

Practical and Technological Skills: An Inevitable Social Engineering Tool for Sustainable Development

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ABSTRACT

Education is a social engineering tool that can impact the society as well as the individuals in the society hence, conscious efforts are regularly put in place by curriculum planners and educationists all over the world to design, redesign and review the contents of the educational curricular so as to measure up with immediate and anticipated challenges of human society. In conformity with this lofty desire, the curricular designed particularly for higher levels of education in Nigeria aims at fast-tracking development. Unfortunately, the realization of this goal leaved much to be desired because it is largely premised on the acquisition of theoretical skills. This has hindered personal and society development. This article, therefore, explored how an adequate educational framework can be provided within which the education curricular would facilitate both personal and society development and its sustainability. In doing this, the paper argued for the substantial inclusion of practical and technological skills as complement to the existing theoretical skills that characterized the curricular. It noted that an education curricular that concomitantly prioritizes both theoretical and practical knowledge is key to activating sustainable development in the twenty-first century human society. More so when such practical and technological skills encourage not only hands-on tasks but also facilitate self-reliance, moral excellence, competence, hard works which are indispensable ingredients for sustainable development. The article, therefore, promises to expand the existing paradigm of education for development which is predominantly embarked upon from a single and narrow perspective premised largely on the acquisition of theoretical skills, to include a more embracing and multi-dimensional practical and technological skills acquisition. When practical and technological skills complement the prevalent theoretical skills acquisition drive of the education curricular, this would offer an adequate framework that would facilitate and sustain development. The work employed argumentative and theoretical methods on the educational policies in Nigeria.

Keywords: Practical and Technological Skills, Soft Skill, Sustainable Development, Tertiary Institutions, Theoretical Skills

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I. INTRODUCTION

The system of education in Nigeria is formally stratified and categorized into primary, secondary (junior and senior sections) and tertiary education. The tertiary education in Nigeria consists of 170 privately and publicly owned universities and several polytechnics and colleges of education; the ultimate goal of these institutions includes teaching and research to develop the learner and the society; the system is expected to add value to every learner who successfully went through any of the institutions. In return, the learners are expected to add value to the Nigeria society. In other words, personal and society development would be enhanced. It is worthy of note that the National Policy on Education (2014) added to the list of tertiary institutions Inter University centres, such as the Nigerian French

Village, Nigerian Arabic Language Village; National Institutions such as innovation Enterprise Institutions(IELs) and other specialized institutions such as colleges of Agriculture, School of Health and Technology and National Teachers' Institute(NTI) . The curricular of these institutions both in contents and implementation (or design and teaching) are expected to carefully and exhaustively capture these lofty goals. By tertiary institutions or post-secondary education, reference in this article is to academic pursuit undertaken after high school, particularly post-secondary education that takes a minimum of three years to complete, be it university, polytechnic or college of education.

An examination of the education curricular of tertiary institutions in Nigeria reveals the desires of the curriculum planners for the acquisition of skills, albeit minimally, as this research will show shortly, such desires, however, are

grossly inadequate to meet the current socio-political and economic challenges of contemporary society. In the same vein, tertiary education in Nigeria and its products has witnessed several interventions from successive governments that ought to enhance the learners and the society development; for instance, the Joint Admissions and Matriculation Board (JAMB) and the National Universities Commission (NUC) were established, among other things, to regulate intakes into the institutions and ensure the institutions' compliance with the contents of its curricular. The Tertiary Education Needs Assessment and the Tertiary Education Trust Fund (TETFund) were established to identify the infrastructural needs, fund and manpower training for these institutions. In addition, reforms emanating from education summits and conferences, strategic plans and policy frameworks were regularly carried out to promote the overall goal of the institutions. It is important to say that, the activities of these and other agencies of government culminated into the National Policy of Education for tertiary institutions in Nigeria. The National Policy on Education has been tailored to meet the needs of the nation. Consequently, the education curricular of the tertiary institutions is the expression of the educational policy statements of the nation specifically, in terms of literacy and skill development which are pivotal to the emergence of enlightened citizenry, economic prosperity and political stability of any society.

In spite of the seemingly robust curricular of tertiary institutions and the interventions by successive governments, the sector is confronted with myriad of challenges, fundamentally is the employability of the products of these institutions. According to Aroge (2015), employment problems in Nigeria revolve around the two perspectives of underemployment and outright unemployment of economically active persons-able and willing and looking for work to do. He defined underemployment as sub-optimal utilization of labour while he cited Perry and Perry (1976) to define unemployment as the state of being unable to sell ones' labour-power in the labour market, despite being active and willing to do so. This claim is justified by the large army of unemployed graduates that defines the socio-political space of the Nigerian society, extant literature by researchers and inferences deducible from public discourse on education. In all these, there seems to be a general agreement that centers on the existence of a wide gap between what is supposed to be taught, what is taught and the methodology used in the teachings. Why is this so? Why is there high rate of graduate unemployment in the country? What makes a graduate desirable to employers? Do the stakeholders in the education sector interrogate their ways of doing business? Why is it that most graduates of Nigerian tertiary education do not fit into the 21st-century knowledge economy? Answers often provided to these questions oscillate between inadequate funding, corruption, obsolete knowledge of the instructors, and requisite years of experience often demanded by employers of labour. But fundamentally, is the inadequate spirit of entrepreneurship, practical and technological knowledge in the curricular that birth the

graduates. In essence, the curricular is partly defective in design and execution.

In design, the curricular is largely premised on the acquisition of theoretical skills; little emphasis is accorded practical and technological skills. In terms of execution of the curricular, the methodology of the instructors is uninspiring; the use of technology device that would arouse the interest, attention and enhance the participation of the learners is either inadequate or unavailable. Emphasis is therefore on the monotonous and archaic traditional teacher-learner method that prides the rote learning in knowledge acquisition. Consequently, the practical utilization of what is thought theoretically in the institutions of learning is difficult after graduation hence, products of the tertiary institutions are more comfortable with the search for white collar jobs than to initiate jobs of their own. In other words, the curricular is incongruent with what is needed to be taught and how it should be taught. In the same vein, cross fertilization of ideas between disciplines are discouraged in the content formulation of the curricular. The existing curricular in tertiary institutions in Nigeria do not cognizance the benefits derivable from other disciplines of study, it restricts the learner to a particular field of study. This neglect is at variance with the modern day labour market which anticipates multidisciplinary and versatile knowledge.

This work, therefore, sets out to find an adequate educational framework that can guarantee the combination of both theoretical and practical skills for meaningful development. This educational framework would ensure quality standard through a conscious and systematic accommodation of entrepreneurial skills, in addition to innovative training that is sync with the needs of the society that anticipate skilled and semi-skilled graduates. The research therefore propose the curricular that concomitantly emphasize practical and technological skills that corresponds with the emphasis on theoretical skills as the means of activating sustainable personal and society development.

II. THE CURRICULUM AND ENTREPRENEURIAL SKILLS IN NIGERIA

The importance of the curricular to the education institution, particularly tertiary institutions cannot be over emphasized. It is among other things, the expression of the visions and missions of a nation in terms of how personal and society development can be actualized within the confine of an enlightened and civil environment. Garcia (2007) defines the curriculum as the totality of learning conceived as educational ends, activities, disciplines and or subject matters decided upon and provided within the framework of an educational institution or in a less formal setup. It is, therefore, a tool for shaping the learner to the designer's vision. Or as figuratively illustrated by Cunningham (2022), curriculum is a tool in the hands of artist (teacher) to mold his material (pupil) according to his ideal (objectives) in the studio (school).

In other words, the pivots on which a good curriculum oscillate would include quality instructors: this is in reference to the knowledge possessed by the instructors themselves and, the quantity of the contents or structure of the curriculum, which refers to the relevance of the curriculum to the challenges of contemporary age. In other words, the content of curriculum should cognized the needs of the society which in turn should determine: What to teach and How to teach them.

Put in another way, perhaps, what Cunningham did not say is that the success or otherwise of the molder in shaping the learner is a function of the contents as well as the implementation of the curricular. Unfortunately, tertiary education curriculum in Nigeria is defective; it lacks *what the society wants* and *how to get it*. In other words, - Practical reasoning is lacking in planning and more in implementation. Buttressing this fact, Olajide and Adeniyi (2013) affirmed that several universities are producing graduates that lack the skills needed to perform tasks required in their chosen fields, making it difficult for them to get employment.

The high rate of unemployment, particularly graduate unemployment in present day Nigeria is worrisome. Tertiary institutions, particularly university education are seen to be synonymous with employability. This assertion is right to the extent that, if one has a good university education one should be employer of labour but not necessarily an employee. The polytechnics and colleges of education whose curricular hitherto pride skills acquisition have derailed from the desires of the curriculum planners. Less emphasis is now placed on self-employment and reliance rather, products of these institutions are dependent on non-existing white collar jobs.

Recourse to the development in the educational sector from colonial time shows that skills acquisition programs that can aid employment opportunities has not been strange to the curricular of education in various Nigerian institutions. Contrary to the belief of many educators, the education curricular of tertiary institutions in Nigeria is not totally bereft of entrepreneurial skills. The recourse to development in the educational sector is necessary in order to disabuse the non-discerning minds on the widely held assumptions that, the curricular of tertiary education in Nigeria completely lacks the teaching of practical and entrepreneurial skills rather; the curricular both in contents and implementation with respect to these skills are grossly inadequate.

Oladele, Aleke, and Oladunjoye (2011) note that prior to colonialism of Nigeria, unemployment was a rare phenomenon, because Nigerians were highly entrepreneurial and were productively engaged. Acquisition of skills was gender-based and contrary to what is obtainable in present day Nigeria, no emphasis was on paper qualification. Consequently, the concept *graduate* was an appropriate description of the learner who was considered to have functions effectively in what was learnt over certain period of time. This value was not incorporated into the curricular of Nigeria's institutions of learning in the colonial period.

In contradiction to the pre-colonial period, as rightly observed by Okoli and Allahna (2011), the school

curriculum consisted mainly of reading, writing, religion, and arithmetic while rote learning, memorization and indoctrination were the methods of learning in vogue. Education during this phase was basically to promote the self-interest of the colonial masters to reduce administrative cost and facilitate effective domination, exploitation and control of the colonies. In other words, the requisite skills necessary for the positive transformation of Nigeria society was lacking in the education curriculum. The negative development on skill acquisition on learners in this stage rub-off on the interventions made in the post-colonial era. Rote learning and lecture method of teaching dominate the post-colonial curricular. It appears the curricular of education in post-colonial Nigeria is modeled after and replicates underdevelopment that defined it in the colonial era.

The post-colonial administrations in Nigeria however made concerted efforts to introduce skill acquisition into the educational system through various interventions that include, but not limited to the introduction of the 6-3-3-4 system of education, the introduction of vocational subjects into the curriculum of Senior Secondary Schools, For instance, the Introductory Technology introduced was to prepare learners for basic vocation such as woodworking, metal work, basic electronics, technical drawing, automobile mechanics, etc. The Basic Technology later introduced into the curriculum comprises of subjects such as Agricultural science, food and nutrition, auto mechanics, commerce, typewriting, etc. The rationale for these subjects and the introduction of others such as photography, catering, craft, and data processing is the development of entrepreneurial skills and laying of foundation upon which learners in tertiary institutions would build on. Consequently, at the tertiary level of education, other skills development programmes, curricular enhancer and the entrepreneurial modules were incorporated into the education curricular. To reduce dependence on government job after graduation, it was mandatory for every student in the university to take a course in entrepreneurship before graduation (Ifedili & Ofoegbu 2011).

It is also worthy of note that the establishment of the Entrepreneurship Development Centre (EDC), National Directorate of Employment (NDE), National Poverty Eradication Programme, National Open Apprenticeship Scheme (NOAS), Subsidy Reinvestment Empowerment Programme etc are efforts by successive governments to strengthen employability rate particularly of the graduates of the tertiary institutions. According to National Policy of Education (NPE, 2014), Technology Education incorporates post-secondary education in technology offered in polytechnics, monotechnics, colleges of education, specifically, no 80 states that these institutions shall;

- a) Provide full time or part-time courses of instruction and training in engineering, other technologies, applied sciences, leading to the production of manpower
- b) Provide the technical knowledge and skills necessary for agriculture, industrial, commerce and economic development of Nigeria.

- c) Give training and impart the necessary skills for the production of technicians, technologists and skilled manpower.

But, in spite of the aforementioned interventions, graduate unemployment is very high thus suggesting the existence of disparities between practical knowledge and skills that are imparted in schools and, the demands of the industrial and hi-tech society. Okebukola (2007) as cited by Fakomogbon and Adegbiya (2011) identified factors that include absence of practical skills in teaching, shallow knowledge of subject matter, poor computer and communication skills as weaknesses of graduates of higher education in Nigeria.

Contemporary labour market demands problem solving skills, creativity, effective communication skills, radiation of confidence, display of honesty and integrity, independent and collaborative research skills which will cut production cost and minimize time and other resources for training and re-training of recruited workforce. Unfortunately, less focus is accorded these skills during learning in tertiary institutions. Emphasis is on theoretical aspect of learning. This negates the goals of tertiary education as proposed by the National Policy on Education which states that tertiary education is to provide high quality lifelong programmes that prepare students with the knowledge and skills for self-reliance and the world of work. This level of education is also meant to reduce skill shortages through the production of skilled manpower relevant to the needs of the labour market, promote and encourage scholarship, entrepreneurship and community service.

In another reference to Nigeria situation, Prof Chris Onalo was reported by Lawal (2018.) to have remarked that, “the curriculums are obsolete and not in tune with the reality ... if you have a curriculum that is 50 years away from the reality, then who are you baking *and for whom?* [Italics mine]”. Corroborating this assertion, the Federal Government of Nigeria was reported to have said “it has realized that, over the years, Nigeria education system produced graduates with no generic and essential skills needed for global opportunities and responsibilities”. It went further to affirm that, “the curriculum used to teach particularly, in tertiary institutions was largely responsible.” (Ezeh. 2021). The fundamental question that this research sets out to answer therefore is; what is defective in the curricular and how can it be remedied so as to enhance personal and society development?

III. THEORETICAL AND PRACTICAL KNOWLEDGE IN CURRICULUM DESIGN

Knowledge could be defined as the acquaintance, awareness, understanding, information and familiarity that a learner has concerning a subject matter. This knowledge could be justifiably acquired through experience and reasoning. The twenty-first century educational curricular for any society should adequately cognize two kinds of knowledge viz; Theoretical and non-theoretical knowledge.

Theoretical, speculative, abstract but reflective knowledge is a kind of knowledge that does not make recourse to experience, it is acquired for the sake of knowledge itself. Most often the learner regurgitates what has been learnt through rote learning without the requisite understanding. Although, this theoretical knowledge helps to understand the concept behind the techniques of doing things and consequently serves as the foundation upon which practical knowledge rests. Nonetheless, it is inadequate to guarantee properly learning. How could one explain the teachings of agriculture, computer science, engineering, chemical sciences or law for instance, without exposing the learners to real farm situation, cyber space, computer sets and accessories, workshop, laboratories and court of law respectively? This is the kind of knowledge that dominates learning in contemporary schools in Nigeria, in spite of the fact that the curricular is not totally blind to the pivotal roles that non- theoretical knowledge could play to enhance learners’ understanding. Some aspects of the curricular of tertiary institutions in Nigeria recognized this pivotal role but the instructional materials are not available for the teaching due to corruption, lack of requisite skills by the instructors who are expected to train the learners, lack of power supply to mention these few.

Non-Theoretical Knowledge otherwise known as practical knowledge is action-laden, participatory and productive. It enhances understanding; equip learners for independence or self –learning and improved confidence. Knowledge acquired through this means are long-lasting in the learners because of their deep involvement in the learning process. Theoretical learning could serve as the foundation of learning but non-theoretical or practical knowledge solidifies whatever has been learnt theoretically. Non-theoretical or Practical knowledge aims at practice and production which is necessary for 21st century global economy.

Theoretical knowledge of skill-based courses in higher institutions of learning requires the support of practice for them to be relevant to the demands of modern day Nigeria economy. This is why the restriction of courses to a particular discipline of choice as contained in the curricular is ill-informed. This rigid compartmentalization of disciplines ensure that the undergraduate students of Religious Studies Department for instance, cannot take course in Computer science nor thus the language of instruction in schools in Nigeria can be carried out in any cultural language besides English. In other words, the content of the education curricular is devoid of adequate cultural contents and indigenous knowledge that can aid assimilation and understanding necessary for application. Students should be encouraged to engage in other relevant curricular and extra-curricular activities outside their field of studies, in addition to the building of internship and exchange programmes, these would enhance exploration and confidence building. The twenty first century curricular of education in tertiary institutions must move beyond the theoretical to include the practical aspect if it is to fulfill the mandates of employment opportunities, independence, competence and creativity in the learners.

IV. DEVELOPMENT AND EDUCATIONAL TECHNOLOGY

Development is a word of pluralistic dimension; it embraces the social, political, material and intellectual spheres of man. For the purpose of this article, the concept is bifurcated into personal and societal perspectives. Firstly, the word *development* specifically analysis how the literate individuals fare in the enhancement of his or her wellbeing in terms of freedom, rise in personal incomes, increased skill and capacity or, in the words of Walter Rodney (1972), the concept development implies activity, increased skill and capacity, self-discipline, greater freedom, responsibility, and material wellbeing.. In this regard, it is concerned with the ability of the learned to choose and to utilize to the maximum capacity the acquired skills to enhance ones quality of life. This, therefore, suggest that proper education predicated on robust educational curricular would facilitate the creation of ideas, opportunities for maximum advantage.

Secondly, the word development is concerned with how the society progresses in terms of infrastructure, industrialization, science and technology. A community, nation or society would be classified as undeveloped or underdeveloped if there is no noticeable improvement in the level of her infrastructure, state of industrialization or if the society is still held down by traditional methods of doing things.

It is these personal and societal conceptions of development that perhaps informed the views of Aik and Edmonds (1976) when they highlighted the functions of educational process to consist basically of teaching the learners how to fit into the social and cultural environment, and teaching the practical skills which will enhance his contributions to the community in which he lives. Unfortunately, tertiary education curricular in Nigeria does not adequately encourage creativity and practical skill acquisitions hence, the low employability rates of Nigerian graduates. This challenge would have been surmounted if the new technologies that revolutionize knowledge production in advanced countries are replicated in teaching and the structure of educational curricular in Nigeria. In other words, educational technology ought to be given its pride of place through the provision of modern teaching gadgets and devices in schools.

Knowledge production and processes are better facilitated with technologies hence, educational technology. Educational technology, therefore, involves the holistic utilization of hardware, software and system approaches to learning. It is, according to Association for Educational Communication and Technology in the United States (AECT 2008), the integration of processes involving devise, procedure, idea for analyzing and resolving problems. Thus it ease teachings, makes learning friendly and permanent in the learners so much so that what has been learnt can easily be applied to day-to day challenges. The AECT went further in their definition that educational Technology as the study of ethical practice of facilitating learning and performance by creating, using and managing appropriate technological processes and resources. Sad enough, this is not comprehensively factored into the educational curricular of tertiary institutions in Nigeria because of paucity of funds, corruption and where, some of these devices are available

they are inadequate or the instructors are not knowledgeable enough to use them. Okolie (2000) and laleye (2013) in their research findings revealed that resources for teaching are inadequate and most of the serving instructors especially the old ones are not computer literate and hardly use instructional material to solve problems in teaching and learning process hence, learning is uninspiring, it is devoid requisite skills acquisition and monotonous to both teachers and learners. Educational Technology should be an essential component in the search for possible pathway toward sustainable development.

V. TOWARDS THE ACTUALIZATION OF THEORETICAL AND PRACTICAL SKILLS FOR SUSTAINABLE DEVELOPMENT

The main objective of Development is the empowerment of the individual both economically and socially to completely alleviate poverty. It brings about economic growth, structural growth, Political stability, self-actualization, self - industrialization for a nation's total reliance. Ibukun (2015) observed that the higher education system in Nigeria is relatively low in relation to the requirements of a 21st century ICT driven competitive world. It has been emphasized that, the policy that should drive any twenty-first century compliant educational curriculum should include personal and society development. The policy should connect the design and implementation of the curriculum into a single whole. This suggests that curriculum planners, instructors and the government should consciously develop the Will to translate policy or principle of the curriculum into action.

What Nigeria tertiary education curricular needs is a concomitant emphasis of both theoretical and practical cum productive knowledge in the school curricular. It must be stressed that theory and practice should be two sides a good coin. Both are needed for proper and marketable education. The challenges and globalization should bring about changes in curriculum design which will require universities to adjust their existing structure and institute strategies to make their products employable.

Theory and practice are not opposites or separate entities. 'Practice' cannot be lacking theory. Similarly, it is difficult to conceive of 'theory' that is purely descriptive and devoid of reference to purposeful action. In other words, practice is soaked in theory. It is a constant process of theory making, and theory testing. Thus, it is in this sense that we can begin to talk about practice as praxis – informed action. As Freire (1972) puts it, 'we find two dimensions, reflection and action, in such radical interaction that if one is sacrificed – even in part – the other immediately suffers'.

In doing this, there is the need for the training and re-training of the instructors and graduates on the use of educational technology equipment and its relevance to modern day challenges. This would make the instructors to be abreast with technological development and its usefulness in modern world. It would also assists the graduates to be useful to themselves rather than being idle without government job.

There is an urgent need for a review of the existing curricular to promote inclusive education. According to UNESCO, inclusive education is seen as “a process of addressing and responding to the diversity of needs of all learners through increasing participation in learning, cultures and communities, and reducing exclusion from education and from within education.” The goal is that the whole education system will facilitate learning environments where teachers and learners embrace and welcome the challenge and benefits of diversity. Within an inclusive education approach, learning environments are fostered where individual needs are met and every student has an opportunity to succeed. It also includes that, learners should not be restricted to his or her chosen field alone in the tertiary institutions. Opportunity should be provided by the curricular for the learners to have cross fertilization of ideas as with other disciplines. Knowledge derives from such other fields would benefit the learner because his horizon and experience must have been broadened by such exposure. The goal of an inclusive education is not only to provide students with an appropriate learning environment but to also allow for each the opportunity to reach their potential. Every student can reach their full potential when they are given the opportunity, resources and teaching that suits their needs. It is important to say at this juncture that, General Studies (GST) and Entrepreneurial Courses (ENT) attempt to capture this point in the curricular but they are inadequate.

In addition and more fundamental to the above, is the promotion of practical skills that cognized economic viability, environmental protection and social equity of the human person, this would help preserve resources for present and future generations and self-reliance of graduates. At both schools and the labour market less emphasis should be on certificates and, more emphasis on practical skills. Furthermore, liberalization of education with emphasis on alternative method that encourages the use of indigenous language should be encouraged by the curricular. Proper education should cognize the environment and culture of the people for it to be sustainable, therefore, indigenous language of the people could aid assimilation and learning if employed in the teaching of some perceived subjects and courses.

VI. CONCLUSION

The paper observed that the widely held belief that tertiary education curricular in Nigeria is devoid of practical and technological skills does not hold any water. It traced development in the education sector from the pre-colonial to contemporary age and argued that it contained though in small measure practical and technological contents. At tertiary education level, there is an unfortunate paradigm shift from the hitherto inadequate practical skills to zero level of practicality thus widening the more, the gap between practical skills and theoretical skills acquisition. Consequently, graduates of tertiary education are bereft of practical and technological skills needed for self-reliance, freedom and relevance to contemporary human society whose labour markets demand innovation, creativity,

independence and team spirit. The article, therefore, argued for concomitant emphasis on practical and technological skills as complements to theoretical skills that dominated the curricular of tertiary education in Nigeria as the key to activating sustainable development of the Nigerian society in the twenty-first century.

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