

**URGENT NEED TO EFFECT 21<sup>ST</sup> CENTURY STEM-RELATED COURSE WORK & UPDATE EMERGING TECHNOLOGIES (ARTIFICIAL INTELLIGENCE & MACHINE LEARNING, CYBERSECURITY, CLOUD COMPUTING, ROBOTICS & AUTOMATION, INTERNET OF THINGS, AUGMENTED & VIRTUAL REALITY E.T.C.) ON THE CURRICULUM FOR SECONDARY SCHOOLS IN AKWA IBOM STATE.**

SPONSOR: HON. (ENGR) UDUAK EKPO-UFOT: Member Representing Etinan State Constituency

Mr. Speaker, Leadership, Ranking Members & Distinguished Colleagues...

This Motion is brought pursuant to Order III, Rule I of the Standing Orders of the Akwa Ibom State House of Assembly (7th edition).

*In the United Kingdom, specifically from <https://www.mape.org.uk>, we are reliably informed that ICT is a compulsory part of the National Curriculum. The existing programme for ICT, however, has been suspended as dull, boring and unsatisfactory and replaced by new courses of ICT study. These are expected to prepare the pupils for the increasingly digital world and give them the necessary knowledge and skills to find decent jobs.*

The academic curriculum in Nigeria & by extension, Akwa Ibom State's educational institutions—nursery, primary, secondary, and tertiary is older than Nigeria itself. This curriculum was passed down by the British colonial masters more than 60 years ago. What is news is that civilisation, development, and innovation have left it behind. Most worrisome is the tenacity with which the education regulatory bodies in Nigeria, notably West African Examination Council (WAEC) and National Examination Council (NECO), National Universities Commission (NUC), and Joint Admissions and Matriculation Board (JAMB) are pushing for a holistic usage and application of these not-fit-for-purpose and out-dated contents that neither serve the public nor the business world and that have been implemented for decades on end. There is an over-reliance on paper qualification as opposed to the skills and can-do attitude of an individual. This then means that the knowledge passed across to students is tantamount to a waste of time and resources, because knowledge attained through an obsolete or archaic curriculum is neither valued in the current dispensation of organisational development, nor capable of preparing these learners for future challenges or tasks.

Other forward thinking economies have since moved on to improve their curriculum with current and practical contents which have ensured the production of innovative and highly creative students, for instance, in June 2023, the Education Bureau in Hong Kong has implemented the city's first curriculum on Artificial Intelligence (AI) for Junior secondary students. The curriculum, distributed to over 450 public secondary schools, encourages teachers to incorporate 10 to 14 hours of AI education into the information and communication technology (ICT) subject for students in Form One to Three starting from September 2023. The curriculum covers ChatGPT, fundamental AI concepts, computer vision, computer speech and language, robotic reasoning, AI ethics, and the social impact of AI.

For instance, given the importance of AI competencies, and the trajectory of the field of AI and its integration into other domains, it is perhaps surprising that so few countries have sought to formally integrate training in this area into Primary & Secondary Education. Governments who have invested in this area have done so based on a recognition that AI skills are essential to both the current and future economy of their country and also to the full participation of citizens in social life. An understanding of what AI is, how it works and what it can do empowers students with the ability to better understand their world, advocate for their own and others' rights, and leverage technology and data for the public good

With due respect, at this point, I will refer my distinguished colleagues to the NERDC website for current curriculum, from where I have extracted- in Attachment 1, the ICT & Data Processing Curriculum for Secondary Schools in Nigeria AND a synopsis of the British Curriculum that was currently in use as of the year 2020.

This House...

**AGREES** that the dictionary definition of the word **BASIC** is “forming an essential foundation or starting point; simple and not complicated, so able to provide the base or starting point from which something can develop”

**ACKNOWLEDGES** that Attachment 1 is inundated with a large number of BASICS, as we can see- even in Senior Secondary

Classes 1-3... Basic Concepts of Computer Software, Basic Concepts of Computer Hardware, Basic Computing e.t.c.

**FURTHER ACKNOWLEDGES** the next generation of Nigerians will be pitted side-by-side with their colleagues & counterparts from China & the Western World, and without being adept in at least ONE Coding language, it will be a near impossible task to play in the emerging technology worlds of Artificial Intelligence & Machine Learning, Cybersecurity, Cloud Computing, Robotics & Automation, Internet of Things, Augmented & Virtual Reality & 3D Printing.

**AWARE** that apart from ICT, there will be a need to perform a complete overhaul of the Curriculum in almost all the other subjects being taught in Secondary Schools as a whole.

**WORRIED** that if the current obsolete & unfit-for-purpose curriculum is not replaced with a mixture of the American, British, Scandinavian & Chinese curriculums, by commencement of the next school year i.e. September 2024, we- as a people, are further toying with the competitive future of the next generation.

**CONCERNED** there will be substantial CAPEX required for the associated acquisitions per hardware & software requirements to complement the efforts of the new curriculum

**RECOGNIZES** that it is our duty and responsibility to speak for the interest of our constituents, noting that the executive arm of our state government gives tangible expression to our laws and resolutions through assiduous implementation of policies and programmes in a holistic manner for the benefit of our citizens without necessarily waiting for the federal government.

**LET IT BE MOVED AND HEREBY ACCORDINGLY RESOLVED BY THIS HONOURABLE HOUSE: -**

1. That the Honorable Commissioner for Education should (per the attachments to this motion)
  - (I) Adapt the ICT curriculum currently used in Nigerian Secondary Schools for use in Primary Schools-  
**Appendix 1**
  - (II) Enforce the adaptation of the ICT curriculum in **Appendix 2 & lean on the ICT curriculums used in specifically The United States, United Kingdom, China, Finland & Sweden** to update this curriculum for use in Secondary Schools in Nigeria
2. That the HC Education should expressly look into, with a view to reviewing the ICT Curriculums in the following Akwa Ibom State-controlled tertiary institutions and ensure they include emerging technologies
3. That the HC Education & other relevant agencies & MDAs should review the STEM curriculum in Secondary Schools to reflect 21<sup>st</sup> century realities
4. The Akwa Ibom State Government, per the recommended Strategies in the 2019 National Policy on Information & Communication Technologies (ICT) in Education, **allocate at least 5% of Education annual capital budget to ICT in Education.**

**My distinguished colleagues & MOST RESPECTFULLY MR. SPEAKER, I SO MOVE.**

**Hon Uduak-Obong Ekpo-Ufot** | Member Representing Etinan State Constituency.

**Co-Sponsors:** Hon Sunday Udofot Johnny | Hon Otobong Bob | Hon Udobia Udo | Hon Jerry Otu | Hon Uwem Imoh-Ita | Hon Eric Akpan | Hon Nsidibe Akata | Hon Ubong Attah

**APPENDIX 1: NIGERIAN CURRICULUM- ICT & DATA PROCESSING**

CLASS	CURRICULUM	THEME	MAIN TOPIC	TOPIC
JSS-1	COMPUTER & IT	Theme 1	Basic Computer Operations And Concepts	1. Historical Development of Computers
				2. Data Processing
			3. Computer Ethics	
Theme 2		Basic Knowledge Of Information Technology	1. Applications of IT in Everyday Life	
			2. Information Transmission	
JSS-2	COMPUTER & IT	Theme 1	Basic Computer Operations And Concepts	1. Computer Software
				2. Operating Systems
				3. Units of Storage in Computer
				4. Computer Problem Solving Skills
				5. Basic Programme
				6. Computer Ethics
JSS-3	COMPUTER & IT	Theme 2	Computer Application Packages	1. Graphic Packages
				2. Paint Environment
		Theme 3	Basic Knowledge Of Information Technology	1. IT as a Transformational Tool
				2. IT Gadgets
				3. Internet
				4. Internet Environment
JSS-3	COMPUTER & IT	Theme 1	Basic Computer Operations And Concepts	1. Computer carrier Opportunities
				2. Computer Viruses
		Theme 2	Basic Knowledge Of Information Technology	1. Internet
				2. Digital Divide
		Theme 3	Computer Application Packages	1. Database
				2. Spreadsheet Packages
SS-1	COMPUTER & IT			3. Worksheets
				4. Graphs
		Theme 1	Fundamentals Of Computer	1. Overview of computer system
				2. Data and Information
		Theme 2	Computer Evolution	1. Computing devices I (Precomputer age to 19th century)
				2. Computing devices II (20th Century to date)
		Theme 3	Computer Hardware	1. Input Devices
				2. Output Devices
		Theme 4	Basic Concept Of Computer Software	1. Computer System Software
		Theme 5	Developing Problem-Solving Skills	1. Computing Application Software
				2. Programming Language
				3. BASIC Programme Language
Theme 6	Information And Communications Technology (Ict)	1. Communication Systems		
		2. Application Areas of ICT		
Theme 7	Operating The Computer	1. Basic Computer Operation		
Theme 8	Computer Applications	1. Word Processing		
		2. Presentation Package		
SS-2	COMPUTER & IT	Theme 1	Basic Concept Of Computer Hardware	1. Central Processing Unit (CPU)
				2. Memory Unit
		Theme 2	Computer Hardware	1. Logis Circuits I (Standard single logic gates)
				2. Logic Circuits II (Alternative logic gates)
		Theme 3	Basic Computer Operation	1. Computer Data Conversion
		Theme 4	Handling Computer Files	1. Concept of Computer Files
		Theme 5	Basic Concept Of Computer Hardware	1. Handling Computer Files
		Theme 6	Computer Applications	1. Word Processing
				1. Systems Development Cycle
				2. Programme Development
		3. Algorithms and Flowchart		
Theme 7	Developing Problem-Solving Skills	4. BASIC Programming II		
		1. Internet		
Theme 8	Information And Communication Technology	2. Electronic mail (Email). Services		
SS-3	COMPUTER & IT	Theme 1	Information And Communications Technology	1. Networking
				2. Introduction to World Wide Web (WWW)
				3. Cables & Connectors
		Theme 2	Computer Applications	1. Database
				2. Graphics (Introduction to CorellDraw
		Theme 3	Problems - Solving Skills	1. BASIC programme III (Onedimentional array)
				2. High Level Languages (H.L.L.)
		Theme 4	Coding Systems In Computer	1. Overview of Number BASES
				2. Data Representation
		Theme 5	Computer Ethics	1. Security and Ethics

CLASS	CURRICULUM	THEME	MAIN TOPIC	TOPIC
SS-1	DATA PROCESSING	Theme 1	Information Age	1. History of computing
				2. Digitalization of data
		Theme 2	Basic Computing	3. Data and information
				1. History of computers
		Theme 3	Information Processing	2. Classification of computers
				3. ICT application in every day life
Theme 4	Information Transmission	1. The art of information processing		
		1. Process of information transmission		
Theme 5	Tools For Processing Information	2. Medium of information transmission		
		1. Operating system		
Theme 6	Computer Maintenance Ethics And Human Issues	2. Word processing		
		3. Spreadsheet		
SS-2	DATA PROCESSING	Theme 1	Data Management	4. Database management system
				1. Computer ethics
		Theme 2	Information Transmission	2. Safety measures
				1. Types of data models
		Theme 3	Tools For Processing Information	2. Data modelling
				3. Normal forms
Theme 4	Computer Maintenance Ethics And Human Issues	4. Entity relationship model		
		5. Relational modelling		
SS-3	DATA PROCESSING	Theme 1	Data Management	6. File organization
				1. Internet 1
		Theme 2	Tools For Processing Information	1. Presentation package
				2. Web design packages
		Theme 3	Tools For Processing Information	3. Graphic packages
				1. Maintenance of computer 1
				1. Indexes
				2. Database security
				3. Crash recovery
				4. Parallel and distributed databases
				1. Networking
				1. Computer virus
				2. Maintenance of computer 1 1
				3. Career options in data processing

## APPENDIX 2: SYNOPSIS OF KEY STAGES AT THE ICT END OF THE BRITISH & REPUBLIC OF KOREA CURRICULUMS.

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

### AIMS

The national curriculum for computing aims to ensure that all pupils:

- Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- Can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- Are responsible, competent, confident and creative users of information and communication technology.

### ATTAINMENT TARGETS

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study. Schools are not required by law to teach the example content in [square brackets].

### Key Stage 3

Pupils should be taught to:

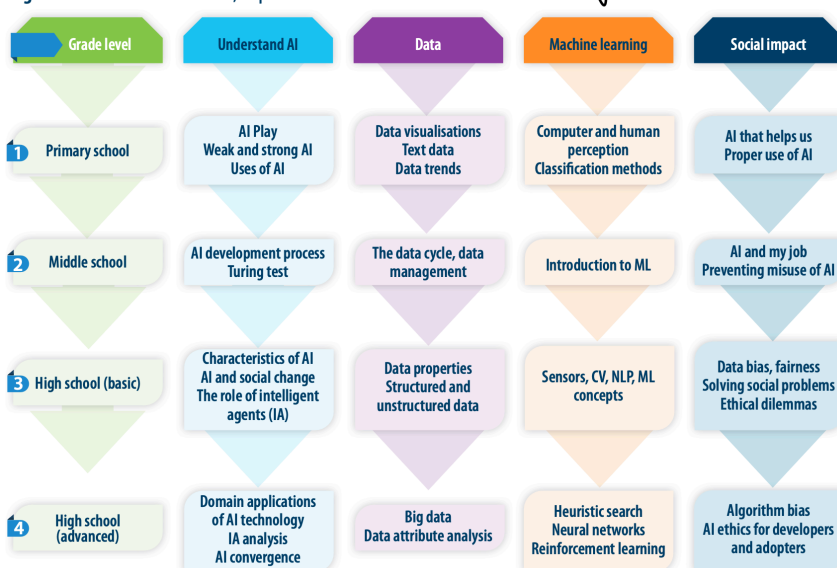
- design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems
- understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem
- use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions
- understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]
- understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems
- understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits
- undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users
- create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability
- understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns.

### Key Stage 4

All pupils must have the opportunity to study aspects of information technology and computer science at sufficient depth to allow them to progress to higher levels of study or to a professional career. All pupils should be taught to:

- develop their capability, creativity and knowledge in computer science, digital media and information technology
- develop and apply their analytic, problem-solving, design, and computational thinking skills
- understand how changes in technology affect safety, including new ways to protect their online privacy and identity, and how to identify and report a range of concerns.

Figure 13. Curriculum Standards, Republic of Korea



Source: Interview and written submissions from Professor Ki-Sang Song