UNIVERSITY OF PORT HARCOURT

FROM CURIOSITY TO CONTRIBUTIONS: REFLECTIONS OF A CHEMICAL ENGINEER ACROSS DIFFERENT FRONTIERS

VALEDICTORY LECTURE

By

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PROGRAMME

1. GUESTS ARE SEATED

2. INTRODUCTION

3. THE VICE-CHANCELLOR'S OPENING REMARKS

4. CITATION

5. THE VALEDICTORY LECTURE
The lecturer shall remain standing during the citation. He shall step on the rostrum, and deliver his Valedictory Lecture. After the lecture, he shall step towards the Vice-Chancellor, and deliver a copy of the Valedictory Lecture and return to his seat. The Vice-Chancellor shall present the document to the Registrar.

6. CLOSING REMARKS BY THE VICE-CHANCELLOR

7. VOTE OF THANKS

8. DEPARTURE

DEDICATION

To the Almighty God;

And to

My Parents
Chief Amos Badejo Kuye and Mrs. Sabainah Yetunde Kuye all of blessed memory.

ACKNOWLEDGEMENTS

As I reflect on my academic journey, I deem it worthy, first and foremost, to thank the Almighty God, who is the giver of all things, for the boundless divine enablements and infinite mercies. Many waters have gone under the bridge but I have not been swept away.

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I am equally grateful to Dr. Daniel Ayo, and Professors Akinjide Akinola, Lucky Uyigue, and Koyejo Oduola for painstakingly going through the manuscript and making excellent inputs and to Theresa Owhorji for typing the manuscript. My special appreciation goes to Professor Acho Akakuru, my brother from another woman, for being my confidant and English tutor; thank you for helping me to rewrite my engineering memos with a human face.

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1. INTRODUCTION

My journey into academics started in 1971 when I got introduced to the chemical engineering discipline, through an enlightenment program in my secondary school organized by Dr Ayodele Francis Ogunye Team. I was told then that to study engineering at the university requires credit passes in mathematics and physics while chemical engineering requires chemistry in addition. My father (aka Baba Teacher) had a note book where he recorded different herbs for different medicinal uses, and in my curiosity, I thought by reading chemical engineering I can commercialize the uses of these herbs. It was this dream to always add value to resources put at my disposal that guided my journey so far.

As of today, chemical engineering has become a more diverse and in-demand discipline. It blends basic sciences, mathematics, engineering, design, economics and informatics to address everyday needs and global concerns, while developing breakthrough processes and products. Chemical engineering, simply put, deals with processes for transforming raw materials to more useful products. Raw materials to a chemical engineer include:

- Materials that occur in nature such as sand, crude oil, barite.
- Intermediate products, e.g. propylene, used for manufacturing polypropylene plastics;
- Energy;
- Intangible materials such as analyzing and managing the various transformation processes;
- Human beings, through education and training.

All these transformations are guided by the fundamental principle of material balance in chemical engineering which states that under steady state conditions:

Input = Output …. (1.1)

Contrary to the general belief, nature is a well-structured system comprising distinct compartments with their norms, rules and regulations. During my journey so far, I had passed through many compartments of learning, acquiring knowledge and making contributions. These compartments can be classified into two major areas – traditional and non-traditional chemical engineering roles. For an academic, the traditional roles include research and teaching. My research interests are summarized in Fig 1. These include process simulation, synthesis and optimization; renewable energy utilization; and computer-aided learning.

I also got involved in non-traditional roles of chemical engineering such as nuclear, cyber and chemical security education; administration and curriculum development; consultancy and international engagements. This lecture would focus on these non-traditional areas from my prism during the past four decades. I start by looking at chemical engineering education and manpower development; nuclear education and nuclear energy applications; national and international engagements. Before concluding, I shall take a look at university culture and values.

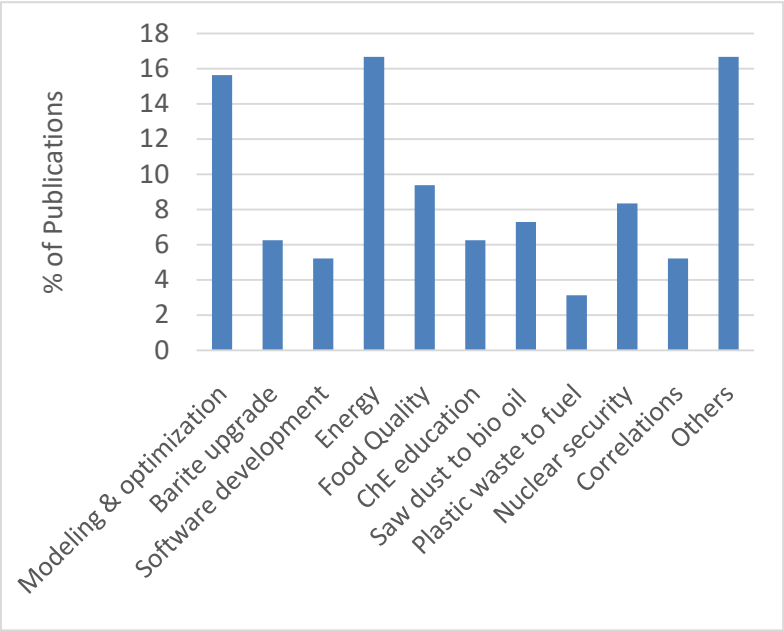


Fig 1: Publications % distribution according to research interests

2. BEYOND TRADITIONAL CHEMICAL ENGINEERING

2.1 CHEMICAL ENGINEERING EDUCATION AND MANPOWER DEVELOPMENT

2.11 Chemical Engineering Education

Chemical engineering education is the process of teaching and learning the principles, knowledge, and skills required to design, develop, and operate chemical processes. It encompasses both theoretical understanding and practical application, preparing individuals to solve complex problems in the chemical industry and related fields. The desired skills now include aspects of digitalization, inclusivity and sustainability (IChemE, 2022). Chemical engineering education comprises creative teaching approaches aimed at improving the student learning experience, as well as student evaluation methods that must be compatible with the changing landscape.

Chemical engineering education research is a relatively new and growing discipline, with its research areas focusing on improving how chemical engineers are educated. Chemical engineering education discipline comprises of six broad research areas namely (Adams et al., 2006; Wankat, 2009; Qiu & Natarajarathinam, 2024):

a. Engineering Epistemologies: Research on what constitutes engineering thinking and knowledge (its nature and how it is understood) within social contexts now and into the future.
b. Engineering Learning Mechanisms: Research on engineering learners' developing knowledge and competencies in context. How students learn engineering concepts and develop competencies in different settings.

c. Engineering Learning Systems: Research on the instructional culture, institutional infrastructure, and epistemology of engineering educators. It examines the educational environment, including the culture, infrastructure, and teaching philosophies within chemical engineering programs.
d. Engineering Diversity and Inclusiveness: Research on how diverse perspectives and backgrounds of human talents contribute engineering solutions to the social and global challenges and profession's overall relevance.
e. Engineering Assessment: Research on developing and evaluating assessment methods, instruments, and metrics to improve learning and teaching of chemical engineering.
f. Curriculum Development: Research on how to best structure the curriculum to meet the evolving needs of the chemical engineering field.

These six areas, however, are not intended to encompass all areas of research interest in chemical engineering education but are flexible enough to accommodate a variety of research questions. In our work, we have enhanced chemical engineering student's learning and critical thinking through inclusive teaching (Edeh and Kuye, 2023) and the use of digital tools for teaching and assessment (Nwambo et al., 2025a, 2025b). By using student learning approach with formative and summative assessment methods for over two decades. We have improved not only the students' interest in ChE515.1 (Process Optimization) but also improved significantly their performance in the examination results. Comparative study of the same set of students taking part in ChE515.1 and ChE517.1 (Chemical Engineering Analysis) from 2006 to 2017 showed that the percentage pass of students in ChE515.1 exceeded that of students in ChE517.1 due to the

course delivery method adopted (Nwambo et al., 2025b). We have also chronicled the establishment and development of chemical engineering departments in Nigerian universities from 1969 to 2019 with emphasis on University of Port Harcourt (Kuye and Edeh, 2024).

In 2019, one of the 10 priority areas identified by Nigeria's National Universities Commission (NUC) is the introduction of a reengineered curriculum that addresses 21st century challenges. This led to the development of CCMAS (Core Curriculum and Minimum Academic Standards) documents. A key feature of the CCMAS documents is the unique structure that provides for 70% of core courses for each programme, while allowing universities to utilize the remaining 30% for other innovative courses in their peculiar areas of focus. Through the Nigerian Society of Chemical Engineering (NSChE, 2023), we appraised the CCMAS for chemical engineering and made useful inputs that were passed to NUC through COREN. Of note is that chemical engineering curriculum must include some fundamental courses for the programme to produce graduates that meet the needs of today's and future process industries.

Thus, in line with international best practices, NSChE (2023) listed core chemical engineering courses and their contents that must be offered by all chemical engineering departments in Nigeria. It is my hope that our department would start offering Engineering Chemistry 1 and 2 as stipulated in this report. In addition, we also contributed to the CCMAS Book Series by presenting a reading text on TCH102 (Overview of Chemical Engineering) as detailed in the Engineering and Technology CCMAS (Ikhu-Omoregbe et al., 2023).

2.12 Classroom and Learning Environment

When I joined the University in 1985, the classrooms consisted of green chalkboards. They were durable but create dusts. The chalkboards were gradually replaced with whiteboards which provide cleaner, vibrant writing with markers but have higher operational costs (markers/cleaners). As a University, I think it is time to start converting the classrooms to e-classrooms and implement its e-learning policy (UNIPORT, 2026). Basically an e-classroom integrates technology with pedagogy. Its core components include a learning management system (LMS), diverse digital content (videos, e-books, graphics), interaction tools (forums, video calls), assessment tools (quizzes, automated feedback), and essential hardware (computers, network, projector).

I have been using some of these tools to teach my undergraduate and post graduate students for over two decades. The experience has been very rewarding for both myself and the students. With such tools, I was able to enforce the university regulations with respect to continual assessment, class attendance requirements, personalize examination question papers and minimize examination malpractice as well as improve my connections with my students. At this point let me thank Late Prof Chi U. Ikoku, the first Dean of Engineering, who saw this potential in me and allocated a Faculty Desktop to me in the early 90s.

Since 2020, quite a number of universities including some centers in this university are offering hybrid (physical and online) classes. However, many students think that online classes are opportunities for multitasking. It is therefore important that higher education institution develop appropriate strategies and policies that would ensure and elevate its quality assurance. The goal is to

make the online environment as engaging as, or even more engaging than, a physical classroom.

2.13 Manpower Development

Knowledge is one of the most powerful drivers of sustainable manpower development. When properly utilized, it produces scalable, effective, and lasting impact on the society. As we all know, the roles of a university are basically teaching, research, and community service. Universities therefore play a crucial role in human growth, societal progress, and economic development by creating new knowledge, training qualified and skilled professionals, encouraging innovation, and promoting cultural enrichment and informed citizenry for a better future. Universities educate students for both high-level jobs and personal growth, tackle difficult societal issues, and serve as centers for intellectual discussion and social change.

Essentially, universities duties in society revolve around knowledge creation, preservation, and dissemination. A Doctor of Philosophy (PhD) program is a major contributor to knowledge creation and it is the highest academic qualification, designed to formalize the process of an individual becoming a subject matter expert and an independent researcher who produces original knowledge. PhD programs are meant to:

i Generate new knowledge through production of original research that extends the forefront of an academic discipline or area of professional practice.

ii Develop research expertise through rigorous training in research methodologies, data analysis, and scholarly inquiry thereby enabling them to become highly skilled, independent researchers.

iii Cultivate thought leaders by transforming candidates into

subject matter experts, thought leaders, and innovators who can direct research, communicate complex findings effectively, and provide expertise to academia, industry, and government.

iv Primarily prepare candidates for academic career.

v Serve as a vehicle for collaborative research between universities and external organizations thus facilitating knowledge transfer and innovation beyond the academic setting.

The foregoing clearly indicates that the PhD program is the engine within any university system for the creation of new and impactful knowledge. This was the situation at this university before the advent of proliferation of PhD programs by Institutes and Centres. Coincidentally, I was a member of the joint committee of the French Institute of Petroleum (IFP), the University of Port Harcourt (UNIPORT) and Elf Petroleum Nigeria Limited that led to the establishment of the Institute of Petroleum Studies (IPS) in 2003, which became the flagship Institute in this University. I was also the Dean of Engineering when its Masters' program was approved by Senate.

Our justification then was that IPS will offer a terminal professional masters' programme in Petroleum Engineering and Project Development while the department will continue to offer its academic masters' programme in Petroleum Engineering. Senate was informed then that only students with academic masters' degree are eligible for PhD admission. In addition, one of the objects of IPS was to improve the quantity and quality of professionals' availability for the oil and gas industry in Nigeria (IPS, 2003).

As stipulated by the National Universities Commission (NUC), the minimum standards for PhD programs in Nigeria include:

a. Entry qualification of a Master's degree with a minimum CGPA of 3.50 on a 5.00 scale (or its equivalent).
b. Submission of a well-structured research proposal, demonstrating their understanding of the chosen field, research question, methodology, and expected outcomes.
c. Qualified supervisors who must hold a PhD degree and be of a rank not lower than senior lecturer. They are to guide and mentor students throughout their research journey.
d. Universities must have adequate libraries, laboratories, and other research facilities to support PhD students' needs.

The University of Port Harcourt also has a very comprehensive regulation governing its graduate studies (UNIPORT, 2024). In addition to NUC requirements, some of the regulations for its PhD programme are:

a. Mandatory Departmental and Faculty Graduate Studies Committees as well the Board of the School of Graduate Studies with their functions clearly stated.

b. Duration of the PhD program depending on the route chosen Full-time or Part-time.

i Full-time admission are offered only to candidates who can satisfy the School of Graduate Studies requirement that they are not in employment, or that they have been relieved by their employers to undertake full time studies. Candidates found to have made a false declaration in this respect shall be asked to withdraw from the programme. Full-time candidates will be required to spend a minimum of 24 calendar months and a maximum of 60 calendar months.

ii All part-time candidates shall be engaged in approved employment and submit evidence that they can devote a good

proportion of their normal working year to their studies and satisfy the Departmental Graduate Studies Committee that they will be available for attendance at courses and for regular consultation with their supervisors. Part-time candidates will be required to spend a minimum of 36 calendar months and a maximum of 84 calendar months. In the early editions of the guidelines, PhD students must spend at least 12 months in residence at the University of Port Harcourt.

c. Candidates must attend and pass the advanced courses approved by Senate for PhD programme, as well as satisfy any further conditions which may be specified by the Departmental Graduate Studies Committee concerned.

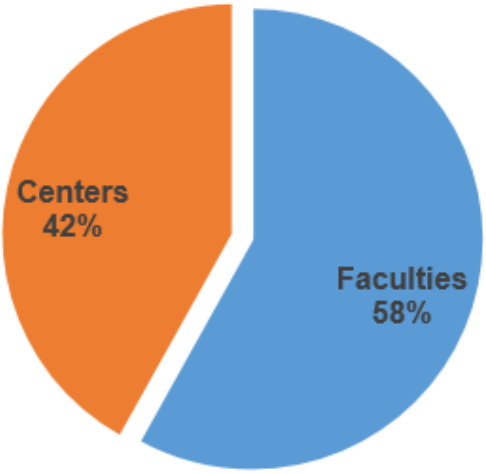
d. Departments must comply with the project supervision carrying capacity specified for each department. The maximum number of doctoral students from any annual intake that an academic staff member can supervise is TWO for a Reader/Professor and ONE for a Senior Lecturer.

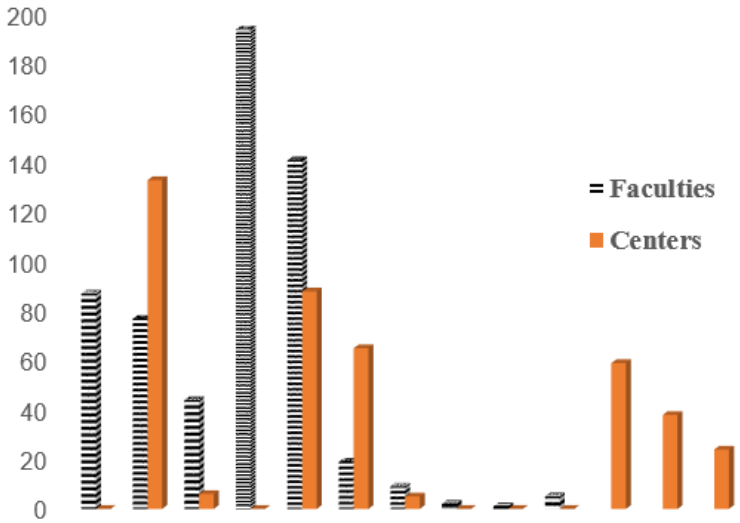
As at 2023, the university had 13 Centres and 10 Faculties offering PhD programmes. The distribution of PhD degrees awarded during the 35th convocation of the University is shown in Fig 2. As can be seen, 42% graduated from the Centers. The bar chart also indicates that one of the Centers graduated more PhDs than its parent Faculty while substantial numbers were from those that are not strictly attached to a particular Faculty. I am aware that one of the requirements for approving PhD program is the list of academic staff that would service the program. Normally a substantial number these staff is from the relevant academic departments. Thus, the supervision of PhD students, whether in the Centers or in the Departments are from the pool of university academic staff who are domiciled in the departments. Apparently to achieve these numbers, the quality of project would be

impacted negatively more so, when most of the Centres do not have any additional research infrastructures.

To reverse this trend, I think the Senate should take an urgent look at the PhD programmes again especially those being offered by the Centres. My view is that all PhD programs must be domiciled in academic departments. The Centres can collaborate with departments to support PhD programs through provision of advance facilities and real-world projects. The School of Graduate Studies should strictly implement its guidelines especially with regards to: (a) full-time or part-time admissions; in a situation where a student is in full employment and also a full-time student is definitely not good for the image of the university; and (b) the maximum number of PhD students an academic staff can supervise.

(a) Pie chart





(b) Bar chart

Fig 2: Awarded PhD Degrees (2021/2022 and 2022/2023 Academic Sessions) by UNIPORT

2.2 NUCLEAR EDUCATION AND NUCLEAR ENERGY APPLICATIONS

2.21 Introduction

Chemical and Nuclear Engineering are distinct, but related fields. Chemical Engineering, as stated earlier, focuses on designing and operating processes for converting raw materials to more useful products, while Nuclear Engineering specifically applies to the design, development, and operation of nuclear energy systems, including power plants and reactors. Chemical engineers in a nuclear plant contribute to areas like heat transfer, fluid dynamics, fuel reprocessing, and waste management. Many chemical

principles are fundamental to nuclear processes. Thus, a chemical engineering degree can provide a strong foundation for further study or a career in nuclear engineering. Other nuclear related fields include reactor physics and transport, nuclear materials and fuel cycle, radiation science and health physics, nuclear safety and security, plasma and fusion engineering.

The nuclear sector is much wider than just energy generation. Growth will include the provision of life-saving medicines, medical processes, and wider applications the International Atomic Energy Agency (IAEA) promotes. The sector includes processing for fuel and medical isotope manufacture, cleanup, storage and reprocessing of legacy wastes, future advanced fuel and new era applications for future generations, as well as the regulatory oversight for all nuclear applications to ensure the highest health and safety standards are achieved and maintained to protect society and the environment.

Many countries have recognized the strategic importance of the nuclear sector. The Council of the EU and the European Parliament has labeled nuclear power as a strategic technology for the EU's decarburization, and the Net-Zero Industry Act (NZIA) aims to speed up the deployment of technologies that can contribute to meeting the EU's net zero emissions target. The US has now introduced green and nuclear energy policies to support the path to net zero, which has led to an increase in interest for nuclear new build, for both fission and fusion (Crampton, 2024). There are 83,000 jobs currently in the nuclear sector within the UK. It is expected that there will be 123,000 jobs by the end of the decade and 150,000 by 2050. The UAE has completed a build for the Bakarah nuclear plant and is now pursuing 25% of their energy mix to be provided by nuclear technology. Emerging

African countries like Ghana and Nigeria may also offer future opportunities.

The nuclear sector needs the chemical engineering mindset to coordinate other professions to meet the many challenges presented in the technical, strategic, construction, operational and shutdown phases. Chemical engineers in the nuclear sector operate in a highly regulated environment, much the same as aerospace, submarine and shipbuilding, health treatments, pharmaceuticals and the oil and gas industries. One other similarity between chemical and nuclear industries is that both place product safety at the centre of everything.

It is therefore not surprising that the nuclear programmes at the University of Port Harcourt was pioneered by the faculty of engineering who got the Senate approval for the establishment of a centre for energy studies and M.Eng Programme in Nuclear Engineering and Technology during its 349th Meeting held on Wednesday, 11th March, 2009. As directed by Senate, the faculty of engineering also worked out the modalities for the establishment and take-off of this Centre. The University also signed a Memorandum of Understanding with Nigeria Atomic Energy Commission (NAEC) on training of nuclear scientists and engineers in March 25, 2009. Almost a year later (March, 19, 2010), the Federal Government approved the Centre as a Centre of Excellence in Nuclear Energy Research and changed the name to Centre for Nuclear Energy Studies (CNES). CNES is now under the supervision, funding, coordination and administration of NAEC while the University is responsible for its academic matters. I was appointed the Director of the Centre by the then Vice Chancellor, Prof. Don M. Baridam, with effect from April 15, 2009 and left the position by September 30, 2016 to enable me

take a sabbatical leave position at the Kumasi Technical University, Ghana.

My tenure as the Director, CNES was well known, especially when it comes to nuclear engineering and nuclear security. To achieve this, a number of measures were put in place. These include:

- Active participation in local and international workshops.
- Developing and implementing a Masters' programme in nuclear engineering. I am happy to note that, UNIPORT through CNES is the first and the only university in Nigeria that to date has produced graduates in nuclear engineering at the Masters' level (see Kuye and Osaisai (2016) for further details). Almost all these graduates now have their PhDs in nuclear engineering; some of them are now lecturing part time at the Centre.
- Organizing national workshops in nuclear security in conjunction with the Institute for Nuclear Materials Management, Nigeria Chapter.

It is my hope that the MEng programme in nuclear engineering will be resumed while the implementation of the BEng programme in nuclear engineering will commence at the soonest by the department of chemical engineering. Senate at its 395th meeting held on Wednesday, January 29, 2014 had already approved the establishment of B.Eng in Nuclear Engineering in the Department of Chemical Engineering. The remaining three sub sections will be devoted to nuclear energy applications and myths; and nuclear security education and training.

2.22 Nuclear Energy Applications and Myths

The first widely publicized nuclear energy used was in 1945 when atomic bombs destroyed Hiroshima and Nagasaki, resulting in the loss of lives in Japan. This incident gave the impression that nuclear energy is only suited for destructive purposes. However, Dwight D. Eisenhower, the then-U.S. President, "Atoms for Peace" program indicated that nuclear technology could beneficial to humanity and opened up many scientific and technological knowledge incentives, allowing the subsequent commercial exploitation of nuclear energy. This led to the creation of the UN's International Atomic Energy Agency (IAEA), based in Vienna, in 1957 which further enhanced this initiative (IAEA, 2022a). The 2016 World Nuclear Association report provides a comprehensive history of nuclear energy (Cobb, 2016).

After years of rigorous research, scientists have successfully applied nuclear energy and technology to a wide range of applications. Such applications include (Akinjide et al., 2026):

a. Nuclear Medicine: for diagnostics purposes (i.e. radioisotopes used in imaging techniques like PET scans to detect diseases); for treatment (targeted radiation therapy treats cancer by destroying tumor cells); and for sterilization (radiation sterilization of medical equipment, such as syringes and bandages).

b. Agriculture and Food: for food irradiation (to extend shelf life and kills bacteria in food); for pest control (The Sterile Insect Technique (SIT) uses radiation to reduce pest populations without chemicals); and Crop Improvement (Inducing mutations to develop stronger, higher-yield crops).

c. Industry: (Non-Destructive Testing (NDT) by using gamma and x-rays to inspect welds and metal parts for structural integrity); Tracers (using radioactive tracers to trace flow patterns

in pipelines or study industrial processes); and Gauging (to measure thickness, density, and levels of materials in production lines).

d. Energy and Power: Electricity Generation (using fission in reactors to produce low-carbon, base-load power); Desalination (Nuclear heat is used to produce fresh water from seawater); and Hydrogen Production (using high-temperature heat from Advanced reactors for efficient hydrogen generation).

e. Space Exploration: Radioisotope Thermoelectric Generators (RTGs). They turn radioactive decay heat into electricity. This makes them a reliable power source for space missions.

f. Scientific and Commercial Uses: Archaeology (Carbon-14 dating to determine the age of organic materials up to 60,000 years old); Atomic clock (An ultra-precise device that measures time by monitoring the constant resonant frequencies of atoms, most commonly cesium. It has been built for timekeeping, navigation, telecommunications, scientific exploration and other uses); and Consumer Products (Smoke detectors use small amounts of Americium-241).

g. Research reactors: Produce isotopes for medicine and other study materials.

The future of nuclear technology is set to change many areas of our lives especially in energy and medical treatments. Nuclear Energy provides one of the best alternatives for clean energy. In this regard, and to ensure that energy generation from this source is safer and cleaner, advancements have been ongoing and one of such is the concept of Small Modular Reactors (SMRs). SMRs offer more economic, and passive safety features, flexibility, and far less radiological consequences from accidents. Ojinnaka et al. (2025) highlighted the fundamentals of SMRs and assessed its

applicable physical protection systems. SMRs will be key in the future energy mix.

Despite the above mentioned peaceful applications of nuclear energy, the nuclear industry continues to face challenges rooted in persistent myths and misconceptions in the public conversation about this technology. Hayes (2022) presented the facts about nuclear energy divorced from political, social or comparable bias. Some of these myths and facts are shown in Fig 3. From Fig 3, it can be argued that most nuclear “myths” stem from fear of radiation and historical accidents, while the facts show that nuclear energy is a highly regulated, low-carbon, and reliable energy source when properly managed.

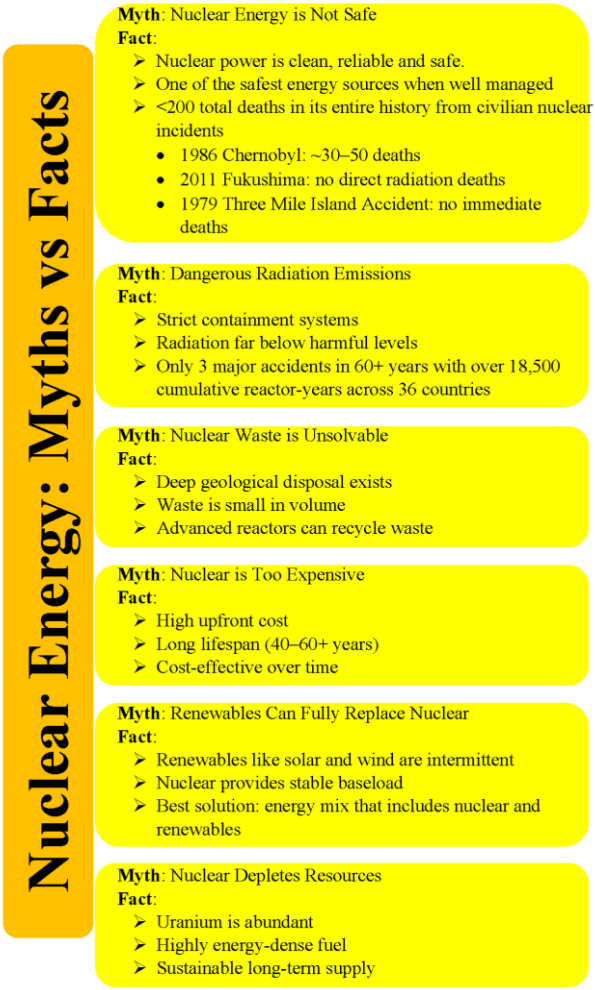


Fig 3: Nuclear Energy Facts and Myths

2.23 Nuclear Security Education and Training

The history of nuclear security changed over time; from Cold War state-level concerns (non-proliferation/physical protection) to post-9/11 global efforts against non-state actors, The Manhattan

Project initially focused on secrecy, followed by treaties like the

a. Non-Proliferation Treaty of Nuclear Weapons (NPT): NPT was an agreement signed in 1968 by several of the major nuclear and non-nuclear powers that pledged their cooperation in stemming the spread of nuclear technology;

b. IAEA safeguards: The safeguards of the IAEA are legally anchored in the IAEA Statute of 1957, in the NPT of 1968 (which entered into force in 1970) and in five treaties establishing nuclear weapon free zones (IAEA, 1998); and

c. Convention on the Physical Protection of Nuclear Material (CPPNM): CPPNM of 1980 and its amendments imposed legal obligations on Parties regarding the physical protection of nuclear material used for peaceful purposes during international transport; the criminalization of certain nuclear material-related offences; and international cooperation in the event of theft, robbery, or any other unlawful taking of nuclear material or credible threat thereof.

However, after 2001, nuclear security refocused to addressing terrorism, resulting in international summits and a greater emphasis on securing all nuclear and radioactive materials worldwide.

IAEA (2013) defines nuclear security as the prevention of, detection of, and response to, criminal or intentional unauthorized acts involving or directed at nuclear material, other radioactive material, associated facilities, or associated activities. It should be noted that nuclear security and nuclear safety have in common the aim of protecting persons, property, society and the environment.

Nuclear Security focuses on *intentional* criminal acts (theft, sabotage, terrorism) while nuclear safety focuses on *preventing accidents* from technical failures, human error, or natural

disasters, and mitigating their consequences. Security measures and safety measures have to be designed and implemented in an integrated manner to develop synergy between these two areas and in a way that security measures do not compromise safety and safety measures do not compromise security.

One of the mandates of CNES is nuclear security training, education and research. The reasons for this are as follows: the global concerns about the risk that nuclear or other radioactive material could be used for criminal or malicious purposes, for which there are a number of reports to support these concerns. Another one is the recommendation of IAEA that each state should take full responsibility for nuclear security in its domain, specifically for the provision of security of nuclear and other radioactive material and its facilities, which include the security of materials in use, in storage or in transport; to combat illegal trafficking and movement of such material; as well as the preparedness to respond to a nuclear security event.

Lastly, there was need to support the FGN in growing the numbers of Nigerians with requisite skills and expertise in nuclear security through education, training and research. With the Federal Government's decision to utilize nuclear energy for electricity generation and its other peaceful uses, the number of professionals handling radioactive and nuclear materials is expected to increase. In response to this need, CNES developed a postgraduate certificate academic program in nuclear security science (PGC-NSS) to enhance awareness of nuclear security and provide students with internationally recommended theoretical and practical knowledge in this field. The PGC-NSS was approved by Senate at its 424th meeting held on Tuesday, September 6, 2016.

CNES developed the PGC-NSS program using a systematic and gradual approach. A breakdown of these approaches encompasses active participation in train-the-trainer series workshops on nuclear security, curriculum and capacity development workshop on nuclear security, nuclear security certification programmes and international conferences on nuclear security as well joining International Nuclear Security Education Network (INSEN). Others are annual national and regional training programmes in nuclear security as well as collaborating with other institutions and using e-learning tools for teaching nuclear security science (Kuye and Uyigue, 2019).

The programme commenced in July 10, 2017 with the first batch of 5 students who were from the Nigerian Nuclear Regulatory Authority (NNRA) and the security agencies. To date CNES has graduated 31 students in 7 batches; 6 females and 25 males. The programme also enjoyed some levels of supports from the Department of State's Partnership for Nuclear Threat Reduction (PNTR, USA), IAEA, NAEC, NNRA and the armed forces.

Building upon the success of the PGC-NSS programme, CNES has commenced a Masters in Nuclear Security (MSc-NS) program during the 2025/2026 academic session. This advanced programme will offer students the opportunity to delve deeper into the subject matter and develop specialized expertise.

2.3 NATIONAL AND INTERNATIONAL ENGAGEMENTS

Over the years, I have been involved in a number of professional national and international activities. Through these activities, we have been able to bridge academic theory with industry practice, allowing us to solve real-world problems while enhancing teaching and research. This dynamics strengthens curriculum

design and prepares students for industry needs. National projects help ensure that engineering curricula meet current industry standards and also bring real-world, up-to-date, and practical experience into the classroom. In addition, it gives opportunities for staff development in specific applied engineering fields.

As part of my public service to Nigeria and in consonance with my research interest, I led two significant national projects:

a. *Design, Fabrication, and Testing of a Modified Flash Dryer (sponsored by IITA, Ibadan; RMRDC, Abuja; RTEP, IjebuImushin; and Godilogo Farms, Obudu) from 2006 to 2008*.

One of the objectives of the former President Olusegun Obasanjo's Administration was to add economic value to cassava. It was the Government policy then that the flour produced in the country must contain 10% cassava flour. Implementation of this policy would require 200,000 tonnes/year of cassava flour. Thus, to meet this target requires not only mechanized farming but also medium to large scale cassava processing. We therefore undertook the project to address the performance issues of the few existing flash dryers that were producing inconsistent flour quality and are generally characterized by inefficient and high-energy use.

This project clearly demonstrated that when Nigerian engineers are challenged they will perform very well. Apart from technical reports that have been submitted to the sponsors, the Team has a book on design and fabrication of a flash dryer for the production of high quality cassava flour that was published by IITA press (Kuye et al., 2011). Kuye, (2025) gives the further technical details for this project.

b. *Computer Aided Process Equipment Design (CAPED) (sponsored by the Raw Materials Research & Development Council, Abuja) from March 2004 to 2015*.
The ultimate goal of the CAPED Team was to produce a software suite for performance evaluation and process design of commonly used equipment for raw material processing. The work involves the development of a process equipment design and simulation package using visual basic. To date the software developed by this team can be used to design air cyclone, hydrocyclone and Spray Dryer. The outputs from this work are well documented as technical reports (submitted to RMRDC) and publications in journals and monographs (Kuye, 2025).

Professionally, I was also involved through Nigerian Society of Chemical Engineers (NSChE) in three national assignments namely:
a. *Member of Nigerian Society of Chemical Engineers (NSChE) / the Nigerian Content Development and Monitoring Board (NCDMB) collaboration project team from 2019–2022*.
The collaboration was to address the key problems and challenges militating against domestication of barite and other chemicals used in the Nigerian Oil and Gas industry. The collaboration resulted in the production and issuance of a pre-feasibility report the domestication of barite by NSChE. In accepting the report, NCDMB identified ten action points to fully domesticate barite production and to further identify other chemicals that could be domesticated and thereby increase the levels of local contents in the Oil and Gas industry in Nigeria. Four of the ten action points were to be handled by NSChE while the rest were assigned to NCDMB and the Ministry of Mines and Steel Development (MMSD). The NSChE four action points were to:

i. Review and Standardize format of feasibility studies and ensure adequate information to drive production and utilization of other oilfield fluids/chemicals.
ii. Initiate a study on the value chain for drilling fluids and chemicals in Nigeria. The study shall identify the size of the market and prevailing prices, the current demand and supply profile, in-country production capacity and feasibility of viable and sustainable manufacture of the chemicals.
iii. Provide information on available Barite reserves, in-country demand, existing in-country production capacity (supply) and projected demand for the African Regional Market.
iv. Carry out an assessment of Barite in-country demand and existing supply capacity to justify investment in additional exploration activities.

The outputs are well documented in three reports submitted to NCDMB by NSChE(NSChE, 2022a, 2022b, 2022c).This collaboration served as a precursor to our research work on adding value to the raw barite and contributing to the ongoing diversifying the Nigerian economy by developing the mining sector (Kuye, 2025). This effort produced a PhD thesis and six journal publications.

b. *Member for the NSChE/MAN (Manufacturers Association of Nigeria) collaboration Committee 2020*.
The joint committee, comprised of 7 qualified Chemical Engineers drawn from NSChE and MAN, was to chart the roadmap for the collaboration and evolve a strong policy recommendation that Government can adopt in addressing issues negatively impacting the manufacturing sector in order to support of the much-desired industrialization of the country. The Committee submitted by February, 2021, a White Paper Report to

the leadership of the two organizations which embodies strategies and policies for sustainable growth of the manufacturing sector. The report contained far reaching recommendations to the Federal Government, the Nigerian Export Promotion Council (NEPC), MAN and NSChE. Subsequently, a number of low hanging fruits amongst the recommendations, which can be readily implemented by MAN and NSChE working together were identified, as well as development of strategies for the implementation.

c. *NSChE Additional Minimum Chemical Engineering Core Curriculum and Minimum Academic Standards for the Nigerian Universities (CCMAS), 2023*. I was actively involved in the preparation of the NSChE position paper on NUC CCMAS for chemical engineering. The approved report contains a chemical engineering curriculum that meets the current needs and international best practices for our national industrial growth. The report (NSChE, 2023) was sent to COREN and the heads of departments of chemical engineering in Nigerian universities. Highlights of the report include:

i. NUC CCMAS include six (6) courses (a total of 15 units) of chemical engineering courses which were tagged as electives. However, these courses are core chemical engineering courses and must be made compulsory.

ii. Chemical engineering curriculum requires more chemistry than what was prescribed in the NUC CCMAS. Hence two new engineering chemistry courses (6 credit units) were introduced.

iii. The minimum graduation requirement for chemical engineering programme shall be 165 credit units instead of the 150 credit units specified by NUC. The corresponding course structure is shown in Table 1.

I am happy that the University of Port Harcourt has started the implementation of CCMAS. It is my hope that the chemical engineering departments in Nigeria will implement the NSChE CCMAS especially the two new engineering chemistry courses which addresses a strong deficiency in the NUC CCMAS. The list of additional core chemical engineering courses are shown in Table 2.

Table 1: NSChE Minimum requirement for graduation

COURSE CLASSIFICATIONS	**100L**	**200L**	**300L**	**400L**	**500L**	**TOTAL**
NUC Compulsory Courses (CS)	27	26	19	5	13	90
COREN Required Courses (CR)	6	3	6	-		15
University Compulsory Courses(CU)	-	6	10	11	6	33
NUC SIWES Requirement (SN)	---	3	4	8	0	15
University Specialty Courses (US)	---	---	---	---	8	8
Electives	---	---	---	---	4	4
Total	**33**	**38**	**39**	**24**	**31**	**165**

Table 2: List of Additional Core Chemical Engineering Courses

Course Code	Course Title	Status	LH	PH	Units
200 LEVEL					
TCH202	Material Science for ChemEngrs	CU	45	0	3
TCHxxx	Engineering Chemistry 1	CU	45	0	3
300 LEVEL					
TCH303	Separation Processes I	CU	45	0	2
TCHxxx	Transfer Processes II	CU	30	0	2
TCHxxx	Particulate Systems	CU	30	0	2
TCHxxx	Chem. Engrng Lab II	CU	0	45	1
TCHxxx	Engineering Chemistry 2	CU	45	0	3
400 LEVEL					
TCH402	Chemical RxnEngrng	CU	45	0	3
TCH404	Process Design & Economics	CU	45	0	3
TCH405	Process Control	CU	30	0	2
TCHxxx	Separation Processes II	CU	30	0	2
TCHxxx	Chemical Engineering Laboratory III	CU	0	45	1
500 LEVEL					
TCH304	Process Instrumentation	CU	30	0	2
TCHxxx	Process Safety & Loss Prevention	CU	30	0	2
TCHxxx	Environmental Pollution Control	CU	30	0	2
	TOTAL				**33**

I have also put the University of Port Harcourt on the nuclear world map through my two international engagements. As the pioneer director of the Centre for Nuclear Energy Studies (CNES), I got *nuclearized* through a series of structured training, workshops, and scientific visits. I am indebted to Professor Franklin Erepamo Osaisai, the then Director General and later the Chairman/CEO of Nigeria Atomic Energy Commission (NAEC) who sent me for my first nuclear related workshop in 2011. Since then, I have attended over forty international workshops held in different countries including Austria, Brazil, Egypt, Ghana, Kenya, Madagascar, South Africa, Tanzania, United Kingdom,

United States of America and Zambia. Of note was my attending an international solar energy experts workshop organized by Brew-Hammond Energy Centre, Kwame Nkrumah University of Science Technology (KNUST), Kumasi, Ghana in 2011.

Apart from the technical content of this workshop, I learnt that the outputs from a Centre is dependent on the quality of its staff and not on the size of its building. It was this experience that encouraged me to start CNES from my personal office in Choba Park and a room at the Basic Studies Unit in Abuja Park with a few staff seconded from NAEC. I am happy that CNES now occupies a relatively large fenced land with three buildings (Nuclear Science and Engineering Laboratory Building; Thermal Hydraulics Laboratory Building; and Guest House/Student Hostel) strategically located at three of the four corners with full funding provided by NAEC. It is my hope that the current Director of CNES will actualize the planned fourth building.

My international engagements gave me the opportunity to interact with academics, researchers, and professionals worldwide leading to grants, knowledge sharing and global networking. Two of such engagements are:

a. *International Nuclear Security Education Network (INSEN)*. I was introduced to INSEN during one of the international nuclear security workshops that I attended. CNES later became a member of INSEN in 2013 with me as its contact person. INSEN was established in March 2010 as a partnership between the International Atomic Energy Agency (IAEA), educational and research institutions, and other stakeholders that are committed to ensuring sustainable establishment of nuclear security education (Goel et al., 2024). The network's mission is to enhance global nuclear security by developing, sharing, and

promoting excellence in nuclear security education. INSEN is guided by all members of the network and consists of three working groups.

With my active participation in INSEN, I became its Working Group III Vice Chair and Chair (July 2017 – July 2019) as well as its Vice Chair and Chair (July 2023 - November 2025). The network has 215 member institutions (65 in Europe; 60 in Asia and the Pacific; 59 in Africa; 24 in North America; 7 in Latin America and the Caribbean) from 75 Member States and 14 Observers as at February 2026. Membership of INSEN has been very beneficial to the aspirations of CNES in particular and the University of Port Harcourt in general. These include access to INSEN teaching material, professional development courses in nuclear security and interaction with nuclear security educator's world wide as well as access to IAEA documents. CNES used the IAEA NSS 12 and 12-T (International Atomic Energy Agency, 2010, 2021) as a guide for developing its Postgraduate Certificate (PGC) and Master of Science (MSc) Programs in Nuclear Security. CNES commenced the (PGC) programme in nuclear security science during the 2017/18 academic session and this gave way to the MSc program during the 2025/26 academic session. Through INSEN, IAEA also donated a number of nuclear security detection equipment to CNES in 2020. It is my hope that CNES would continue to be active in nuclear security and retain the university on the nuclear map.

b. *The African Network for Education in Nuclear Science and Technology (AFRA-NEST)*. AFRA-NEST was established by the Africa Regional Cooperative Agreement for Research, Development and Training related to Nuclear Science and Technology (AFRA) to facilitate the implementation of its strategy on human resource development and nuclear knowledge

management. Its main objective is to facilitate operation and networking in higher education, training and related research in nuclear science and technology in the African region (AFRA-NEST | IAEA, n.d.). The key function of AFRA-NEST is to facilitate sustainable human resource development and nuclear knowledge management to meet the needs of IAEA Member States in the African region in their priority areas of non-power and power applications of nuclear energy. I was nominated by NAEC as the national coordinator of Nigeria Network for Education in Nuclear Science and Technology (NGA-NEST). NGA-NEST is the national network of AFRA-NEST.

NGA-NEST is registered with Corporate Affairs Commission in Nigeria as a non-governmental organization. The goal of NGA-NEST is to facilitate the cooperation and networking of institutions that are interested in nuclear science and technology education, training, research and outreach within Nigeria and also within the African Region. Membership of NGA-NEST is open to Universities; Nuclear Organizations and Regulators; Atomic and allied Energy Commissions; Nuclear Industries and other peaceful users of radiation and nuclear applications. Currently, NGA-NEST has 16 institutional members and has been organizing regular online webinars since July 2023 with presenters from United States, Canada, Ghana and Nigeria.

Through my engagements with AFRA-NEST, I have benefitted from the IAEA Education Capability Assessment and Planning (ECAP) methodology (Ugbor et al., 2018). The methodology is a structured, self-assessment tool designed to help Member States—particularly developing countries—evaluate and improve their national capacity for education in nuclear science and technology.

The process involves a preliminary survey to (a) establish a baseline for nuclear education and R&D resources in a country; and (b) provide information on the strengths and weaknesses of national nuclear education programmes, level of collaboration and cooperation between government, education and industry, unmet current and future needs and the barriers and enablers involved in realizing them, as well as the external and internal factors that influence the nuclear education programme. This is then followed by an IAEA ECAP Assist Mission to evaluate the national education landscape. Nigeria had its IAEA ECAP Assist Mission from December 10-14, 2018. Although the methodology was designed for nuclear science and technology education, the principles can easily be adapted to other educational programs. I would recommend that the University School of Graduate Studies should consider using ECAP principles to update its current template for new programmes.

3. UNIVERSITY CULTURE, NORMS AND TRADITIONS

3.1 Introduction

There are many definitions for a university. One of them is that the word "*university*" which is derived from the Latin phrase: *universitas magistrorum et scholarium*, which roughly mean *community of teachers and scholars* (Mulder, 2025). University can also be described based on its structure or organogram, its people and its physical environment. As of early 2026, there were 309 universities in Nigeria (*National Universities Commission*, n.d.). Out of this number, 168 are private universities, 74 are federal universities, and 67 are state universities. Each university has its culture, norms and traditions. Each university possesses a unique and cherished culture.

University culture is an accumulation of shared beliefs, values, traditions, and practices developed over long-term, collective experiences by staff and students. It encompasses (a) the academic spirit which is characterized by curiosity, collaboration, and critical thinking; (b) core values and norms such as academic integrity, fairness, and mutual respect; (c) shared decision-making between faculty, administration, and students; and (d) openness to new ideas, interdisciplinary collaboration, and global networking. It is pertinent to note that university culture is distinct from university ethics. While culture describes how people commonly behave in the university environment, ethics defines the moral principles, standards of conduct, and academic integrity that guide the behavior of individuals (staff and students) within the institution.

University culture is deeply intertwined with knowledge management (KM) and administration as these elements collectively define the academic environment, influence knowledge production, and foster professional development. University culture determines how knowledge is shared and managed, while administration sets the policies, such as sabbaticals, that enable staff to update their skills and contribute back to the institution.

3.2 University Knowledge Management (UKM)

Knowledge exists in two primary forms: explicit and tacit. Tacit or implicit knowledge is personal, context-specific, and often difficult to formalize or communicate with, such as intuition, insights, and hands-on skills. It resides in the minds of individuals and is gained through experience. Explicit knowledge, in contrast, can be codified and transmitted in formal language, such as manuals, reports, or databases (Haque, 2025). There is a strong interplay of these knowledge forms. In a university, examples of

tacit knowledge include a professor's teaching style, a researcher's intuition regarding a study, knowing by feel how tightly to tighten a bolt, or mentorship techniques while examples explicit knowledge include lecture notes, published research papers, textbooks, syllabi, and administrative policies.

UKM is a process of coordinating, organizing and making institutional knowledge available for capture, storage, sharing and reuse to achieve institutional aims and objectives (Ogunbanwo et al., 2019). It focuses on managing knowledge related to teaching, research, and administrative processes. UKM improves organizational performance, enhances decision-making, fosters innovation, and ensures efficient use of intellectual capital.

Fig 4 shows the four foundational components of KM. They are the people who create, use and share knowledge; the processes which are the methods capturing, transferring, and applying knowledge; the content/IT which comprises the backbone for storing, retrieving, and sharing information; and the strategy used which must align with institutional objectives.

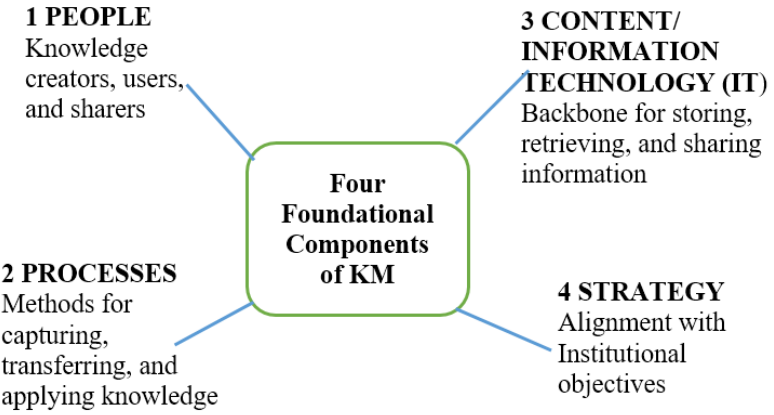


Fig 4: Foundational Components of KM

KM is an emerging concept in developing countries with varying awareness and maturity levels. The maturity levels are:

i Level 1: Knowledge Chaotic – No formal KM, recognition of knowledge as an asset.
ii Level 2: Knowledge Aware – Adopting and developing KM vision.
iii Level 3: Knowledge Focused – Full implementation of initial steps, focus on enablers.
iv Level 4: Knowledge Managed – Performance reviews, active management.

With over 50 years of existence and as an entrepreneurial university, the University of Port Harcourt is ripe for a robust knowledge management system (KMS). The University can start with an assessment of the level of awareness and thereafter develop a KMS. The goal would be to ensure that valuable information is not lost and is available to the right people at the right time. The developed KMS should not be just a document repository but an interactive ecosystem that promotes communication and learning. It is my considered opinion that the KMS should be housed in the Library. When well-implemented, KMS would deliver significant benefits to the university. These include (Haque, 2025):

i Quick access to accurate and relevant information,
ii Improve decision-making process thereby empowering employees to act with confidence.
iii Enhances operational efficiency by reducing the time spent searching for information and decreasing redundant work, which in turn boosts productivity and saves costs.
iv Serves as an organizational memory by ensuring knowledge retention and continuity by capturing institutional wisdom that might otherwise be lost when employees leave.

v Streamlines employee on boarding, significantly reducing the learning curve for new hires by providing a single, organized source of truth for all essential information.

3.3 University Administration and Policies

University administration involves organizing human and material resources to achieve institutional goals, focusing on teaching, research, and community service. Each university has in place its core policies for ensuring operational sustainability, academic standards, and efficient service delivery. These policies include: (a) academic policies which regulate admissions, examination protocols, plagiarism, and grading standards; (b) human resource policies which provide guidelines for recruitment, promotions, staff development, and staff discipline; (c) financial policies which comprise procedures for budget approval, auditing, and resource allocation; and (d) student services policies which are regulations governing student life, accommodation services, and discipline. Tables 3 and 4 are the policies of the University of Port Harcourt are listed at (UNIPORT, n.d.). Table 4 is policy and guideline documents.

Table 3: Policies of the University of Port Harcourt

1	Career Structure for Junior Staff
2	Career Structure for Senior Professional, Administrative and Technical Staff (SPATS)
3	E-Learning Policy
4	General Regulation and Statement of Academic Policies
5	General Regulation for Graduate Programmes
6	Handbook of Administrative Procedures
7	Policy and Procedures for Design and Approval of Academic Programmes
8	Policy Guide for Mentoring
9	Policy on Diversity, Inclusiveness, Equity and Gender Equality

10	Policy on Policy Development in the University of Port Harcourt
11	Policy on Teaching, Learning, Assessment and Student Support
12	Policy on Teaching, Learning, Assessment and Student Support
13	Public Relation and Information Policy
14	Quality Assurance and Quality Control Policy
15	Regulations Governing Staff Conditions of Service
16	Roles and Responsibilities of Key Officers in the University of Port Harcourt
17	Sexual Harassment Policy
18	Standard Operating Procedures for Research Ethics
19	Structure and Procedures of the University of Port Harcourt Quality Assurance and Quality Control Unit
20	UNIPORT Guideline on Inaugural and Valedictory Lectures
21	UNIPORT Guidelines for Appointment and Promotion of Academic Staff
22	University of Port Harcourt Regional Strategy
23	University of Port Harcourt Research Strategy and Management Policy

A close look at the policy documents list in Table 3 indicates that there is need to standardize the template for these documents. I would suggest that the documents should be reviewed using the following outline:

- Document control page (to contain Policy Title, Effective Date, Version, Initial version, Approved By, Date Approved, Review Date, Superseded or Obsolete Policy/Procedure(s), Related Policies, Policy Owner)
- Table of Contents
- Corporate profile of the university
- Policy main body

The documents listed in Table 4, although listed as policies, are in the real sense not policies. For instance, the academic adviser's document is a list of students and their course advisers for U2022

set for a particular department. Usage analytics is also dynamic information which should not be placed on this web page. My suggestion would be that the documents listed in Table 4 should be removed from the policies list in the university website.

Table 4: Non policy documents that are listed as policy documents

1	2023 and 2024 University Budget
2	2023 Usage Analytics of the Main Library
3	Academic Advisers
4	Major Decisions Of Senate 2015 – 2021
5	Minutes Of SCAPP 2020 2021
6	Minutes of Stakeholders Meeting on Review and Adoption of UPH Policies and Procedures
7	Report Of Complaints Received and Treated from January to July, 2023
8	Usage Analytics for The Learning Management System

I am aware that the university received the report from the committee on AI policy which was constituted to formulate a formal AI policy framework for responsible adoption, ethical use, and integration of AI technologies in academic and administrative processes (Georgewill, 2025). This policy has not been included in the webpage. This goes to indicate that the policies listed in Table 3 may not be exhaustive. There is need, therefore, to regularly update the policies on university website especially as new ones are formulated.

For the rest of this section, I will elaborate on certain aspects of three of the policies in Table 3 namely:

i *Regulations Governing Staff Conditions of Service (UNIPORT, 2015)*: When I joined the University in 1985, the first policy document I bought was the staff conditions of service from

the then university bookshop. This document was revised in September 2015. Unfortunately, the online version of the staff conditions of service on the university website (UNIPORT, 2015) appears to be a draft with a number of errors. However, the hard copy is free of these errors. By going through this document I learnt that the academic staff is entitled to annual leave and research leave. In addition, they are also entitled to 12-month sabbatical leave after every six years of continuous service. However, sabbatical leave is only for senior staff (Senior Lecturer and above). It allows the staff to focus on research, teaching improvement, and professional development at other institutions or industry settings.

Usually it requires a formal application submitted through the department to the Vice Chancellor, including a letter of invitation from the host institution/industry, with proposed activities, and objectives (Uniport, 2015). I will encourage every staff to get a copy of the university regulations governing staff conditions of service for more details on the procedures for applying for these leaves and other benefits. It is also my hope that the University would revive its bookshop. The university press and university bookshop serve as key academic publisher and distributor, offering a wide range of educational resources. These entities are vital for the availability of academic resources and the support of scholarly activities within the university system. I have taken four sabbaticals – three within Nigeria and one outside Nigeria. I also took a number of research leaves during my early years at the University. I derived a lot of benefits from these leaves which include acquiring new skills and knowledge from host institutions and networking. Quite a number of my publications and collaborative research were initiated and/or completed during my sabbaticals.

ii *General Regulation and Statement of Academic Policies (UNIPORT, 2021)*: The students' life cycle begins with admission and enrolment into an academic programme. This process should start with the Departmental Admissions Committee in line with quota allocated to the departments. In engineering, this quota is usually guided by carrying capacity as stipulated by COREN and NUC. Shortlisted candidates are then forwarded to the Faculty Admissions Committee for further processing before being sent to the Committee of Provost and Deans, whose responsibilities include advising the Vice-Chancellor on academic policies, curriculum, student admissions, and academic calendar planning, for the final admission. This was the procedure when I was the acting head of department (Oct 1991 - Dec 1994) and the Dean of Engineering (Jun 24, 2002 – Jun 23, 2004). It appears that this procedure has changed. If this is true, may I plead that this procedure should be reactivated and implemented.

Another issue that is of concern to me is the handling of semester and degree examination results. It is clearly stated in the academic policy (UNIPORT, 2021) that Faculty Officers. Heads of Department and Provost/Deans/Directors should ensure that results are treated as high-security documents. It was further stated that duly signed and Senate-approved semester results should be distributed as follows: one copy to the Course lecturer(s), one copy to the Head of Department, and two copies to the Office of the Provost/Dean. This provision is very apt since after the course lecturer submits his/her results, it goes to Senate through the departmental and faculty boards with the possibility of the results being moderated at each step. Since this policy came into effect, I have never received a copy of the Senate approved result for the courses I taught. Apparently, this important section of the policy is ignored. To the best of my knowledge, the

provisions for external moderation of degree examination are also not followed to the letters. Most External examiners only conduct an oral examination of final year Projects and just sign the final year Degree Spreadsheets without waiting for due consideration of all results and Projects. There is urgent need to address these issues.

iii Guidelines for Appointment and Promotion of Academic Staff (UNIPORT, 2023): This guideline is comprehensive and qualitative. Ideally, it should remove any subjectivity when accessing academic staff, but, in reality, it is prone to human factors due to the number of criteria that must be considered. It is prone to errors of uniformity, presentation format and even calculations of weighting points. With this in mind, I developed an Excel programme that can be used for promotion assessment using the university guideline. The programme ensures that all the requirements for promotion to a particular rank are satisfied; otherwise the deficiencies are flagged. The programme has three main sections – scoring of the publications, summary of the scores, and the report (see Figs 5-7). The scores are calculated using the provided information on number of authors, paper status (Old/New), lead author (Yes/No), where the work is published (Local / Foreign) and the Assessment (Excellent (3), Very Good (2.5), Good (2), Fairly Good (1.5), Fair (1), Poor (0)). The summaries are derived from scores and other non-publication scores. The report to be submitted to central Appointments and Promotion Committee are also generated. The summary section uses the formula shown in Table 5.

Fig 5: Computation of scores for publications

UNIVERSITY OF PORT HARCOURT
APPOINTMENT & PROMOTION ASSESSMENT

NAME OF STAFF:
ASSESSMENT FOR:

S/N	Title of Paper	No of Authors	Comments/Review	Paper Status (Old/New)	Lead Author (Yes / No)	Local / Foreign	Assessment	Score
A	**Patents**							
1								0
B	**Books/Monographs**							
1								0
C	**Chapters in Book**							
1								0
D	**Journal Papers**							
1								0
E	**Conference Proceedings**							
1								0

Note: +Assessment: Excellent (3), Very Good (2.5), Good (2), Fairly Good (1.5), Fair (1), Poor (0) ++ Refer to University of Port Harcourt Guideline

Total Number of Publications 0 **% Lead/Corresponding Author ….** #DIV/0!

Total Publication Points…… 0 **% of Local Publications ….** #DIV/0! **% of Foreign Publications ….** ######

Fig 6: Summary of scores

COMMENTS/OBSERVATIONS/SUMMARY:

(a) Positives
(b) Negatives
Recommendation
Name:
Signed: **Date:**
Summary

Assessment for	0
Patents	0
Books / Monographs / Chapters in Books	0
New Journals (Vol 3 and below)	0
Old Journals	0
10% of the total journal publication	0
Old Journals (<=2 Authors)	0
Old Journals (>2 Authors)	0
% Lead/Corresponding Author	#DIV/0!
% of Local Publications	#DIV/0!
% of Foreign Publications	#DIV/0!
% of scores from Journal Articles	#DIV/0!
Books / Monographs / Chapters in Books	0

At least sixty (60%) percent of the score from publications shall come from journal articles.
Not more than 10% of the total score allotted to research and publications shall be obtained from book publications.
List of reputable international journals (Minimum 18 points for Professorship position, 12.5 points for Readership and 4 points for Senior Lecturer)
For three or more authors, the lead author/corresponding author gets 60% of the points while the other authors get 40% each
A book should consist of 100 pages, typed with font 12 and single line spacing in the area of specialization, not less than size of A4

Score only 0 of the New Journals 0 Scored New

#DIV/0! 60

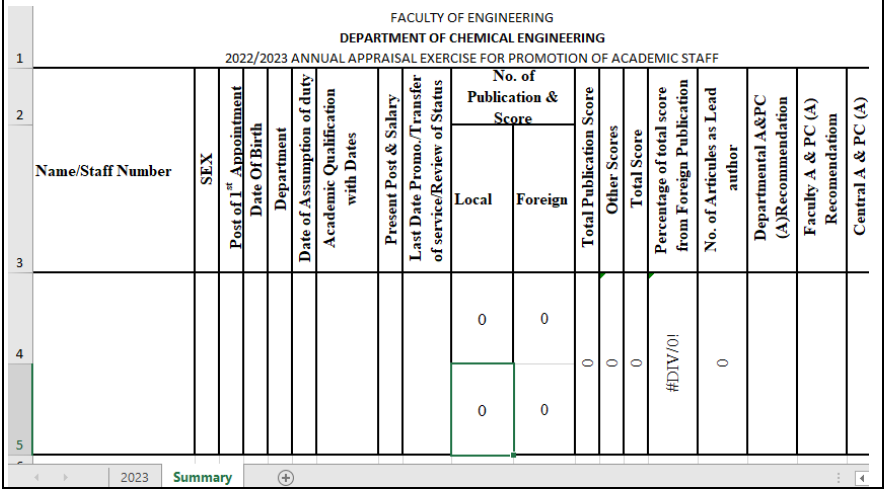
No of Local 0 Score Loc 0
No of Foreign 0 Score Fore 0
No as Lead 0 Total Pub 0
Others 0
Total 0
Check Correct summary
Other Are 0
Check Correct Total

Scoring

Patents	0
Books / Monographs / Chapters in Books	0
New Journals	0
Old Journals	0
Conference	0
Total	**0**

Other Areas of Scoring		
Qualification - Academic	0	not qualified for promotion
Qualification - Professional	0	
Teaching / Professional Experience	0	Not qualified for promotion
Professional Activities	0	Not qualified for promotion
University / Public Service	0	Not qualified for promotion
Administrative Experience	0	Not qualified for promotion
No of Conferences attended in the last 3 years	0	Not qualified for promotion
Total Score	**0**	

Fig 7: Report of the assessment



FACULTY OF ENGINEERING
DEPARTMENT OF CHEMICAL ENGINEERING
2022/2023 ANNUAL APPRAISAL EXERCISE FOR PROMOTION OF ACADEMIC STAFF

Name/Staff Number	SEX	Post of 1st Appointment	Date Of Birth	Department	Date of Assumption of duty	Academic Qualification with Dates	Present Post & Salary	Last Date Promo./Transfer of service/Review of Status	No. of Publication & Score		Total Publication Score	Other Scores	Total Score	Percentage of total score from Foreign Publication	No. of Articles as Lead author	Departmental A&PC (A)Recommendation	Faculty A & PC (A) Recomendation	Central A & PC (A)
									Local	Foreign								
									0	0	0	0	0	#DIV/0!	0			
									0	0								

2023 Summary

Table 5: Formula used for the summary section

Assessment for	=D5
Patents	=COUNTIF(K9:K13,">0")
Books / Monographs / Chapters in Books	=COUNTIF(K22:K29,">0")+COUNTIF(K15:K20,">0")
New Journals (Vol 3 and below)	=COUNTIF(G31:G110,"New")
Old Journals	=COUNTIF(G31:G110,"Old")
10% of the total journal publication	=0.1*(D152+D153)
Old Journals (<=2 Authors)	=D153-D156
Old Journals (>2 Authors)	=COUNTIFS(D31:D110,">2",G31:G110,"=Old")
% Lead/Corresponding Author	=COUNTIF(H31:H110,"Yes")/(D152+D153)
% of Local Publications	=COUNTIF(I30:I110,"Local")/(D152+D153)
% of Foreign Publications	=1-D158
% of scores from Journal Articles	=(D166+D167)/D169
Books / Monographs / Chapters in Books	=SUM(K22:K29)+SUM(K15:K20)

Scoring	
Patents	=SUM(K9:K13)
Books / Monographs / Chapters in Books	=SUM(K22:K29)+SUM(K15:K20)
New Journals	=SUMIF(G31:G110,"New",K31:K110)
Old Journals	=SUMIF(G31:G110,"Old",K31:K110)
Conference	=IF(SUM(K112:K131)>3,3,SUM(K112:K131))
Total	**=D166+D167+D168+D165+D164**

Other Areas of Scoring	
Qualification - Academic	0
Qualification - Professional	0
Teaching / Professional Experience	0
Professional Activities	0
University / Public Service	0
Administrative Experience	0
No of Conferences attended in the last 3 years	0
Total Score	**=SUM(D172:D177)+D169**

This Excel template has been used severally in my department and by the university committee on verification of submissions for elevation to professorial cadre for the 2019/2020 annual promotion. This Committee, chaired by me, was able to verify a total of one hundred and sixty-six (166) professorial candidates out of which one hundred and two (102) were for professors while the remaining sixty-four were for readers. 12.22% of the submissions for professorship, and 14.04% submissions for readership were not recommended. I would recommend that the university should move away from manual assessment process. Some other universities in Nigeria are already using software for their professorial assessments. It may also be nice to make other areas of the assessment (professional activities, conference attendance, etc.) less subjective as was done with actual publications.

4. CONCLUSIONS

My journey into academics began over four decades ago, driven by curiosity and a desire to add value to resources. This led me into chemical engineering and, over time, enabled contributions to be made not only within the field but also across other disciplines. In this lecture, I demonstrated how lifelong curiosity has shaped my work across multiple frontiers, including three non-traditional areas of chemical engineering and reflections on university culture.

I highlighted chemical engineering education research as an emerging field, outlining its key areas and our contributions. I argued that the University of Port Harcourt should transit from traditional classrooms to e-classrooms in order to enhance learning and align with global trends.

PhD programmes should primarily prepare candidates for academic careers, and this requires strong libraries, laboratories, and other research facilities. Yet, despite lacking additional infrastructure when compared with academic departments, the institutes and centres produced 42% of the PhD degrees awarded at the University's 35th convocation. In my view, all PhD programmes should be domiciled in academic departments, while institutes and centres collaborate by providing advanced facilities and real-world research projects. Furthermore, the School of Graduate Studies should strictly enforce its guidelines, particularly regarding admission status (full-time or part-time) and the maximum number of PhD students each academic staff may supervise.

During my tenure as Director of CNES, the University gained strong recognition in nuclear engineering and nuclear security. The University of Port Harcourt, through CNES, remains the first and only university in Nigeria to have produced graduates in

nuclear engineering at the Master's level. It is my hope that the Department of Chemical Engineering will soon commence the Senate-approved B.Eng programme in nuclear engineering and reactivate the M.Eng programme. CNES also introduced a Postgraduate Certificate in Nuclear Security Science (PGC-NSS) to build capacity and awareness in the field. So far, the programme has graduated 31 students across seven batches—6 females and 25 males.

After years of rigorous research, scientists have successfully applied nuclear energy and technology across diverse fields, including nuclear medicine, agriculture and food, industry, energy and power, space exploration, and research reactors. These wide-ranging applications demonstrate that nuclear technology remains one of the most attractive and impactful options, despite public perceptions that often portray it as unfavorable or even dangerous.

A university is a community of teachers and scholars, shaped by a unique culture which is closely tied to knowledge management. With over 50 years of existence, the University of Port Harcourt is well positioned to establish a robust Knowledge Management System (KMS) to capture, store, and share both explicit and tacit knowledge, ensuring it is available when needed.

We also reviewed some university policies, recommending standardized formats and encouraging staff to consult existing regulations. While promotion guidelines are comprehensive, they can suffer from inconsistencies. To address this, an Excel-based tool was developed and tested by me to ensure all promotion requirements are met and deficiencies are clearly identified.

I have been involved in several professional activities at both national and international levels, including two national projects, three national professional assignments, and two international engagements.

Finally, I came to the University of Port Harcourt, imbed its culture and norms, and is leaving with a lot of knowledge garnered. I believe in the system and all my children passed through the University. They continue to carry the university flag proudly in all their endeavours. It is my hope that the University will continue to propagate its positive unique feature that encourages its staff and students to be curious and innovative.

5. REFERENCES

Adams, R., Aldridge, D., Atman, C., Barker, L., Besterfield-Sacre, M., Bjorklund, S., & Young, M. (2006). The research agenda for the new discipline of engineering education. Journal of Engineering Education, 95(4), 259-261.

African Network for Education in Nuclear Science and Technology (AFRA-NEST) | IAEA. (n.d.). Retrieved February 20, 2026, from https://www.iaea.org/services/networks/afra-nest

Akinola, A. A. C. A. S. Ojinnaka and A. Kuye. (2026). Peaceful Applications of Nuclear Technology and Its Challenges, Journal of Engineering and Technology, (Accepted)

Crampton, L. (2024). The Nuclear Option. TCE: The Chemical Engineer, Issue 999, p41.

Edeh, I. & Kuye, A (2023). Maximizing Students Performance through Inclusive Teaching in Chemical Engineering Education. Biomedical Journal of Scientific and Technical Research, 50(1).

Georgewill, O. A. (2025). This Week in Retrospect in the University Of Port Harcourt (16th – 20th June, 2025). https://www.uniport.edu.ng/retrospect/this-week-in-retrospect-in-the-university-of-port-harcourt-16th-20th-june-2025/

Goel, A., Kuye, A., & Gerlini, M. (2024, May). International Nuclear Security Education Network (INSEN): Building Capacity for Youths in Nuclear Security. International Conference on Nuclear Security: Shaping the Future.

Haque, A. (2025). Fueling Impact: A Practical Guide to Knowledge Management for UN & INGOs. Available at SSRN 5377935. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5377935

Hayes, R. B. (2022). Nuclear energy myths versus facts support it's expanded use-a review. Cleaner Energy Systems, 2, 100009.

IAEA (1998). The Evolution of IAEA Safeguards, International Nuclear Verification Series No. 2, Vienna.

IAEA (2013). Objective and essential elements of a State's nuclear security regime. Nuclear Security Series no. 20, Vienna

IChemE: Chemical Engineering Matters (2022). https://www.icheme.org/media/19338/chemical-engineering-matters-4th-edition-2022-icheme.pdf

Ikhu-Omoregbe D.,, Kuye A., & A. Atta (2023). Overview of Chemical Engineering. In Faborode, M. O. &Bolu, C. A. (Eds.), CCMAS Fundamentals of Engineering and Technology Book 1 Volume 1 (pp 135 – 160). National Universities Commission, Abuja,

International Atomic Energy Agency. (2010). Educational Programme in Nuclear Security (IAEA Nuclear Security Series No. 12, Ed.). International Atomic Energy Agency.

International Atomic Energy Agency. (2021). Model academic curriculum in nuclear security (IAEA NUCLEAR SECURITY SERIES NO. 12-T (REV. 1), Ed.). International Atomic Energy Agency.

IPS (2003). Institute of Petroleum Studies Constitution.

Kuye A. &Edeh, I., (2024). Department of chemical engineering, University of Port Harcourt. In S. A. Sanni& A. A. Susu (Eds.), 50 Years of Chemical Engineering Education in Nigeria (1969 – 2019) (pp 145 – 171). University of Lagos Press and Bookshop Ltd.

Kuye A. and F. E. Osaisai: Development And Implementation Of Post Graduate Nuclear Engineering Education In Nigeria. International Journal of Nuclear Security, 2(1), 98-106, 2016.

Kuye, A. and L. Uyigue (2018). Using E-Learning Platform To Facilitate Institutional Collaboration For Nuclear Security Education in Nigeria, Proceedings of the International Conference on Human Resource Development for Nuclear Power Programmes: Meeting Challenges to Ensure the Future Nuclear Workforce Capability, Gyeongju, Republic of Korea, paper CN-260/29, May 28 – 31.

Kuye, A. and L. Uyigue (2019). Nuclear Security Education in Nigeria: University of Port Harcourt Approach, International Journal of Nuclear Security, 5(1), Article 3.

Kuye, A. and L. Uyigue: Graded Approach to Nuclear Security Education and Training in Nigeria – The University of Port Harcourt Experience, Proceedings of the International Conference OnNuclear Security: Commitments And Actions, International Atomic Energy Agency, Vienna, Austria, paper CN-244-087, 5–9 December, 2016.

Kuye, A. O. (2025). Nature Engineers: From Ideas to Impacts An Inaugural Lecture. University Of Port Harcourt

Kuye, A., Ayo, D. B., Sanni, L. O., Raji, A. O., Kwaya, E. I., Otuu, O. O., Asiru, W. B., Alenkhe, B., Abdulkareem, I. B., Bamkefa, B., Tarawali, G., Dixon, A. G. O., &Okechukwu, R. U. (2011). Design and fabrication of a flash dryer for the production of high quality cassava flour. International Institute of Tropical Agriculture.

Kuye, A., ChukwudiAfamefula Samuel Ojinnaka, Yusuf OlamilekanAyinla, AdeyinkaOkeowoFagbemigun (2023). Detection of Radioactive Material Out of Regulatory Control: A Radiation Dose Survey of a University Environs in Rivers State, Nigeria. Journal of Nuclear Engineering & Technology, 13(2): 1–11.

Mulder, A. (2025). The university as a community in the digital age. In Places of Engagement (pp. 88–92). Routledge. https://doi.org/10.5117/9789463726702-15

Nacht, M., Frank, M., Prussin, S. (2021). Contemporary Issues in Nuclear Security. In: Nuclear Security. Springer, Cham. https://doi.org/10.1007/978-3-030-75085-5_6

National Universities Commision. (n.d.). Retrieved February 22, 2026, from https://www.nuc.edu.ng/

NSChE (2023). Additional Minimum Chemical Engineering Core Curriculum And Minimum Academic Standards For The Nigerian Universities (CCMAS).

NSChE. (2019). Pre-Feasibility Report On Domestication Of Barite In Nigeria.

NSChE. (2022a). Domestication of Barites and Other Drilling Fluids in the Nigerian Oil and Gas Industry: Available Barite Reserves, Local Demand and Supply, Projected Demand for the African Regional Market and Justification for Investment in Additional Exploration Activities.

NSChE. (2022b). Domestication of Barites and Other Drilling Fluids in the Nigerian Oil and Gas Industry: Current Demand and Supply Profile, In-Country Production Capacity and Feasibility of Viable and Sustainable Manufacture of Oil Field Chemicals.

NSChE. (2022c). Domestication of Barites and Other Drilling Fluids in the Nigerian Oil and Gas Industry: Feasibility Study Template for Oilfield Fluids/Chemicals.

NSChE. (2023). Additional minimum chemical engineering core curriculum and minimum academic standards for the Nigerian universities (CCMAS).

Nwambo, Y., Muritala, , I. K., Otaraku, I., & Kuye, A. (2025b). Assessing Critical Thinking Outcomes: A Comparative Study of Traditional and Online Teaching Methods. Journal of Scientific and Engineering Research, 12(2), 207-214.

Nwambo, Y., Muritala, I. K., Otaraku, I., & Kuye, A. (2025a). Evaluating Critical Thinking Proficiency among Lecturers and Students: A Questionnaire-Based Approach. Journal of Emerging Technologies and Innovative Research, 12(1),

d591-d598.
Ogunbanwo, A. S., Okesola, J. O., & Buckley, S. (2019). Knowledge management awareness assessment in Nigerian. F1000Research, 8, 608. https://doi.org/10.12688/f1000research.18223.1
Ojinnaka, C. A. S., A. Kuye and A. A. Akinola (2017). Nuclear Techniques Applications In Solid Minerals Analysis, JNSChE, 32(2), 1-5.
Ojinnaka, C. A. S., Emejiaka, E. E., Osaisai, F. E., & Kuye, A. (2025). Small Modular Reactors: Physical Protection Considerations. Nigerian Journal of Physics, 34(3), 65-79.
Ojinnaka, C. A. S., Emejiaka, E. E., Osaisai, F. E., & Kuye, A. (2025). Small Modular Reactors: Physical Protection Considerations. Nigerian Journal of Physics, 34(3), 65-79
Qiu, S., &Natarajarathinam, M. (2024). Fifty-three years of the Journal of Engineering Education: A bibliometric overview. Journal of Engineering Education, 113(4), 767-786.
Ugbor, U., Peddicord, K., Dies, J., Beeley, P., &Artisyuk, V. (2018). Establishing Sustainable Nuclear Education: Education Capability Assessment and Planning (ECAP) Assist Mission. IAEA.
UNIPORT (2015). Regulations Governing Staff Conditions Of Service. https://www.uniport.edu.ng/wp-content/uploads/2025/01/Regulations_and_Staff_Conditions_of_Services.pdf
UNIPORT (2021). General Regulations And Statement Of Academic Policies. https://www.uniport.edu.ng/wp-content/uploads/2025/01/General_Regulations_and_Statement_of_Academic_Policies.pdf
UNIPORT (2023). Guidelines for Appointments and Promotions of Academic Staff. https://www.uniport.edu.ng/wp-content/uploads/2025/01/UNIPORT_Guidelines_for__Appointments_and_Promotions_of_Academic_Staff.pdf

UNIPORT (2024). General Regulations for Graduate Programmes. School of General Studies. University of Port Harcourt, 2023/2024 Edition.

UNIPORT (2025). 35th Convocation Brochure. University of Port Harcourt, Nigeria, July 25 - 26.

UNIPORT. (2026). E-Learning Policy. https://www.uniport.edu.ng/wp-content/uploads/2025/01/E_Learning-Policy.pdf

UNIPORT (n.d.). University of Port Harcourt Policies. Retrieved March 17, 2026, from https://www.uniport.edu.ng/uniport-policies/

Wankat, P. (2009, June). The Role of Chemical Engineering in Engineering Education Research. In 2009 ASEE Annual Conference & Exposition (pp. 14-1249).

World Nuclear Association, (2025). Safety of Nuclear Power Reactors. https://world-nuclear.org/information-library/safety-and-security/safety-of-plants/safety-of-nuclear-power-reactors.

CITATION ON

ENGR. PROFESSOR AYOADE OLUDAYO KUYE

Vice-Chancellor, Sir, I have the honour to present to you the scholar who will deliver the 45th Valedictory Lecture of this great University. He is
Engr. Professor Ayoade Oludayo Kuye,
a Professor of Chemical Engineering,
former Dean of Engineering and
pioneer Director, Centre for Nuclear Energy Studies.

Professor Ayoade Oludayo Kuye was born on May 23, 1956 at Ijebu-Ode, Ogun State to the family of Late Chief Amos Badejo Kuye and Late Mrs. Sabainah Yetunde Kuye. He attended Ijebu-Ode Grammar School for his secondary education and Comprehensive High School, Aiyetoro, Egbado for his A-level education. By October 1975, he entered University of Lagos, Akoka, Lagos and graduated with a First Class Honours degree in chemical engineering by 1978. For his post graduate education, Prof Kuye went to University of Lagos for his Masters Degree

and University of Strathclyde, Glasgow, United Kingdom for his doctorate degree. He bagged MSc and PhD degrees in Chemical Engineering from these institutions in 1980 and 1985 respectively.

Professor Kuye, following the footsteps of his father, the popular "Baba Teacher (Father of Teachers)" in Ijebu Okun Owa, joined the academia at the Department of Chemical Engineering, University of Port Harcourt, Port Harcourt in 1985 and rose to the rank of Professor by 1996 in the same department. Professor Kuye is a well-known academic. He is an external examiner and external assessor to many Universities in Nigeria and Ghana. Professor Kuye has mentored many students across different fields by providing guidance, career advice and opportunities for growth that build confidence and improve academic performance.

Professor Kuye's research interest is in the area of computer-aided mathematical modeling in Chemical Engineering. He has 102 publications in learned national and international journals, 12 books, 7 book chapters and numerous technical reports/monographs. He also has three patents and one copyright to his credit. His major contributions include:

- Development and testing of a number of chemical engineering software that can be used to simulate/design multi component distillation equipment, wet scrubbers, air cyclones, hydrocyclones, spray dryers and shell and tube heat exchangers. He has also developed a physical property database system. Some of these software are already being used locally.
- Study of the effects of factors that are likely to affect the use of palm bunch ash as a source of alkali for soap production and pioneered the detailed experimental study of the performance of spray towers when used for particle scrubbing. In addition, he has studied the moisture isotherms of some cassava products (lafun, fufu and tapioca).

- Application of optimization principles to design a sieve tray and was involved in the developing a new one- dimensional optimization technique. With other Nigerian engineers, designed, fabricated, installed and tested an efficient flash dryer for the production of high-quality cassava flour.
- Presentation of a long-term (13-year) solar radiation and other meteorological information for Port Harcourt in a concise form. This information is necessary for effective design of wind-powered solar dryer for agricultural produce.
- Conversion of sawdust to briquettes and bio-oil using locally fabricated equipment.
- Conversion of waste plastics to kerosene grade fuel.

Apart from research, Prof Kuye is well known in the process and allied industry. He is actively involved in offering short courses, technical and consultancy services to process engineering as well as to oil and gas companies. Professor Kuye has been awarded many national and international grants.

Professionally, he is a COREN Registered Engineer, a Fellow of the Nigerian Society of Chemical Engineers (NSChE) and a Member of the Institute of Nuclear Materials Management. He is a World Institute for Nuclear Security (WINS) Certified Nuclear Security Professional.

Professor Kuye has held several administrative and public service positions. Within the University of Port Harcourt, he is a former Dean of Engineering, the pioneer (and former) Director of the Centre for Nuclear Energy Studies and a Member of Senate. He has also served the University in various capacities, some of these are:

- Faculty representative, Junior Staff Committee,
- Faculty representative, Student Disciplinary Committee
- Chairman, The Willbros (Pollution) Study Group
- Chairman, Departmental Graduate Committee

- Chairman, Faculty Wide Courses Committee
- Chairman, Senate Committee on Prizes
- Chairman, Central Hostels Management Committee
- Chairman, Committee on Computerization of Students Records
- Chairman, Committee on Verification of Submissions for Elevation to Professorial Cadre

Outside the University of Port Harcourt, Prof Kuye served in various capacities including:

- Member, Interview Panel for NSE/COREN Professional Interviews
- Associate Editor, NSChE Journal
- Member, NUC and COREN Accreditation Panels
- Chairman, Committee on Strengthening Research and Development Infrastructure In The Nuclear Research Centres in Nigeria.
- Chairman, Organizing Committee, National Workshop on Nuclear Security for Engineers, Scientists and Technicians, Port Harcourt.
- Foy, H. and A. Kuye (Organizers), Professional Development Course on Introduction to Nuclear Security and Safeguards for Sub-Sahara Africa.
- Chairman, Organizing Committee, Workshop on Nuclear Security for Media Practitioner in Africa, Kumasi, Ghana.
- Team Leader for two different national projects namely Computer Aided Process Equipment Design and Design, Fabrication, Installation and Testing of an improved flash dryer.
- Former Coordinator, NSChE Education and Research Sectorial Group.

Internationally, Prof Kuye has served in various capacities including:

- National Coordinator, AFRA Network for Education in Nuclear Science and Technology (AFRA -NEST), 2013 – present
- Vice Chair and Chair, Working Group III of the International Nuclear Security Education Network (INSEN), Vienna, Austria (July 2017 – July 2019)
- Vice Chair and Chair of INSEN (July 2023 - November 2025).

Professor Kuye is married to Mrs. Kofoworola Adenike Kuye and they are blessed with children and grandchildren.

Prof Kuye is a worthy colleague, an honest Lecturer, a born leader and a thorough-going workman. He is a living example of the rare admixture of transparency, affability and generosity. All who meet him are struck by the confidence he exudes, the humility of his assertions and the patience to listen to others. He is a team-player and an outstanding academic.

Professor Onwunari Abraham Georgewill
Vice Chancellor