INNOVATIONS IN THE HIGHER EDUCATION FOR SUSTAINABILITY: A FUNCTIONAL APPROACH

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ABSTRACT

Higher education system in Nigeria is in recent time characterized by poor funding, strike actions, financial impropriety in the high places, and insecurity in the campus, rampant cases of examination malpractices and above all high rate of graduate unemployment. The Agenda 21 chapter 36 of the UN Earth Summit (1992) emphasised the importance of orienting education to achieve sustainable development through including more principles, skills, perspectives and values that are quantitative, qualitative, appropriate and relevant to the socio-cultural environment to the school curricula. Many scholars upheld that sustainable development could be guaranteed more when education is customized for individual learners (Zeilberger, 1999; Good, 1999; Huckle and Sterling, 2006). Sustainable Education (SE), Education for Sustainability (EfS) and Education for Sustainable Development (ESD) are interchangeable terms when describing the practice of teaching for sustainability in order to provide everyone with the opportunity to acquire the knowledge, skills, attitude and values necessary to shape a sustainable future. Therefore there is need to explore innovative approaches higher education could adopt for sustainability which is the thrust of this study. The study adopted a survey research design. Lecturers from the 441 universities in Nigeria constituted the population of the study. Purposeful sampling technique was used to select twenty-five (25) respondents from each of the twelve (12) universities selected for the study giving a total of 600 as the sample size. The instrument for data collection is a researchers-structured questionnaire. Mean score was used for data analysis. Results revealed that curricula programmes, research and community services in higher institutions should be fine tuned to guarantee sustainable higher education system in Nigeria.

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INTRODUCTION

It is widely accepted across the globe that education plays a vital role in national development. Looking at the changes that have taken place in the Federal Republic of Nigeria over the past 50 years, it is clear that the driving force for improvement in the living standard of people came from gains in knowledge and transformation of value systems through education. It is therefore necessary to consider specifically how higher education could be managed to bring about the changes needed for sustainable development in Nigeria. It is worthy to mention that within the tertiary education sector, there have been various efforts made by scholars and international organizations on the approaches and mechanisms to promote sustainable development through higher education. Some of these landmarks were:

The Magna Charta of European Universities in 1988; the Tallories Declaration of University Presidents for a sustainable future in 1990; the Halifax document: an action plan for universities creating a common future in 1991; the Luneburg Declaration on Higher Education for sustainable Development in 2002; the A U Declaration on Higher Education in 1993; the COPERNICLES University Charta on Sustainable Development in 1994; the Ubuntu Declaration on education, Science and Technology for Sustainable development in 2003; Graz Declaration on committing universities to sustainable development in 2005; G8 University Summit Sapporo Sustainability Declaration/ Statement of Action in 2010 (Leal Filho,2010) and the Nagoya Declaration on Higher Education for Sustainable Development in 2014. Since then, other non-profit organisations, professional associations and initiatives have arisen, including the Global Higher Education for Sustainability Partnership (established 2000), the Association for the Advancement of Sustainability in Higher Education (established in 2005), and the Higher Education Sustainability Initiative (established in 2012). The experiences from these laudable initiatives show that there is need to explore new and innovative ways to foster the cause of sustainable development through the ambit of higher education institutions in a more concrete and meaningful manners. This is not to say that the earlier efforts were not beneficial as they have provided valuable theoretical basis and pre-conditions for a paradigm shift on successful implementation of any sustainable development programmes through functional higher education any time anywhere. It is on this premise that the present study is apt to explore innovative ways of carrying out core mandates of higher education for sustainability

CONCEPTUAL CLARIFICATION

The Concept of Innovation

Innovation is derived from the Latin word 'innovate' which means renewal. Innovation could be associated with invention, creativity and change because all innovation brings about invention, improvement and change but not all inventions and change are innovation (Udo, 2014). This is because invention is bringing into existence what has never existed while change is the process through which new programmes, practices and approaches are put in place or injected into the operation of a system to replace the old or ineffective ones. It then implies that an innovation does not mean the same thing as invention, creativity or change rather each of these activities may lead to innovation. Innovation is not ends in themselves but means towards ends. Innovation is the introduction of new ideas system or technology which essentially brings change into the system or organisation.

Gabadeen (2014) described innovation as a radical or incremental change in principles, processes, procedures and operations of any service delivery system organization in order to bring about the desired change. In the vein Boblenz (N.D) see innovation as a fundamental different way of doing thing that result in considerable better and perhaps different outcomes. In summary, innovation connotes doing thing differently, exploring new territory, taking risks to bring into existence and practice something new so as to enhance performance and growth through improvement in efficiency and effectiveness. The dimension of innovation could be incremental, radical (breakthrough and transformational (disruptive) hence, need to be effectively nurtured or managed to achieve desired result. It is in the light of this thought that Gabadeen see innovation management as a process of planning, organizing, directing and controlling the activities of the organization for the purpose of supporting people (worker) and the entire system to initiate and inject new ideas and technology necessary to bring about the desired result. This implies that management of innovation involves a systematic promotion of new ideas from people in the organization through planning, organizing and control of available resources to achieve desired organizational goals.

In education, innovation involves deliberate application of information, imaginations and initiatives in deriving greater or different values from resources which often results when new ideas are applied to satisfy the needs and expectation of students. That is why innovation should be supported and welcomed in all forms of education considering the paucity of resources available to education and global competitiveness. Gabadeen (2014) noted that innovation could be applied in areas of curriculum content design and development, pedagogical approaches, planning and management of school-based activities, policy formulation or implementation, infrastructural facilities, management structure, funding strategies and accountability procedures in order to enhance the quality and quantity of the output of the education system. The goals of innovation in education according to him are: Improving the quality of service delivery in education; creating new products that will meet the yearning of the client; extending the market coverage for education service and products; reducing the cost of labour,

energy, consumption and material for production; improving the process of providing educational activities; reducing the impact of the environmental/climate change retaining and attracting old and new customers; improving the image of the organization and; complying with the directives of the regulating bodies and agencies. Innovation is sine qua non for the desired change in the education system.

Management

Management is being in charge or in control. Educational management is the process of handling carefully and not wastefully what goes on in the process of educating people so that nothing goes out of hand. In other words; it is the process of utilizing available human and material resources without waste in planning, organizing, staffing, directing and co-coordinating school activities for the purpose of achieving educational goals and objectives (Babalola, 2006); (Uchendu, 2015). The meaning of management in the context of this work is about work, people, structure and system involved in universities to bring about the desired change in students behaviour to enable them contribute their quota in sustainable national and international development.

Functional Education

Functional education is a form of education which is based on the natural needs of the child. It is the education for which there is an anticipated application and its immediate meaning transferable into actions by the learner (Zeilberger, 1999 and Good; 1999) in Asaju and Adagba, 2014). Here functional education is presented as a total process of bringing individuals to develop their potentials to the fullest and consequently be able to contribute maximal to the development of the society. In other words, it is education that is of value to the learner, community and the nation. Obanya (2003) noted that these ideas of functional education are part and parcel of basic philosophical principles of education, captured in such well-known expressions, as 'Education is not just a preparation for life, but life itself' but observed that over the years, this paradigm has shifted from 'functional' to 'functional context', to 'functional skills' education. According to him, functional context education is a situation where the environment in which the child is growing and the one s/he is going to live in should determine the way education is carried out, including what is taught and how it is to be taught and learned. While functional skill education posits that the purpose of education is to acquire the skills of understanding life situations, adapting to it and acting to influence it and contributing to its development. Here, focus is on the learner, within the context of him or her becoming a full functioning member of society, and with a view to equipping him or her with the skills needed for living and contributing meaningfully in society. It is in this context that functional university education is presented for providing students with relevant knowledge and skills that could enable them to contribute to sustainable national development.

Education and Sustainable Development

Sustainable development has been various conceived in terms of value change (Clark, 1989), social reorganization (Gore, 1992), vision expression (lee, 1993), moral development or transformational process towards a desired

future vision or better world (Viederman, 1994) in (Ajibola and Habiba, 2014). Thom-Otuya, and Inko-Tariah (2016) described development as the ability of a country to mobilize resources to improve the social welfare of the people by providing social amenities. According to the United Nations World Commission on Environment and Development (1987) in Ilechukwu, Njoku, and Ugwuozor (2014), development is sustainable if it meets the needs of the present without compromising the ability of future generations to meet their own needs. This implies that sustainable development enables people to develop knowledge, values and skills to participate in decisions about the ways they do things individually and collectively, locally or globally, that will improve their quality of life now without damaging the planet earth of the future.

It is in this regard that the Food and Agricultural Organisation (1988) in Okwelle and Ayomike, (2014) stated, that sustainable development is the management and conservation of the natural resources base and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generation. It is the exploitation and improvements in all aspects of human existence for the continued satisfaction of mankind both today and tomorrow. In 1992, a UN conference known as Earth summit held in Rio de Janeiro, the Agenda 21 chapter 36 brings up educational issues and it emphasis the importance of orienting the education to achieve sustainable development through including more principles, skills, perspectives and values that are quantitative, qualitative, appropriate and relevant to the socio-cultural environment to the school curricula. It is in line with this that Huckle and Sterling (2006) in Ajibola and Habiba (2014) posit that education must be customized for individual learners for sustainability.

Nnabuo and Asodike (2012) conceived education for sustainable development as a holistic approach for managing the school curriculum to reflect on what to teach and how to teach it in order to clarify and extend the ability of students to be functional. UNESCO (2014) in Sterling (2017) stressed that Education for Sustainable Development (ESD) is to provide everyone with the opportunity to acquire the knowledge, skills, attitude and values necessary to shape a sustainable future. Sterling in his contributions maintained that higher education is no longer preparation for an assumed stable future but a nurturing of individual's collective potentials to live well and skillfully towards human and planetary betterment.

Higher institutions define their ideas of sustainability in all relevant academic disciplines, research on sustainable development issues such as greening campus operations, inter-university cooperation, partnerships with governments, civil society and industry, and the moral obligation of higher education to work for a sustainable future. Higher institutions are under obligation to identify activities that will help to address environmental factors, buildings and other infrastructure by infusing environmental education into academics, co-curricular activities and research. Other initiatives higher institutions undertaker to addressed economic and social issues include investment, endowments,

developing community partnerships and committing to affordable education for all students. Whilst not all higher institutions engaged in all of these activities, the sector defined the core forms of higher education sustainable development initiatives through academic, operational and administrative programmes.

Despite all this, higher institutions could not move their mandates far enough to really break into new sustainable habits. An empirical review of 200 campuses in 2008 analysed several factors thought to improve sustainability practices which include: regulatory pressures, finances, and student and faculty preferences, among others. Results show that access to financial resources and wealth has been the main drivers of sustainability practices (Stafford, 2011 reported in Taya, 2014). The result of this research is relevant to Nigeria situation where education is generally underfunded. This implies that higher institutions should look inwards in order to develop better approaches to improve their roles of providing the needed leadership in sustainable development.

In summary, education for sustainable development calls for giving people the required knowledge and skills in terms of lifelong learning to help them find new solutions to their environmental, economic and social issues in a sustainable manner. Hence the needs for this study innovations in higher education for Sustainability.

Overview of Higher Education and Sustainable Development

Higher education is the type of education provided in institutions that provide post-secondary school education usually referred to as higher education. Babatola (2015) described higher education as institutions that provide scholars with the highest and largest form of human and educational organization as well as traditions and models of excellence and expertise in faculties and specialization marked with distinct value of autonomy, teaching-learning and culture. The government of Nigeria noted that the education of higher professionals will continue within the university system rooted in a broad-based, strong, scientific background structured to contribute to national development. National development here is conceived as a process of systematic transformation of the overall social, economic, political, scientific and technological life of a nation via effective, coherent, co-ordinate management system, result oriented social mobilization strategy in which the citizens actually participate and exhibited positive attitudinal commitment in the overall reconstruction process for improved human conditions of the people (Mezieobi, 2013).

These could be enhanced through a functional education provided under the auspices of higher education institutions. Higher education in Nigeria aims at: The acquisition, development and inculcation of the proper value-orientation for the survival of the individual and society; the development of the intellectual capacities of individuals to understand and appreciate their environments, the acquisition of both physical and intellectual skills which will enable individuals to develop into useful members of the community; the acquisition of an objective view of the local

and external environments. These are to be achieved through: teaching, research, dissemination of existing and new information, pursuit of service to the community as well as serving as store house of knowledge (Federal Republic of Nigeria, 2004). The National policy on Education in realization of the contributions of higher education to national development, state that there is need to intensify and diversify university programmes for the development of high level manpower within the economy; design course contents to reflect national requirements, conduct researches that are relevant to the nation's development goals and render services to the community. These sound plausible as fund is hardly available for higher institutions to perform their traditional roles.

It is against this background Lee (2015) posits that higher education now have the responsibility, more than ever before, to integrate sustainable development into all their teaching, research, community engagements and campus operations. This has given credence to the present study which sought to find out how innovations in higher education could help to ensure sustainable development in Nigeria.

Statement of the Problem

Higher education system in Nigeria is characterized by poor funding, strike actions, financial impropriety in the high places, and insecurity in the campus, rampart cases of examination malpractices and above all high rate of graduate unemployment. It is evident from the 2018 budget that only 7.04 percent was allocated to education which is grossly inadequate. This occasioned the incessant strike actions going on in the higher institutions. Insecurity on campuses emanating from the school communities abounds. Every now and then students and staff are being robbed; abducted and molested for instance a final year student of business education in Ebonyi state university, Abakakaliki was shot dead by robbers in his hostel. Boko Haram serial attacks on university of Maduguri and Abuja have generated a lot of resentments. On alleged cases fraud in higher institutions, the vice chancellors of federal university of technology Abeokuta and that of federal of technology Akure were suspended for alleged fraud. Similarly, the provost and the bursar of college of education, Obudu in Cross River state were fingered for alleged theft of 125 million Naira (Azeezat, 2018). All these call for palliative measures to retool higher education system in Nigeria; hence the problem of this study posed in as a question thus: What innovations in higher education system could guarantee sustainable development in Nigeria higher institutions.

Research Questions

The following research questions guided the study.

1. What are the innovations to be integrated into curricula programme in higher education for Sustainable Development in Nigeria?
2. What are the innovations to be incorporated into research in higher education for Sustainable Development in Nigeria?
3. What are the innovations to be included in higher education community services for Sustainable Development in Nigeria?

RESEARCH METHOD

Research Design

Descriptive survey research design was adopted for this study. Meredith, Joyce and Walter (2007) described survey research as a research that involves the collection of data from a sample that has been selected to represent a population to which the findings of the data analysis can be generalized. That is why survey design was considered appropriate for the study.

Area of the Study

The study was carried out in Nigeria universities. There are 441 universities in Nigeria. Nigeria has thirty six states and the FCT Abuja with a population of about 180 million people. Nigeria as a nation is divided into six geo-political zones for administrative conveniences. These are the North West, North East, North Central, South West, South East and South - South. Nigeria has three major religions are Christianity, Islam, traditional African religion. Nigeria is still a developing nation with GDP of about 1.2 and relatively high unemployment rate and out of school children (Federal Republic of Nigeria 2006, World Bank Group, 2017) [19].Universities were chosen because they provide the highest form of higher education programmes.

Population of the Study

The population of the study comprised of all the lecturers in the 441 universities in Nigeria.

Sample and Sampling Techniques

The sample of the study comprised of 300 respondents. Purposeful sampling technique was used to select 25 lecturers from each of the 12 universities chosen for the study. The researcher purposely chose two universities from each of the six geo-political zones in Nigeria for the study. This is because of accessibility.

Instrument for the Data Collection

The instrument used for data collection is a researcher structured questionnaire. The instrument is composed of three sections each with five questionnaire items to address the research questions. The response patterns was presented in a four point rating scale thus: Strongly Agree (SA) = 4 points, Agree (A) = 3 points, Disagree (D) = 2 points and Strongly Disagree (SD) = 1 point.

Validation of the Instrument

The instrument was vetted for face and content validity by three experts, two from educational administration and planning and one from educational measurement and evaluation all from Faculty of Education, Ebonyi State University, Abakaliki.

Reliability of the Instrument

To determine the reliability of the instrument, 30 copies were administered to 40 lecturers (10 each) from four universities that were not used for the study. Split half test method was used and scores were computed using Crombach alpha. The result gave a reliability co-efficient of 0.78 which was high enough to consider the instrument suitable for the study.

Method of Data Collection

The questionnaire was administered to the respondents by the researcher through the assistance of the school principals who were properly educated on the instrument.

Method of Data Analysis

The data collected were analysed using the mean (x) scores of each questionnaire item. Decision rule regarding disagreeing, agreeing an item was based on mean range of 0 – 2.49 as disagree and mean range of 2.5 – 4.0 as agree.

PRESENTATION OF RESULT

Research Question One

What are the innovations to be integrated into curricula programme in higher education for sustainable development in Nigeria?

Table 1: Mean rating of respondents on the innovations to be integrated into curricula programme in higher education for sustainable development in Nigeria.

S/N	Item Statement	SA	A	D	SD	N	∑x	X	Decision
1	Integrating entrepreneurship education into courses to enhance student's employability.	400	450	90	10	300	950	3.17	Agree
2	Including environmental education a general course to make student environmental conscious.	220	330	200	55	300	845	2.82	Agree
3	Designing courses to suit the peculiar need of the students.	200	210	240	50	300	700	2.33	Disagree
4	Designing courses to suit the peculiar need of the school community.	240	240	220	50	300	750	3.50	Agree
5	Tailoring programmes in line with the manpower need of the nation.	300	360	180	10	300	850	2.83	Agree
	Grand mean							2.73	

The result of data analysed on table 1 show that agreed in items 1, 2, 4 and 5 are the innovations to be integrated into curricula programme in higher education for sustainable national development. However, they disagreed with item 3 which means that designing course to suit the peculiar need of the students may not help student to contribute to sustainable national development.

Research Question Two

What are the innovations to be incorporated into research in higher education for Sustainable Development in Nigeria?

Table 2: Mean rating of respondents on the innovations to be incorporated into research in higher education for sustainable national development in Nigeria.

S/N	Item Statement	SA	A	D	SD	N	∑x	X	Decision
6	Encouraging Students to conduct research on the problems of the immediate environment	300	225	200	50	300	775	2.58	Agree
7	Universities sponsoring researches on the problems of the immediate environment.	300	300	150	50	300	800	2.67	Agree
8	Special directorate be created in the university for research development and result dissemination.	400	360	240	10	300	910	3.03	Agree
9	Supporting lectures to undertake collaborative researches on national issues.	500	450	40	5	300	995	3.32	Agree
10	Institutions making mandatory for professors to carry out research on the problems related to their areas of specialization at least once every year.	240	240	220	50	300	750	2.50	Agree
	Grand mean							2.82	

Result on table 2 reveals that the respondents agreed with all the items 6 – 10 are the innovations to be incorporated into research in higher education for sustainable development.

Research Question Three

What are the innovations to be included in higher education community services for Sustainable Development in Nigeria?

Table 3: Mean rating of respondents on the innovations to be included in higher education community services for sustainable development in Nigeria.

S/N	Item Statement	SA	A	D	SD	N	∑x	X	Decision
11	Higher education to mount programmes that are relevant to the needs of the immediate Community.	300	300	200	25	300	825	2.75	Agree
12	Higher education supporting students to undertake projects relevant to the needs of the immediate community.	360	330	160	20	300	870	2.9	Agree
13	Higher education to always identify and handle one problem of the Community at least once every five years as their corporate social responsibility.	300	240	210	20	300	770	2.57	Agree
14	Higher education consultancy services to incorporate programmes/ projects that will benefit the community.	320	210	200	50	300	780	2.6	Agree
15	Giving specified percentage of Staff to be employed to the institution's community.	400	360	150	5	300	915	3.05	Agree
	Grand mean							2.77	

Result on table 3 indicates that the respondents agreed in all the items 11 – 15 are the innovations to be included in higher education community services for sustainable development.

DISCUSSION ON THE FINDINGS

On are the innovations to be included into curricular programme in higher education for sustainable development, result shows that sustainable national development could be enhanced through: integrating entrepreneurship education into core courses; including environmental education as a general course; designing courses to suit the peculiar need of the institution's community. However, the respondents were of the opinion that designing courses to suit the peculiar need of the students may not necessarily enhance the contribution to sustainable national development. The findings are in line with Ajibola and Habiba (2014) who posit that education must be customized for individual learners for sustainability. UNESCO's global action plan for sustainable development suggested transforming learning and training institutions by integrating sustainable development principle in students' daily activities. Lee (2015) also noted that educational institutions have the responsibility to integrate sustainable development into their teaching, research, community engagement and campus operations for sustainability.

On the innovations to be incorporated into research in higher education for sustainable development, the result shows that the respondents agreed that sustainable development could be enhanced through higher education by: encouraging students to conduct research on the problems of the immediate environment; sponsoring researches on problems of the immediate environment, creating special directorate for research development and result dissemination; sampling lecturers to undertake collaborative researches on national issues; and making it mandatory for professors to carry out research on the problems related to their area of specialization at least once every year. This is in line with the Organization for Economic Co-operation and Development (2011)'s green growth strategy which acknowledged the need to adjust students' training and skills to meet changing labour demands and policies, as well as the need to re-orient higher national research for new technologies and innovation for sustainable development.

On the ways of managing higher education community service for sustainable national development, result shows that sustainable development could be enhanced by: Higher institutions mounting programmes that are relevant to the needs of the immediate community; supporting students to undertake projects relevant to the needs of the immediate community; to identify and handle one problem of the community at least once every five years as their corporate social responsibility; and consultancy services to incorporate programme/project that will benefit the community; and giving specified percentage of staff to be employed to the university community. The finding is in line with Lee (2015) and the international Association of Universities where they note that higher education offers disciplinary and trans-disciplinary teaching and research, generates and contributes to the development of new and innovative approaches for solving global national and local issues.

CONCLUSION

Higher education is a worthy activity that prepares an individual for a useful life at the present and for the future. It is the education that is of value to the learner, community and the society at large. It exposes the learner to knowledge and skills needed by the individual to be useful to them and contribute to national development in a sustainable manner. Higher education has an important role to play in meeting the sustainable development challenges. It holds the potential to educate excellent teachers, uncover ground-breaking research, and connect services to communities. For higher education to truly form a part of the sustainable development agenda, governments, non-governmental agencies, higher institutions communities and other stakeholders must work together by targeting publicly-funded research and building partnerships across sectors.

Implications for Practice

Our main aim in this study was to explore new ways of retooling higher education in Nigeria for sustainability because of the seeming failure of their traditional roles. We investigated various innovations that could be integrated into higher education curricula, research and community services for sustainable development both national and international scales.

The first major practical contribution of this study is that it provides much needed empirical data on the actual roles of higher institutions in contributing to sustainable development through paradigm shift from their stereotyped traditional roles. This made our research timely at this conference to brainstorm among the academia to look for more pragmatic approaches of equipping students with necessary skills and knowledge for sustainable future.

The second important implication of our study derives from our findings on the uniqueness of each institution of higher learning to exercise their academic freedom and autonomy to identify the needs of the local environment through their corporate social responsibilities as these will go a long way in guaranteeing sustainable development.

The third implication stems from our findings that indicate the need for higher institutions think out of the box in reaching out to the immediate environment therefore, lecturers should not only concentrate on their traditional role of teaching and supervision but vigorously undertake more practical mentorship of students through active research collaborations.

Limitations of the study

The study is limited in content, geography and only descriptively analysed the data which may make generalization of the finding impossible. Despite these short comings, the findings of our study have contributed to the much needed knowledge on the expected roles of higher education to guarantee sustainable development.

RECOMMENDATIONS

Higher education to be functional and contribute to sustainable national development, there should be reform and innovations in the traditional roles as follows:

1.   Higher education curricula programme should be oriented to the needs of the students and the community.

2.   The research function of higher institutions should be oriented to solving identified problems of the community.

3.   Higher education's community services should be a compulsory projects required for programme accreditation.

4.   Higher institutions should exercise their autonomy and academic freedom to mount programmes and carry out projects that could help solve identified needs and problems of students as well as that of the immediate community.

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