourable Commissioner for Petroleum and Mineral Resources, Abia State, Nigeria</i> Keynote: Green Technology and Collaborative Education: Fulcrum for Sustainable Energy Transition Accomplishment
10:35 – 10:45	Discussion/Q&A following keynote
10:45 – 11:15	<i>Prof David Turner, University of South Wales, UK & Beijing Normal University, China</i> Learning Experiences in Science and Technology
11:15 – 11:45	<i>Dr John Nwokocha, Faculty of Education, Ignatius Ajuru University of Education, Nigeria</i> Effective Utilization of Indigenous Knowledge and Effective Transformation of Educational Management in Public Universities in Nigeria
11:55 – 12:25	<i>Dr Mezewo Emerinwen Obuzor, Department of Sociology, Rivers State University & Dr Elijah Nwabueze Emeodu, Department of Sociology, Ignatius Ajuru University of Education, Rivers State</i>

	Assessment of The Knowledge and Attitude Towards Cigarette Smoking Among Youths in Ogbia Town: Ogbia Local Government Area of Bayelsa State
12:25 – 12:45	Lunch Break
12:45 – 13:15 Keynote 4	<i>Prof. Robert Ogbanje Okwori, School of Science and Technology Education Federal University of Technology, Niger State, Nigeria</i> Keynote: Promoting Indigenous Knowledge in Education, Science and Technology in Tertiary Institutions
13:15 – 13:45	<i>Oyeyemi Jumoke Jekayinfa & Aminat Ozohu Aburime, Faculty of Education University of Ilorin, Ilorin, Nigeria</i> Virtual Learning and Academic Performance among Undergraduates with Rural Backgrounds in Kwara State Universities, Nigeria
13:45 – 14:15	<i>L.K. Nima, N. N. Odu, L. O. Amadi, S. I. Douglas and T. Sampson, T., Department of Microbiology, Rivers State University, Nkpolu-Oroworukwo, Port Harcourt</i> Plasmid Profiling and Antibiotic Resistance in Enteric Bacteria Associated with Poultry in Three Local Government Area Rivers State.
14:15 – 14:45	<i>Ogunbela Adegboyega Ayo, Ajayi Olalekan Kehinde & Elumalero Gabriel Olabode, Forestry Research Institute of Nigeria, Ibadan, Nigeria</i> Ethnobotanical Survey and Utilisation of Medicinal Plants in Ijebu-Ode Metropolis, Ogun State
14:45 – 15:15	<i>Idongesit Effiong Sampson, Rivers State University, Port Harcourt, Nigeria</i> Design of Microwave Metal Precipitator for Processing Bio-Solids
15:15 – 15:25	Break
15:25 – 16:00	Isolation and Identification of Bacteria for the Treatment of Wastewater
16:00 – 16:30	<i>Ibiloye Abiodun Christian, Ministry of Education Kaduna, and Department of a Statistics,</i> Considering Students Seating and Three Effective Classroom Seats Arrangements
16:30 – 17:00	<i>Idongesit Effiong Sampson, Rivers State University, Port Harcourt, Nigeria</i> Design of Shell and Tube Heat Exchanger for Thermophilic Anaerobic Wastewater Treatment
17:00 – 17:10	Chair's end-of-session remarks

Friday 01 December 2023 (Day 3)

Session Chair: *Dr Gertrude Shotte, Middlesex University, UK*

10:00 – 10:05	<i>Dr Gertrude Shotte, Middlesex University, UK</i> Chair's Introduction to session
10:05 – 10:35	<i>Idongesit Effiong Sampson, Rivers State University, Port Harcourt, Nigeria</i> Production of Biogas using Thermophilic Anaerobic Wastewater
10:30 – 10:45	<i>M. K. Abdullahi, R. Mamman, R D Audu & F. L. Muhammad, Department of Biology, School of Sciences, Niger State College of Education, Minna</i> Biology Teachers' Accessibility and Use of Virtual Laboratory in Senior Secondary School in Chanchga Local Government Area of Niger State
10:45 – 11:15	<i>Idongesit Effiong Sampson, Rivers State University, Port Harcourt, Nigeria</i> Design of Counter-Flow Cooling Tower for Treated Industrial Liquid Wastes
11:15 – 11:45	G.A. Uzah., F.S. Ire, & C.J. Ogugbue, Department of Microbiology, University of Port Harcourt, Nigeria. Biofertilizer Potential of Microbial Cells on Okra and Tomato Plants
11:45- 12:05	H. M.Lawal, A. Shehu, U. Garba, Department of Biology, Environmental Technology and Chemistry Shehu Shagari College of Education Sokoto, Nigeria. Comparative Genomic Determination of Pathogenicity and Virulent Factors of <i>Helicobacter pylori</i> 26695 among Human Host.
12:05 – 12:30	Lunch Break
12:30 – 12:50	U. Garba, U. Z. Farouk, A. Uba, I. Nasir and A. J. Yusuf, Department of Chemistry, Energy and Environmental Chemistry, Pharmaceutical and Medicinal Chemistry, Shehu Shagari University of Education, Sokoto Nigeria. Phytochemical and Antibacterial Studies of <i>Acacia macrostachya Reichenb.</i> (<i>Leguminosae</i>) Leaves Extracts
12:50 – 13:10	Okpokiri Meka, Prof. Philip Okerentugba, Dr Obakpororo Ejiro Abagwa, Department of Microbiology, University of Port Harcourt and Rivers State Prevalence and Antibiotic Resistant Profile of Bacteria Isolated From Human Fecal and Poultry Soil Samples in Port Harcourt
13:10 – 13:30	M. K. Abdullahi, K. M. Buda, D. P. Audu & R. Mamman, Department of Biology, School of Sciences, Niger State College of Education, Minna Science Teachers' Technological Knowledge (Tk) As a Determinant of Secondary School Students' Performance in Minna Educational Zone
13:30 – 13:40	<i>Conference takeaways – Discussion following presentations</i>
13:40 – 13:45	Closing Remarks

ABSTRACTS

Comparative Education Keynote

Shaping Sustainable Society through Comparative Education

Prof. Ewelina K. Niemczyk

ABSTRACT: This keynote address speaks to Comparative Education and the urgency for the field to serve as a driver for development of sustainable society. We live in interconnected world of unprecedented technological advancements and innovations, which come with multitude of opportunities and challenges. In fact, we are living in VUCA times where Volatility, Uncertainty, Complexity and Ambiguity are a norm. Comparative education as a field tasked with examining education systems, policies, and practices across contexts has much to contribute to a broader understanding of education's role in societies. The field offers also to explore and understand similarities, differences, and relationships between various educational systems and the factors that influence them. Finally, the field of Comparative Education allows for development of VUCA mindset to approach solutions to the problems of our digital and dynamic world in comparative and comprehensive manner. Having reached a critical point with regards to global challenges, many innovators and institutions treat sustainability as innovation's new frontier. In order to develop sustainable innovations and VUCA mindset, we need to question accepted norms and assumptions behind current practices. We need to foster exchanges of ideas and experiences to jointly brainstorm how we can address pressing challenges and what kind of transformations do we need in education to shape sustainable societies.

Correspondence

President: BRICSEd Association@NWU
Editor-in-Chief: Southern African Review of Education (SARE)
School of Professional Studies in Education
<https://education.nwu.ac.za/edu-hright>

Education Keynote

Promoting Indigenous Knowledge in Education, Science and Technology in Tertiary Institutions

Prof. Robert Ogbanje Okwori

ABSTRACT: The paper explained the meaning of indigenous knowledge (IK) as the practice, beliefs, understandings and skills developed by local communities through histories and experiences by interacting with their natural environment. Indigenous knowledge is also known as local knowledge or traditional knowledge. The concept of education, science and technology was explained in the paper. The paper explained how education, science and technology have contributed to the development of the society. It further explained the importance of indigenous knowledge to individuals and the society. The sources of indigenous knowledge and its characteristics were also discussed. It identified types of indigenous knowledge, the custodian of indigenous knowledge and explained how indigenous knowledge can be preserved for use. Wealth of knowledge in local practices is in existence in various fields such as education, science and technology that is not yet tapped or not sufficiently integrated into educational programmes of tertiary institutions. The only way it can be tapped or integrated into educational programmes is through promotion. The various ways indigenous knowledge can be promoted in education, science and technology in tertiary institutions were discussed in the paper. This includes popularization of indigenous knowledge in education, science and technology using mass media; documentation of indigenous knowledge in text (print) using local languages; emphasizing on the use of indigenous knowledge in education, science and technology by school administrators; capacity building of lecturers in the utilization of indigenous knowledge in education, science and technology; creating website on indigenous knowledge relating to various areas of knowledge such as education, science, technology; use of traditional instructional methods and recognizing the best lecturer in the use of indigenous knowledge in education, science and technology.

Correspondence

Department of Industrial and Technology Education
School of Science and Technology Education
Federal University of Technology
Niger State, Nigeria - [Email{robertokwori@futminna.edu.ng}](mailto:robertokwori@futminna.edu.ng)

Science Keynote

Production and Utilization of Highly Fertile Organic Compost for Integrated Farming, Based Mostly on Aquaculture Effluent

Professor Godwin N. Isitor

ABSTRACT: In this day and age of information explosion, courtesy of ubiquity of mass media gadgets, health enhancement procedures through consumption of organically grown farm products has become the norm. A lot of individuals, cutting across national as well as educational and social strata, are becoming health conscious. This is also largely within the context of being self-reliant through home grown products, rather than purchase habits of virtually all consumables during active working periods of typical employees. We at Ugo Resorts and Health Farm Ltd., have embarked on observational studies aimed at comparison of recycled aquaculture fish effluent with other common farm wastes, such as poultry, goat dungs, and decomposed leaves, either as single or combined wastes. The study has to-date spanned a period of three years. Fish effluent collection was from dumped concrete pond-contained effluent in a separate pond compartment; the used water being pumped in the process of partial water change. While poultry and goat dungs were respectively obtained from underneath the broiler cages and indoor goat pens. Dry broad leaves were gathered through periodic sweeping of shedded leaves of trees within Ugo Resort premises. Some of the concrete pond compartments were dedicated for mixing of the collected dung materials, typically in combination with other dung-types. The fish effluent was allowed to partially dry into semi solids prior to transfer into concrete pond compartments with the mix of other dungs. Some of the mixtures were devoid of fish dung content, thereby serving as controls. Mixing of the dungs was done manually with the aid of shovels, while poured water or accumulated rain water enabled thorough mixing. Mixed dungs were allowed to further decompose aerobically for a period of not less than 3 months. The dung mixtures were tested for fertilizer qualities through application in containers with seeds, seedlings, as well as being applied to heaps of sand that was typically covered with up to 15cm dung-mixture covering layer. Plastic trays and buckets mostly served as containers for the testing procedures. Seeds and seedlings of common vegetables tested included peppers, tomatoes, okra, local spinach, as well as tubers of yam and plantain/banana pseudostem. The yam

tubers were typically grown in bags. Environmental variables, such as water exposure level, sunlight, and insects exposure level were monitored in line with standard procedures. Results show that luxuriant growth as well of sprout of seedlings was quite notable in containers and compost heaps with fish dungs, compared with dungs devoid of fish dungs. We conclude that addition of aquaculture-derived fish dungs is veritable for enhancement of compost-based organic fertilizer.

Keywords: compost, organic fertilizer, composting, aquaculture, fish effluent, poultry dung, goat dung, bucket farming.

Correspondence

Professor Godwin Isitor
Ugo Resorts and Health Farms Ltd.
Idumute Quarters, Ekwuoma, Ika NE
Delta State, Nigeria.

Technology Keynote

Green Technology and Collaborative Education: Fulcrum for Sustainable Energy Transition Accomplishment

Professor Ogbonna F. Joel

ABSTRACT: Climate change is driving policy shifts, reshaping industrial and learning activities, paving the way for novel opportunities in the spheres of energy development and sustainable learning; comparative and collaborative learning. Our learning approach should involve people working and learning together to ensure that everyone participates rather than learning in isolation. The whole earth is under a severe threat as a result of pollution and climate change burden. The earth is our only “Home”; We will not have a place to live if we do not stop or control pollution through collaborative application of green technology and science. Sustainable education and the current energy transition drive must include collaborative/comparative education, green technology and science application, development of technical expertise and team efforts geared towards actualising the green energy transition agenda.

The time is running out so we must act now because, the climate crisis coupled with the negative environmental effects of the conventional Energy, Food and Agricultural systems, has become an existential threat to the planet. So business as usual is no longer an acceptable option. It is more and more clear that our survival will depend on how we align our learning efforts and development of innovative green technology and science to make our present climate change challenges to become incredible opportunity sets.

Everyone has a part to play in this new drive to achieve net-zero carbon emission. By thinking about what you are doing, you can make a difference. If we do and get it right, we get due reward from our benevolent environment - healthy living, peace of mind and long life. If we fail to do it right, we get commensurate retribution from a helpless environment - bleak future filled with sickness, disease and death at premature age. The choice is yours, mine and all of us to make! If we fail to take proactive steps to develop green technology and science through collaborative learning , the energy transition accomplishment will be a mirage.

Learning Experiences in Science and Technology

Professor David A. Turner

ABSTRACT: I have been fascinated by science education since I started on my own. But I think we are selling our students and pupils short by trying to teach science without its proper context. Science as we now know it blossomed in the eighteenth century, and it has been a focus of attention in philosophy ever since. But we tend to teach science without that philosophical background. I will try to explore whether we could do better by drawing on the work of Immanuel Kant. Kant set himself the project of finding out how limits are set to our knowledge by the way that we think. That seems rather important that one should learn the limits of science, as well as the science itself. Many philosophers since Kant have tried to escape from the barriers, but their efforts generally lead to rather strange speculation. Kant failed in the detail of his project, but Michael Friedman has more recently tried to rescue the core of his philosophy. In this paper, I will examine some of the implications of that turn in philosophy for how we help our students to learn about science and technology.

Correspondence

Professor David A. Turner
University of South Wales
UK & Beijing Normal University, China

Assessment of The Knowledge and Attitude Towards Cigarette Smoking Among Youths in Ogbia Town: Ogbia Local Government Area of Bayelsa State

Obuzor, Mezewo Emerinwen (PhD) & Emeodu, Elijah Nwabueze (PhD)

ABSTRACT: This study investigated the assessment of the knowledge and attitude towards cigarette smoking among youths in Ogbia Town; Ogbia Local Government Area of Bayelsa State. The population of the study consisted of three hundred (300) Youths, and one hundred and fifty 150 (50%) were selected as the sample size for the study. The simple random sampling technique and systematic sampling techniques were adopted to select the sample for the study. Three research questions and objectives were used. The instrument used for data collection was a well-structured questionnaire; percentage was used to answer the research questions. The results showed that; 95.3% of the respondents had knowledge of the negative effect of cigarettes on health; 96.7% of the respondents said smoking should be strictly prohibited in public areas. 96.0% of the respondents indicated that Smoking is a disgusting behavior; 90.0% of the respondents indicated that smoking is hazardous to the health of others, while 19.3% of the respondents did not accept that smoking is a personal freedom. Again, 84.0% of the respondents indicated that peer group influenced the cigarette smoking habits among youths. In the light of the findings of the study, it was therefore recommended that; policies prohibiting the advertisement and use of tobacco in public places be properly enforced by the government, parents and educational management; and finally that religious leaders should be good role-models that will help youths in quitting cigarettes smoking.

Keywords: assessment, knowledge, attitude, cigarette smoking, youths,

Correspondence

Emeodu, Elijah Nwabueze (PhD)
Lecturer Department of Sociology

Design of Counter-Flow Cooling Tower for Treated Industrial Liquid Wastes

Idongesit Effiong Sampson

ABSTRACT: Industrial liquid wastes (wastewater, as it is often mixed with water) treated at thermophilic temperature enhances higher reaction rates, increased death rate of pathogens and hence larger volumes of liquid wastes could be treated in a shorter time. This helps avoid the problem of accumulation which is an environmental disaster. Nevertheless, the discharge of hot treated liquid wastes into water bodies could cause thermal pollution of the water body with adverse effect on aquatic life. Treated liquid wastes needs to be cooled to a temperature suitable for disposal. Moreover, turbo-expanders need cooling water which can be produced by cooling a part of the treated liquid wastes. With the help of an aeration tank cooling was done to suitable temperature of 20 °C but further cooling in a cooling tower of 10.79 metres of packed height to enhance the production of the cooling water further reduced the temperature of the treated liquid wastes to 14 °C. There was no significant change in the air temperature as initial cooling of the treated liquid wastes was done in the aeration tank. This could not have been avoided as aeration is a strategy for further destruction of the biochemical oxygen demand. Kinetic energy loss in the form of heat loss lowered the temperature of the air from 10 °C to 7.25 °C. Moreover, in the process there is an evaporation of a small amount of water. This also causes a cooling effect on both the water and the air in contact with the water.

Keywords: aeration tank biochemical oxygen demand cooling water wastewater, thermal pollution

Correspondence

Rivers State University
Port Harcourt
Nigeria

Design of Microwave Metal Precipitator for Processing Bio-Solids

Idongesit Effiong Sampson

ABSTRACT: Bio-solids Produced from the treatment of wastewater has high fertilizer value if heavy metals and other toxic substances are removed from the bio-solids. Heavy metals were removed from the bio-solids by precipitating the heavy metals using metallic hydroxides. These helped eliminate the consequent effect these heavy metals could have had on human health especially through the food chain. Using a suitable design procedure, a microwave metal precipitator of 5.99 m³ volume, 2.25 m diameter and 1.51 m height was designed. The design was such that microwaves of frequency 2.450 GHz and wavelength 12.20 cm made to bombard bio-solids in a microwave metal precipitator broke the bonds between the molecules of the bio-solids and heavy metals such that 5.57 m³ of heavy metals was precipitated using 0.0000043 m³ of metallic hydroxides.

Keywords: bio-solids, heavy metals, hydroxides, microwaves, wastewater

Correspondence

Rivers State University
Port Harcourt
Nigeria

Design of Shell and Tube Heat Exchanger for Thermophilic Anaerobic Wastewater Treatment

Idongesit Effiong Sampson

ABSTRACT: Wastewater was treated an anaerobic reactor operated at thermophilic temperature (75 °C) with the help of *Bacillus stearothermophilus* (a thermophilic bacteria). To maintain a constant temperature in the reactor, a heat exchanger with steam as the tube side heating fluid was inserted into the reactor. The steam helped

heat the wastewater in the reactor (shellside) and maintain the thermophilic temperature to enhance optimum activity of the thermophilic bacteria. The contacting mode was countercurrent in the 1,8 shell and tube heat exchanger. This means the steam passed eight times through the tubes as the wastewater passed once through the shell. This helped achieve a higher contact time and hence a higher efficiency of heat transfer. With this, the reactor acted as a shell and tube heat exchanger with surface area of 53.23 m² and heat transfer area of 4.63 m² with 29 tubes with high pressure steam in the tubes heating wastewater at 28 °C to a thermophilic temperature of 76 °C and maintaining the temperature of these wastewater at thermophilic temperature.

Keywords: thermophilic temperature, countercurrent mode, logarithmic mean temperature difference, overall heat transfer coefficient, heat transfer area

Correspondence

Rivers State University
Port Harcourt
Nigeria

Plasmid Profiling and Antibiotic Resistance in Enteric Bacteria Associated with Poultry in Three Local Government Area Rivers State

L. K. Nima, N. N. Odu, L. O. Amadi, S. I. Douglas, T. Sampson

ABSTRACT: Enteric bacteria that are resistance to antibiotic is a growing public health concern. This study examines the patterns of antibiotic resistance and plasmid presence in enteric bacteria isolated from poultry obtained in Rivers State, Nigeria. A total of 337 samples from Aluu, Elioparanwo and Rivers State University Demonstration Farm were analysed. Isolates were identified using standard microbiological methods. Antimicrobial sensitivity test was carried out on bacteria isolated according to the methods recommended by Clinical Laboratory Standard Institute. Plasmid profile of each strain was determined through gel electrophoresis. A total of 205 bacterial isolates in 5 genera where *Citrobacter*, *Enterobacter*, *Aeromonas*, *Acinetobacter* and *Myriodes*. The findings showed high prevalence of antibiotic-

resistant enteric bacteria in poultry, with resistance observed against multiple classes of antibiotics commonly used in poultry production. Plasmids were identified in a substantial proportion of these antibiotic-resistant strains, suggesting the potential role of plasmids in mediating antibiotic resistance. Also, 60% of the isolates possessed TEM genes while 50% possessed SHV genes. Isolates: *Aeromonas caviae*, *Acinetobacter baumannii* and *Enterobacter hormachei* possessed both genes. This study highlighted the critical requirement for increased monitoring of antibiotic-resistant microorganisms in chicken production systems in Rivers State. These findings have significance for the preservation of public health, antimicrobial stewardship, and food safety.

Keywords: poultry, enteric bacteria, plasmid profiling, food safety

Correspondence

Department of Microbiology
Rivers State University
Nkpolu-Oroworukwo
Port Harcourt
kiaka.nima@ust.edu.ng

Production of Biogas using Thermophilic Anaerobic Wastewater

Idongesit Effiong Sampson

ABSTRACT: Biogas, a source of renewable energy useful for electric power generation and heating is a better substitute for natural gas in that it contains less carbon and hence produces less pollutant emissions. Moreover, being produced from a natural source, it is renewable. Nigerian industries generate large quantities of wastewater. This constitutes health hazard to personnel on exposure and environmental hazard on disposal if not properly treated before disposal. Thermophilic anaerobic digestion of wastewater in bio-reactors yields biogas and bio-solids. Thermophilic anaerobic digestion of 5 m³ per day of wastewater yielded 4,513.7 Litres per day of biogas for a hydraulic retention time of 5 days. This shows that 1 m³ of

wastewater would yield 900 Litres per day of biogas for a hydraulic retention time of 5 days. This shows that substantial amount of biogas could be produced from thermophilic anaerobic digestion treatment of wastewater. This could enhance the realization of the Nigerian Vision of zero gas flaring by the year 2020 (now 2060). Moreover, biogas could replace natural gas as domestic fuel source while natural gas could be used solely for exports. This of course could increase the Nigerian foreign exchange earnings and gross domestic product hence advancing the Nigerian economy.

Keywords: wastewater, thermophilic anaerobic digestion, zero gas flaring, biochemical oxygen demand, volatile suspended solids

Correspondence

Rivers State University
Port Harcourt, Nigeria

Teachers' Career Development Options for Quality Service Delivery in Public Senior Secondary Schools in Rivers State

Igwe Uzoamaka Rose

ABSTRACT: The study investigated teachers' career development options for quality service delivery in public senior secondary schools in Rivers State. Two research questions and two null hypotheses were formulated to guide the study. The study anchored on Human Capital theory. This study adopted a descriptive research design. The population of the study comprised of all the 6557 teachers in the 302 public senior secondary schools in Rivers State. The simple random sampling technique was used to select a sample of 655 teachers representing 10% of the total population. A self-structured questionnaire titled "Teachers' Career Development Options Questionnaire (TCDOQ)" was used to elicit information from the respondents. The face and content validity was validated by the researcher's supervisor and two other experts from the department of Psychology, Guidance & Counseling. The Cronbach Alpha statistics was used to determine the reliability for the study which gave a coefficient of 0.81. Mean and standard deviation was used to answer the research questions while T-test was used to test the null hypotheses at 0.05 level of significance using Statistical

Package for the Social Sciences (SPSS) Version 21. The result of the study indicated that developing the required skill and interest in teaching increases quality service delivery. The study concluded that proper screening process should be adhered to during recruitment process to eradicate practitioners in the teaching profession. It was recommended among others that the ministry of education and the management of the senior secondary school board should tighten their nuts during recruitment process to employ teachers with the right qualifications and registered teachers.

Keywords: career development options, teachers, quality service, public secondary schools

Correspondence

Faculty of Education
Ignatius Ajuru University of Education
Rivers State, Port Harcourt
igweuzoamakarose@gmail.com

Effective Utilization of Indigenous Knowledge and Effective Transformation of Educational Management in Public Universities in Nigeria

John Nwokocha

ABSTRACT: This study investigated effective utilization of indigenous knowledge and effective transformation of educational management in public universities in Nigeria. The study was guided with three objectives, research questions and null hypotheses. The study adopted correlational survey research design. The population of the study comprised academic staff of the two Rivers State owned public universities. A sample size of 618 respondents representing 30% of the entire population was drawn from entire population 2,060 using Stratified sampling technique. The instruments for data collection were a self-structured questionnaire titled Effective Utilization of Indigenous Knowledge (EUIK) and Effective Transformation of Educational Management (ETEM). The instruments for the study were effectively and efficiently validated by another the researcher. The reliability coefficients of 0.810 and 0.790 respectively were derived using Cronbach Alpha statistics. The research questions were answered with the use of Pearson Product Moment Correlation Coefficients while Linear Regression statistical tool was used to test the corresponding null hypotheses at 0.05 significance

level using Statistical Package for the Social Sciences (SPSS) version 23. Findings of the study revealed that education is for all nations and belongs to all people of all ages, social status, regardless of ethnicity, religion, race, and customs and therefore requires effective utilization of indigenous knowledge. The study concluded that education is not uniformity but empowerment and independence for the individual and the society at large. Therefore, suggest among others that cultural products and local knowledge should be continuously maintained in educational management and should not to be eroded by modernity.

Keywords: educational management, empowerment, indigenous knowledge, independence, ethnicity

Correspondence

Dr John Nwokocha
Faculty of Education, Ignatius Ajuru University of Education, Nigeria
johnnwokocha@yahoo.com

Ethnobotanical Survey and Utilisation of Medicinal Plants in Ijebu-Ode Metropolis, Ogun State

Ogunbela Adegboyega Ayo· Ajayi Olalekan Kehinde & Elumalero Gabriel Olabode

ABSTRACT: Investigations into this survey revealed some of the medicinal herbs utilized for treatment of some ailments by people of Ijebu-ode metropolis located in Ogun state, Nigeria. This ethnobotanical survey of some medicinal plants carried out in Ijebu ode enumerates the plants and plant parts such as stem, leaves, root and bark used to cure different ailments. A total of 51 plant species were highlighted for treatment of 17 different ailments. The study revealed that 22.2% of these plants are employed in curing rheumatism, 15.8% are employed in curing malaria fever, 7.9% and 9.5% are used in curing fontanelle and diabetes respectively which clearly unveils percentage frequencies of herbs used in treatment of ailments in the study area. This study investigated wide range of medicinal plants used by Ijebu ode people to cure ailments. It implies our forests serve as homes to many medicinal plants with curative abilities for a lot of ailments.

Keywords: medicinal plants, ailments, trado-medical practice, plant parts, ljebu-ode.

Correspondence

Ogunbela Adegboyega Ayo, Ajayi Olalekan Kehinde & Elumalero Gabriel Olabode
Forestry Research Institute of Nigeria, Ibadan, Nigeria
Email: gogunbela@gmail.com

Considering Students Seating and Three Effective Classroom Seats Arrangements

Ibiloye Abiodun Christian

ABSTRACT: Teachers are often challenged on classroom design and space optimization that could bring the best out of learning environment given the available resources. Mostly, not serious researches have been published on effects of seats arrangement on cognition, lesson delivery and classroom control. These are part of the contribution made by this article as it reviews and offers practical perspectives on three popular student seats arrangements: the traditional long rows (with variants including stadium or lecture theatre design , paired seat rows by columns arrangement, etc.), the U-shape or horseshoe design and the pod-community sitting design. This include principles that educators can consider in choosing arrangements most appropriate for learning and realizing the content and Instructional objectives. Literatures were explored, and from teaching experience, a balance between instructional objectives, class characteristics and diversity, and cost affordable to the school is suggested. Teacher's innovation and improvisation are informed by their exposure and classroom experience. The arrangement of pair desk modules was shown to be the best in all situation, easy to readjust into pod-community design and into u-shape when appropriate for 21st century flipped learning, interactive and collaborative leaning shifts , giving its flexibility, advantage in time before lesson, and with the optimum results.

Keywords: class management, collaborative learning, flipped learning , paired desk optimization, pod-community seating

Correspondence

Department of a statistics
Ministry of Education
Kaduna

Virtual Learning and Academic Performance among Undergraduates with Rural Backgrounds in Kwara State Universities, Nigeria

Oyeyemi Jumoke Jekayinfa (*Ph.D*) & Aminat Ozohu Aburime (*Ph.D*)

ABSTRACT: The rapid integration of virtual learning platforms into higher education has raised questions about its effectiveness, especially among students from rural areas. This study looks into how virtual learning affects the academic performance of first-year students from rural areas in Nigerian universities. Diverse sample of undergraduates were surveyed and interviewed as part of a mixed-methods approach that was used to gather data. The study looks at how easy it is to get virtual learning tools, problems with internet connection, and how people think virtual learning affects their academic performance. The findings of the study revealed that while virtual learning offers opportunities for educational inclusivity, disparities in access to technology and infrastructure pose significant challenges for undergraduates with rural origin in Nigeria. The research also looks at how support systems and socioeconomic factors affect how well students do in school when they use virtual learning. The implications of these findings for educational policy and practice are discussed, with a focus on making sure that all students, no matter their geographical backgrounds, have equitable access to virtual learning tools.

Keywords: virtual learning, academic performance, undergraduates, rural background, inclusivity

Correspondence

Dr Oyeyemi Jumoke Jekayinfa, Oyeyemi
Faculty of Education

Biology Teachers' Accessibility and Use of Virtual Laboratory In Senior Secondary School in Chanchga Local Government Area of Niger State

M. K. Abdullahi, R. Mamman, R D Audu & F. L. Muhammad

ABSTRACT: This study was on Biology teachers' access and utilization of virtual laboratory in secondary schools in Chanchaga Local Government Area of Niger State. Research design employed for this study was descriptive survey research design. The population of the study comprised of the entire thirty five (35) biology teachers in government-owned secondary schools in Chanchaga Local Government Area of Niger State. Two objective and its corresponding research question was raised to guide the study. A sample size of fifteen (15) biology teachers was randomly selected, using simple sampling techniques. The research instrument used for the study was Biology Teacher Accessibility of Virtual Laboratory Questionnaire (BTAVLQ) and Biology Teacher Level of Utilization of Virtual Laboratory Questionnaire (BTLUVLQ). The instrument was validated by two science education experts from Federal University of Technology, Minna, Niger State. Cronbach alpha was used to obtain the reliability coefficient index of 0.79 and 0.84 for (BTAVLQ) and (BTLUVLQ) respectively. Data collected was analysed using Mean and standard deviation with a decision benchmark of 3.0 mean rating. Findings from the study reveals that biology teachers had no access to virtual laboratory let alone the use of the laboratory for teaching and learning. Finally, it is recommended that Government at all levels should do all within its capacities to provide a well equip virtual laboratories in public senior secondary schools and Biology teachers should be given adequate training on how to use virtual laboratory for the purpose of teaching and learning biology.

Keywords: teacher training, accessibility, virtual laboratory, teaching and learning

Correspondence

M. K. Abdullahi, R. Mamman, R D Audu & F. L. Muhammad

Department of Biology,
School of Sciences,
Niger State College of Education, Minna.
Email: abduallahikobo@gmail.com

Isolation and Identification of Bacteria for the Treatment of Wastewater

ABSTRACT: Wastewater was treated using biological treatment process involving the use of micro-organisms (bacteria). The wastewater was treated at different temperature ranges: Mesophilic: 28 °C - 37 °C using mesophilic bacteria. Thermophilic 50 °C - 75 °C using thermophilic bacteria. The bacteria (mesophilic and thermophilic) were isolated from the wastewater sample and identified by the help of biochemical tests carried out in accordance with standard methods of American Public health Association (APHA). The suspected mesophilic micro-organism in the wastewater sample was *methanogenic methanobrevibacter* as acid production indicated a colour change from red to yellow and gas production indicated in the space in the durhan tubes. The suspected thermophilic micro-organism in the wastewater sample was *Bacillus stearothermophilus* as purple stain, a pink colour diffusing from the line of inoculation, a clear zone around the bacterial growth after addition of iodine to the agar and endospores stained green indicated that the thermophilic bacteria was *Bacillus stearothermophilus*.

Keywords: methanogenic methanobrevibacter, bacillus stearothermophilus, mesophilic; thermophilic, micro-organism.

Biofertilizer Potential of Microbial Cells on Okra and Tomato Plants

G.A. Uzah, F.S. Ire., & C.J. Ogugbue

ABSTRACT: Microbial cells as an integral component of biofertilizer is an environmental friendly alternative to chemical fertilizers that enhances crop performance, shelf life, pest control and soil revitalization. This study is designed to

determine the biofertilizer potential of microbial cells on okra and tomato plants. Soil samples were collected around University of Port Harcourt and standard microbiological methods were used to isolate, identify and mass produce the microorganisms. The liquid biofertilizer containing microbial cells were applied on okra and tomato plant to determine the plant growth index and crop yield and the microbial consortia were *Aspergillus niger*, *Penicillium chrysogenum*, *Bacillus cerus*, *Bacillus licheniformis*, *Pseudomonas fluorescens* and *Azotobacter chroococcum*. The result obtained from this study after 12 weeks of planting reveals that the number of leaves of Okro and tomato treatment plants ranges from 17.00 ± 1.00 to 26.00 ± 0.00 and 88.00 ± 4.58 to 121.67 ± 7.51 ; shoot height (cm) were 20.40 ± 2.42 to 45.10 ± 1.40 and 48.33 ± 3.79 to 97.67 ± 0.58 respectively. The number of fruits for Okro and tomato plants were 4.67 ± 1.16 to 16.67 ± 2.08 and 7.33 ± 2.52 to 23.67 ± 2.52 ; the fruits weight (g) were 6.30 ± 3.58 to 31.00 ± 4.58 and 1.33 ± 0.06 to 78.03 ± 12.23 respectively. It was also observed that the control had the lowest germination rate and the harvested fruits of okro and tomato treated with biofertilizer spanned up to 4 weeks before spoilage. This study demonstrates that the microbial cells have the biofertilizer potential in enhancing plant growth index and crop yield which could be an affordable and alternate source of plant growth enhancement.

Keywords: *biofertilizer, microbial consortia, and crop enhancement.*

Correspondence

G.A. Uzah, F.S. Ire., & C.J. Ogugbue
Department of Microbiology, University of Port Harcourt, Nigeria.
Email: gift.uzah@ust.edu.ng

Comparative Genomic Determination of Pathogenicity and Virulent Factors of *Helicobacter pylori* 26695 among Human Host

H. M. Lawal, A. Shehu and U. Garba

ABSTRACT: The diverse spore-forming pathogenic bacterium *Helicobacter pylori* colonizes the human stomach and has been implicated in affecting half of the human population globally, by causing a variety of infections such as gastritis, gastric &

duodenal ulcers. In some cases the disease might persist to gastric cancer depending on the strain that causes the infection. Although not all people being infected by *H. pylori* develop the diseases but human safety is of great concern, hence the need to know more about the organism as human pathogen. It is therefore essential to determine the causes of the infection, the virulent factors associated with infection and the mechanism used by the bacterium in causing damage to human health. In this study, various publicly accessible URL websites such as; The National Center for Biotechnology Information (NCBI) website, Ribosomal database project, ClustalW window, phylogeny fr, KEGG, Web Artemis Comparison Tool (WebACT) and Basis Local Alignment Search Tool(BLAST) will be used to investigate and analyse different genomic factors (genes for motility, vacuolating cytotoxin VacA, outer membrane protein and Cag Pathogenicity Island CagPAI) that are responsible for pathogenicity of *Helicobacter pylori* in human host, through comparative analysis of *H. pylori* 26695 genome with close species of same strain *H. pylori* J99 and other related species *C. jejuni*. These identified traits within *Helicobacter* might help in colonization of the human gastric epithelial cells are confirmed to be lethal and account for pathogenicity in human host thereby causing damage to the tissues.

Keywords: comparative genomics, helicobacter pylori, virulent factors, pathogenicity

Correspondence

H. M. Lawal

Department of Biology, Shehu Shagari College of Education Sokoto, Nigeria.

Email: hmuhdlawal@yahoo.com

Phytochemical and Antibacterial Studies of *Acacia macrostachya* Reichenb. (Leguminosae) Leaves Extracts

U. Garba, U. Z. Farouk, A. Uba, I. Nasir and A. J. Yusuf

ABSTRACT: Aims: *Acacia macrostachya* Reichenb ex DC (*Fabaceae*) is used in traditional medicine for the treatment of many pathogens including diarrhea, malaria with convulsion and fevers, snake bites, vomiting, nausea, dysenteric syndrome and

cholera, inflammatory diseases and old wounds. The purpose of this study was to carry out phytochemical screening and antibacterial studies of *Acacia macrostachya* leaves extracts (hexane, ethylacetate and methanol).

Place and duration of the study: the work was carried out at Department of Pharmaceutical science faculty of Pharmacy Usmanu danfodiyo university, sokoto as well as Fleming's AMR Laboratory, Faculty of Veterinary Medicine Usmanu Danfodiyo University, Sokoto.

Methodology: one kilogram (1kg) of the powdered leave sample was successively and sequentially extracted with 5 liters of n-hexane, ethylacetate and methanol respective. The solvents were evaporated at 45°C with the aid of rotary evaporator. The phytochemical screening was carried out using standard procedure for phytochemical analysis. The antibacterial studies was investigate using Agar well diffusion and Broth dilution method using different extracts concentrations of 0.2µg/ml, 0.1µg/ml, 0.05µg/ml and 0.025µg/ml respective.

Results: The extract yield was found to be 29.29g (2.93%) for n-hexane, 15.94g (1.59%) for ethylacetate and 131.72g (13.17%) for methanol. The phytochemical screening reveals the presence of alkaloids, glycoside, steroids in both extracts while tannins, flavonoids polyphenol, coumarins and carbohydrate are present in ethyl acetate and methanol extract. Saponin was found to be present only in the methanol extract. The antibacterial test shows the inhibitory effect against *Salmonella typhi*, *Shigella dysentarea*, *Escherichia coli* and *Pseudomonas aeruginosa*. The hexane extracts shows MBC at 0.2µg/ml for *Shigella dysentarea*, *Escherichia coli*, *Pseudomonas aeruginosa* with the exception of *Salmonella typhi*. The MBC for methanol was 0.2 µg/ml, 0.1 µg/ml and 0.05 µg/ml for *Salmonella typhi*, 0.2 µg/ml for *Shigella dysentarea*, and *Escherichia coli* while *Pseudomona aeruginosa* was inhibited at all concentration.

Conclusion: the results of this study demonstrated the interest of *Acacia macrostachya* leaves in the treatment of bacterial infection and constitute a scientific basis of its traditional uses.

Keywords: *A. macrostachya*, phytochemical, antibacterial, traditional medicine

Correspondence

Email address: umar.g4000@gmail.com

Prevalence and Antibiotic Resistant Profile of Bacteria Isolated From Human Fecal and Poultry Soil Samples in Port Harcourt

Okpokiri Meka, Prof. Philip Okerentugba, Dr Obakpororo Ejiro Abagwa

ABSTRACT: This study aimed at investigating the prevalence of bacteria and their antibiotic resistant profile isolated from human fecal and poultry soil samples in Port Harcourt, Nigeria. Fifty human fecal and fifty poultry soil samples were collected using aseptic techniques, the spread plate method of isolation using *Salmonella Shigella* agar Eosine methylene blue agar and nutrient agar was used, the bacterial isolates were characterized based on cultural, morphological and biochemical analysis using online advanced bacterial software (ABIS online). These bacteria were then subjected to susceptibility testing against 12 antibiotics. The results revealed that seven bacterial isolates were obtained belonging to the genera *Pseudomonas*, *Shigella*, *Salmonella*, *Escherichia*, *Staphylococcus*, *Alcaligenes* and *Serratia*. The results show that the highest prevalence was seen in the human fecal samples at 80% compared to the poultry soil samples at 70%. Additionally, most of the bacteria were found to be resistant to a range of antibiotics with *Salmonella* sp. (11(92%) and 12(100%)) and *Serratia* sp. (9(75%) and 12(100%)) as the most resistant bacteria found in the poultry soil sample and human fecal sample respectively. This study suggests that bacterial isolated from poultry soil and human fecal samples have developed a high degree of antibiotic resistance, which may pose a significant risk to human health. Therefore, more efforts should be directed towards implementing strategies that help reduce rates of bacterial abundance and antibiotic resistance.

Keywords: prevalence, antibiotic resistant bacterial, animal farm

Correspondence

Okpokiri Meka - Email address: okpokirim00@gmail.com
Prof. Philip Okerentugba - Philipokerentugba@uniport.edu.ng
Dr Obakpororo Ejiro Abagwa - Obakpororo.abagwa@gmail.com

Science Teachers' Technological Knowledge (TK) As a Determinant of Secondary School Students' Performance in Minna Educational Zone

M. K. Abdullahi, K. M. Buda, D. P. Audu & R. Mamman

ABSTRACT:The study examined the relationship between Science Teachers' Technological Knowledge (TK) as Determinant of Senior Secondary School Science Students' Performance in Minna Educational Zone of Niger State. The study adopted a correlational and ex-post facto research design. The population for the study was 175 science teachers and 1,010 senior secondary school science students in Minna Educational Zone. One research question was raised to guide the study and one corresponding null hypothesis was formulated and tested at 0.05 level of significance. A sample size of 50 Science teachers and 278 science students was randomly selected, using simple sampling techniques. The research instrument used for the study was Science Teachers' Technological Knowledge Questionnaire (STTKQ). The instrument was validated by two science education experts from Federal University of Technology, Minna, Niger State. Cronbach alpha was used to obtain the reliability coefficient index of 0.81. Data collected was analysed using linear regression. Mean and standard deviation with scatter plots were used to answer the research questions. Findings from the study reveals that there was no significant relationship between Science Teacher Technological Knowledge and senior secondary school science students' performance. Finally, it is recommended that Science teachers need to be trained to acquire necessary knowledge and skills needed to use technological tools for teaching science subjects. This is important in preparing science teachers for science subject teaching, as well as providing in-service training for science teachers.

Keywords: science teachers, technological knowledge, students, examination and performance

Correspondence

M. K. Abdullahi, K. M. Buda, D. P. Audu & R. Mamman
Department of Biology, School of Sciences, Niger State College of Education, Minna.
Email: abdullahikobo@gmail.com

Notes:

1. For all presenters (excluding the keynoters):
20 minutes presentation and 10 minutes Q & A
2. Here is the link for zoom access:
<https://us02web.zoom.us/j/83669937085?pwd=SG5oaXd2Q3cyU2lxakhEbzBzaHFFQT09>
3. WAT is the time used for the conference.