Role of Nigeria in the development of higher education in Africa

Akinwumi Femi Sunday

(Department of Educational Management, Faculty of Education, University Of Ibadan, Ibadan 234, Nigeria)

Abstract: In most countries of the world, higher education is highly subsidized by the public sector. The subsidy is a result of the role of higher education sector on the economy and good governance of the nations. Enrolment into higher institutions of learning is quite low in Africa compare to other continents of the world due to the continent's low and declining spending on her higher institutions of learning. This shabby contribution by the continent could be likened to a result of some imminent challenges, which ranged from inadequate financial resource due to economic and social crisis to the challenges posed by the HIV/AIDS pandemic. The contributions of Nigeria to the development of higher education in Africa is quite worthy of note. This can be affirmed by the increase in the number of states and federal universities in the country over the years since independence. This can be further reaffirmed by the promulgation of Decree 9 of 1993, which made the provision for the establishment of private universities, which further increased the nation's total number of universities to 93 from 59 and further strengthened the nations contributions to higher education development in the continent. In spite of all efforts made by the FGN (Federal Government of Nigeria), the nation is yet to reach her potential in the development of her higher education sector as the percentage of potential students that gained admission into the nation's higher institutions of learning still stand below 15% of the total number of applicants. The study therefore recommended that budgetary allocations to higher institutions of learning be increased to meet the financial demands of the institutions. In addition, multi-campus should be encouraged in order to allow for more access to higher education.

Key words: role; quality assurance; higher education; knowledge=based-economy; enrolment; policies

1. Africa higher education: A historical perspective

Higher education in Africa is as old as the pyramids of Egypt, the Obelisks of Ethiopia and the Kingdom of Timbuktu. The oldest university still existing in the world of Egypt, Alzaazhar, founded as, and still the major academic institution in the world organized according to the original Islamic model. All other universities in Africa have adopted the western model of academic tradition, the fact is that, traditional centers of higher learning have all disappeared or were displaced by the effects of colonialism. Today, the continent is demanded by academic institutions shaped by colonialism and organized according to the European model as in the case of the developing worlds. "Higher education in Africa is an artifact of colonial policies" (Altabach & Selvarantnam, 1989).

2. The policies of the colonial higher education in Africa

The colonial higher educational policies had some peculiar features, among which are limited access, language, limited freedom, etc. That colonial authentic feared a widespread access to higher education, because

this may jeopardize their missions. They were only interested in the training of a limited number of Africans to assist in administering the colonies. Throughout Africa then, the size of the academic system was very small as at the time of independence. A World Bank study of 1991 reported that, at independence, less than one-quarter of all professional civil service posts were held by Africans, most trade and industries throughout the continent were foreign-owned and only 3% of high school age students received a secondary education.

In 1961, Zambia had only got 100 universities graduates. University of East Africa (Serving Kenya, Tanzannia and Uganda) turned out a total of 99 graduates, form a combined area of a population of 23 million at the same year. Zaire, now Democratic Republic of Congo, got her independence without a single engineer, lawyer and doctor who were citizens of the country.

French-speaking African countries could only produce 4 graduates in the field of agriculture in 1952-1963, a period of 11 years while English-speaking African countries turned out 150 (Eisermon, 1988).

After independence, the number of students' enrolment in the continents' higher educational institutions was within 1 million. However, the present estimation shows that 4-5 million, students are currently enrolled. Egypt has the highest number in Africa with over 1.5 million (including about a quarter of 1 million part-time students). Nigeria came second with close to 1 million, 93,000 students enrolled in her post-secondary institutions (Jubril, 2003). Subotzky (2003) opined that South Africa has more than half a million students in her 21 universities and 15 technikons. She has the third largest number of enrolled post-secondary school students in the continent.

Higher educational institutions in Africa have assumed a positive role in improving the entire education system and the pattern designed to prepare young people at all levels for an improved and commendable citizenship. In addition to its functions of teaching and advancing knowledge through research, the roles of higher education in Africa are as follows:

(1) to ensure unification of Africa;

(2) to maintain adherence and loyalty to world academic standards;

(3) to encourage the comprehension and appreciation of African cultural heritage;

(4) to train every individual for nation building;

(5) to develop over the years, a truly African institution of higher learning dedicated to Africa and its people, a kinship to the larger society.

At present, the total number of African students enrolled in institutions of higher education both in Africa and abroad has been estimated at 165,000 with 141,000 studying in Africa and 24,000 abroad (Conference of African States on the Development of Education in Africa, Addis-Ababa, 1968).

The Addis-Ababa reports stipulated that, by 1980, 60% of students enrolled in the universities would be studying in scientific and technological fields.

Among the findings of studies undertaken for the conference, it appeared that the actual distribution of students enrolled in middle African universities according to their fields of study was in the following arrangement: science, engineering, medical science, medical studies (medicine, pharmacy, and dentistry), agriculture, forestry, social science and technology, and all other fields.

3. The state of higher education in Africa

According to the report of UNESCO (United Nations Educational, Scientific and Cultural Organization) in 2002, the enrolment rates for higher education in Sub-Sahara Africa are by far the lowest in the world, though the

gross enrolment ratio has increased in the past years. Between 1985 and 1989, 17% of the worldwide education sector expenses were on higher education, but from 1995 to 1991, the portion allotted to higher education declined to just 7% as the focus shifted to primary education (World Education Conference, 1990).

UNESCO Report (2005) confirmed this asserting that, this reduction in spending has adversely affected higher education in Africa. The average percentage of gross enrolment conceals wide disparities among countries. In several countries, enrolment stood at 1% or less in 2003. However, signs of progress for higher learning are now appearing in sub-Sahara Africa. The International Development Community has begun to recognize the importance of advanced schooling, and African countries have introduced innovative policies to strengthen tertiary education systems there.

Higher education in Africa faces novel challenges at present. Not only is the demand for access unstoppable particularly in the context of Africa's usual low post secondary attendance levels, but also higher education is recognized as a necessary factor for modernization and development.

Among the challenges facing higher education in Africa are inadequate financial resources coupled with an overwhelming demand for access, the legacy for colonialism, long standing economic and social crisis in many countries and the challenges of HIV/AIDS (Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome) in part of the continent.

As regards limited access, colonial authorities feared widespread access of higher education. They were only interested in training a limited number of Africans who would assist in administering the colonies. Some colonial power, notably the Spanish, Portuguese, Belgians and French, kept their enrolment very small thereby making the size of the academic system very small at the time of independence. At independence, Africans held less than a quarter of professional civil service posts, only 3% of high school age students received a secondary education and the language of institution was the language of the colonizers—limits on academic freedom and on the autonomy of academic. Institutions were the order of the day. Also, the curricular was dramatically restricted.

Another challenge facing the higher education in Africa is the legacy of colonialism—For most of the African countries, independence has been the national reality and the former colonizers have remained strong. The fact that in many African counties, the colonial language has been adopted as the language of instruction is significant, importance and illustrative. The impact of the colonial influence remained crucial in an investigation of African higher education.

Considering inadequate financial resources in virtually all the African countries, the demand for enrolment is gradually restricting the resources of higher education institutions. Students had to be admitted into institutions designed originally for fewer students. Since the enrolment increased rapidly, the financial resources had not been able to meet up with it.

In the estimation, 4-5 million students are currently enrolled in the continent's post-secondary institutions. Task Force on Higher Education (2000) in a report put this figure at 3,3489,000 students. There is over 150,000 academic staff in African's post-secondary institutions. Egypt has the highest number of enrolment with 15,000,000 students and 31,000 academic staff. Jubril (2003) asserted that, Nigeria came closely behind with about 900,000 students in 92 universities. South Africa with more than half 1 million students in its 21 universities and 15 technikons is the third in the procession.

At the beginning of this century, the central reality for all African higher education systems was severe financial crises. Academic faces economic problems everywhere but the problems are more pressing in Africa than anywhere else. The causes of these problems are not difficult to discern, they include:

(1) The pressure of expansion and massification, which have added large number of students to most African academic institutions and systems;

(2) Individual African countries' fiscal problems have made it difficult to increase the funds for higher education;

(3) A changed economic climate induced by multilateral lending agencies, such as World Bank and International Monetary Funds led to it;

(4) Misallocation and poor privatization of available financial resources, such as the tradition of providing highly subsidized or even free accommodation and food to students, and maintaining a large cumbersome non-academic personnel and infrastructure is faded;

(5) The inability of students to afford the tuition rates necessary for financial stability and some cases of inability to impose tuition.

The financial situation appears to be relatively less severe or be improving gradually in few places in Africa. During a series of military regimes in the past, Nigeria had suffered serious social, economic and political upheavals.

Jubril (2003) opined that funds are expected to increase by 25.2% under the current elected government. Confirming the fact that the expansion of the tertiary institutions through greater enrolment has led to inadequate financial and personnel resources, and that the available resources are not well allocated, it is considered that, Botswana, which has a small population and considerable mineral wealth, has been able to provide for her higher education sector with adequate funds.

In the area of governance, public higher education institutions predominates Africa and governments' involvement in university affairs is the norm. This legacy is reflected in the current governance structures in many African universities. In many parts of Africa, the head of State holds the ultimate authority as the president in appointing the vice-chancellor and other administrators in the institutions. This is typical of the Anglophone countries in Africa. The chain of administrative power starts with the vice-chancellor and then moves to the deans or directors and finally the departmental heads. The deans and directors in most cases are appointed either by the vice-chancellor or directly by the government officials constituted for that purpose (the boards of directors or trustees). In many cases, fellow members of the department elect the departmental heads.

Excessive intake of non-academic staff is another challenge facing the higher institutions in Africa—Observation results give it that, the teaching and research staff in quite a large number of African institutions are smaller in population than the administrative staff. The administrative bureaucracy in African universities is disproportionately large. For instance, Maliyamkono (1991) reported that at the National University of Lesotho, there is twice as many administrative staff as there are academics and more than 60% of the institution's budget goes on the staff's salary. In Madagascar, Jimenez (1987) reported: "The student-to-administrator ratio remained highly relative to other countries (with 6 students to each administrator)".

4. Development of higher education in Nigeria

The height of a process of maturity and systematic training through experience, and the extensive development of the intellect, orientation and values imbued in the individual in question at the primary and secondary levels are conceptualized as higher education (Longe, et al., 1990). In actual fact, it is a more or less specialized type of education that individual students obtain at the post-secondary levels of schooling, such as

universities, polytechnics, colleges of education, colleges of agriculture and other monotecnics. Ojo (1983) opined that, the establishment of higher education institutions in Nigeria emerged as part of the colonial struggles championed by the nationalist elites, majority of who obtained tertiary education outside the country. Education was perceived by the nationalist as the most forceful weapon for mental de-colonization, political and socio-economic developments. Considering the nationalist' relentless agitation for higher education, the British government established the Yaba Higher College in 1932 with the objective of providing average manpower in relevant government departments by offering sub-degree courses in medicine, engineering, agriculture, teachers' education, and other vocations.

The British Colonial Administration also found the Elliot Commission on Higher Education in West Africa, in 1945. This body recommended for a University College in Nigeria. The University College, Ibadan was then established in 1948 as an off-shore and branch of the University of London. In 1949, a delegation of the Inter-University Council for Higher Education in the British colonies gave another report which made a strong case for promoting technical education at the regional levels, hence, the establishment of 3 polytechnics, one in each administrative region of the country. These polytechnics, namely, the Nigeria colleges of arts, science and technology, Zaria, then for the Northern region (1952); Ibadan, for the western region (1954) and Enugu for the eastern region (1955).

The Ashby Commission named after its chairman (Sir Eric Ashby) submitted its report that more courses should be introduced into technical education in 1959. Consequently, the number of the universities increased to 7 in order to accommodate an expanded production of high level manpower to meet the Nigerians needs.

Longe, et al. (1990) opined that historical inventories of the first sets of universities in Nigeria are the University of Nigeria, Nsukka which was established in 1960, Obafemi Awolowo University in 1962, University of Lagos in 1962, and the University College, Ibadan, was converted into an autonomous institution at the same year. Thus, by the end of 1962, there were 5 universities in Nigeria. Four more universities were established in Sokoto, Maiduguri, Jos and Calabar in 1975 for wider geographical spread of institutions of higher learning. Three colleges were also instituted in Ilorin, Port-Harcourt and Bayero University Kano respectively. Several state governments instituted universities alongside those of the federal government in many states in 1977. Private universities later equally came into the scene in 1999 with the emergence of Igbinedion university, Babcock university and covenant university. At present, there are 27 federal universities, 32 state universities and 34 private universities. Altogether, there are 93 universities in Nigeria (NUC (National Universities Commission), 2008) (see Table 1).

Table 1   Present state of universities in Nigeria

Period	Federal	State	Private	Total
1984	1	-	-	1
1950-1959	-	-	-	-
1960-1969	4	-	-	4
1970-1979	8	1	-	9
1980-1989	9	7	-	16
1990-1999	3	5	-	11
2000-2006	1	17	21	39
Total	26	30	24	80

Sources: NUC, 2007; Okojie, 2007.

5. The Nigerian educational system

The exit of the Colonial government in Nigeria in 1960 provided opportunities for Nigeria to recognize education as an important tool for the development and strategic for changes in demographic dynamics.

The pluralistic nature of the Nigeria and different religious inclinations made the realization of policies difficult in all sectors. The dichotomy between the Northern and Southern Nigeria also manifested in their educational policies. While because of their long-time exposure embraced western education in the southern, the North vehemently adhered to Islamic education. English language is associated with Western education while Arabic is the language associated with the Islamic education.

In an attempt to bridge the gap between these 2 regions, the national policy on education which was formulated in 1970 adequately took care of the interests of the entire population by addressing both formal and non-formal systems and providing parallel systems of education to include all the segments of society. Before the year 1970, the system of education in Nigeria was a 6-5-2-3 system which is similar to British system of education and a legacy of Nigeria's colonial part (Odejide, 2002).

After the end of the Civil War, Nigeria emerged with a realization of her true potentials and the pursuit in greater degree of policy of self-reliance in all fields of national life. The National Development Plan (1970-1974) laid down 5 social, political and economic objectives for the nation which also is seen as the foundation for the national policy on education: (1) a free and democratic society; (2) a just and egalitarian society; (3) a united strong and self reliant nation; (4) a great and dynamic economy; (5) a land of input and full opportunities for all citizen.

The national policy on education is associated with a numerical formula 6-3-3-4 which represents the number of years that a child is expected to spend at various level of education. The first 6 stands for 6 years in primary, followed by 3 years at the junior secondary, 3 years at the senior secondary and 4 years at the tertiary level.

The new policy is in conception and design, a radical departure from the former British implanted educational system in Nigeria. A striking feature of colonial education in Nigeria was that, it was guided by the imperial utilization considerations.

The primary education curriculum is designed to enable pupils use their minds and hands. The objective is to produce better farmers, fishermen, craftsmen, carpenters and better citizens.

The secondary system is divided into two: the junior and senior secondary. At the first level, which is junior, students are expected to have a good mastery of craftsmanship, carpentry, wood works, etc. Its belief will make them to be self-reliant and independent. Instead of becoming job-seekers, they would be job-creators. However, for those who can make it to senior secondary school, higher curriculum tailored towards sciences and humanities are designed for them.

However, what as good as the system is, it lacks foundational planning. Teachers with relevant knowledge or competence, in vocational and technical education were nowhere to be found. Because of their non-professional teachers lacked the methodological aspect of delivering their lectures.

These amongst others, therefore, makes a mockery of the system both academic and practical disciplines in the universities and polytechnics. They are designed to produce high level human resources.

6. Is there any role Nigeria is playing at all?

The above question leads people to the main topic of this paper. The Federal Government of Nigeria has being

doing well in bringing improvement to the higher education in Nigeria. Some of the efforts include the follows.

6.1 Private participation in higher education in Nigeria

The recent upsurge in secondary education has multiplier effects on the demand for higher education in the country in which government finds it difficult to cope with. Many youngsters in Nigeria are left scrambling for places in universities, polytechnics and colleges of education. According to Oyebade (2005), since 1991-1992 academic year, the unsatisfied demand for university education has been above 70%. In 1992-1993 academic session, the unsatisfied demand was 83%. This issue of unfulfilled demand for university education coupled with the undignified system run by the public universities which is characterized by strikes, poor funding, cases of cultism and of most predominantly declining in quality had increased the request for private universities by stakeholders (see Table 2).

Table 2   JAMB (Joint Admission and Matriculation Board) application and admission profiles (2006)

	No. of application	No. admitted	Percentage admitted (%)
1986-1987	193,774	39,915	20.6
1987-1988	210,525	36,356	17.3
1988-1989	190,353	41,700	21.9
1989-1990	255,638	38,431	15.0
1990-1991	287,572	48,504	16.9
1991-1992	398,270	61,49	15.4
1992-1993	357,950	57,685	16.1
1993-1994	420,681	59,484	14.1
1995-1996	508,280	32,473	6.4
1996-1997	472,362	76,430	16.3
1997-1998	419,807	72,791	17.3
2000-2001	550,399	60,718	11.0
2001-2002	828,214	78,416	9.5
2002-2003	828,334	83,405	10.1
2003-2004	851,604	91,280	10.7
2004-2005	913,559	92,103	10.1

Sources: (1) Jegede 2000 Experts consultants report on Commonwealth of Learning World Bank Project; (2) Executive Secretary of NUC (2005), paper delivered at the National Workshop on Distance Education in Nigeria.

In the words of Adekanmbi (2007), he posited that the universities cannot afford to become a beehive of commercial activities, where the search for money beclouds the search for knowledge and the truth. It becomes a kind of contradiction in terms if it were to be. It must satisfy the yearnings for its existence. How for example would it be different from the ordinary business organization? To allow universities to become financial corporations is itself a dangerous enterprise. The university must be the theoretical basis for development, and the guide for the praxis of such a goal.

Due to this massive demand for education, government in Nigeria in 1980s received several applications for the establishment of private higher institutions. Concern for quality and for the need to set out guidelines led to the applications not being approved until the end of 1990s. Several private higher institutions have since been approved. The private sectors have responded by successfully getting so many private higher institutions licensed in the past 9 years. This private sector response to creation of higher institutions has been quite intense and has

made Nigeria to become aligned to the change in the deregulated education industry worldwide, where private sector participation is taking a pride of place in the provision of what was originally regarded as government preserves. Apart from the above, it will be of great interest to note that the Federal Government has taken steps to expand access to higher education in Nigeria. Some of the giant steps taken by the Federal Government include: (1) increasing the number of both state and federal universities; (2) expanding enrolments; (3) introducing an admission quota system to address regional and class imbalances; (4) approving the establishment of more private universities; and (5) establishment of National Open University (see Table 3).

Table 3　Distribution of students by institution

Type of institution	Enrolment	1987-1988	1990-1991	1994-1995	1998-1999	2006-2007	Increase from 1987-1988 to 2006-2007 (%)
University	—	158,758	195,759	256,780	319,914	723,213	418.53
Polytechnic	—	72,134	106,926	187,738	219,770	323,684	348.73
College of education	—	61,890	85,574	95,502	105,416	331,396	435.46

Source: NMB (2007).

With this development, there has been serious concern about the quality of products of private higher institutions especially in the light of the sudden rise in their number as well as of the number of students, factors that had a serious telling effect on the institutional facilities.

6.2 Curriculum development

The reality of a knowledge-based economy, in which producing, disseminating, adapting using and applying knowledge are the key factors of economic growth and competitiveness, requires the university curriculum and its implementation and must be dynamic and be relevant to the needs of the society in a rapidly changing world. Employers believed that, academic standards have fallen considerably over the past decade and that a university degree is no longer a guarantee of communication skills or technical competence. As a result, university graduates are commonly viewed as half-baked (Dabalen, Bankole & Olatunde, 2001). There is therefore the need for tracer study by institutions of higher learning to find out the relevance of their degree programmes. The curriculum of university education should prepare student for global labour market.

However, the Nigerian government through NUC (National Universities Commission) of recent introduced some new dimensions to salvage the battered image through re-positioning of curriculum. One of these strategies is the inclusion of new content in the field of study arising from public, demand with existing programmes. Babalola and Jaiyeoba (2008) opined that, "Government often respond to the demands of the society concerning relevance of academic programmes through policy statements and directives from the NCE (National Council on Education), which communicates such decisions to the NUC and in turn issues directives to the universities for action". The introduction and adoption of post-JAMB (Joint Admission and Matriculation Board), screening by all the universities in Nigeria is a giant step aiming at sanitizing the quality of education in Nigeria. Besides, due to the dynamic nature of the society and nature, the injection of entrepreneurial studies and citizenship education into the curriculum is like a harmattan fire spreading the self-sustainability of the graduates and thus, reducing the unemployment.

The packaging and repackaging of some university programmes to meet the changes in the knowledge environment goes a long way to improve the old moribund curriculum. For instance, the inclusion of courses like, bio-chemistry and geo-physics are in response to the market trends.

One other way of strategizing curriculum in Nigeria, according to Babalola and Jaiyeoba (2008), is the

systematic and professional approach. Curriculum development should follow a due process. That is, a proposed curriculum should be drafted by the department to faculty board then to the senate. The approved document should now be sent to NUC and finally to the Ministry of Education for ratification (see Tables 4 and 5).

Table 4   Distribution of total graduate out-turn by types of institution and academic year

Type of institution	Enrolment	1987-1988	1990-1991	1994-1995	1998-1999	2006-2007	Increase from 1987-1988 to 2006-2007 (%)
University	—	37,286	41,497	48,219	61,749	97,376	161.16
Polytechnic	—	25,573	31,321	43,965	58,823	100,766	293.64
College of education	—	19,803	21,757	19.158	21,147	45,348	129.00

Source: NMB (2007).

Table 5   Admission quota into Nigerian private universities for undergraduate programme (2007-2008)

University	Total
Igbinedon University, Okada	1,097
Madonna University, Okija	2,266
Babcock University, Ilisan Remo	1,937
Pan African University, Lagos	200
Benson Idahosa University, Benin	960
Covenant University, Ota	1,500
Bowen University, Iwo	981
ABTI America, University, Yola	500
Bingham University, New Karu, Nasarawa	500
Caritas University, Enugu	500
Al-Hikmah University, Ilorin, Kwara State	500
Cetep City University, Lagos	500
Redeemers University, Ede	500
Ajayi Crowther University, Oyo	500
City University, Ibadan	500
National Open University	—
Total	9,578

Source: NUC (2008).

Globalization poses a big threat to universities in South. Universities in developing countries are under tremendous pressure to carry out their responsibilities due to government inability to provide adequate fund to sustain university education. There is substantial migration abroad for academic work. Globalization encourages these flows and will ensure that growth continues. As academic systems become more similar and academic degree more widely accepted internationally, as immigration rules are tailed to people with high skills level and as universities themselves are more open to hiring the best talent worldwide. At present, a large exodus of Nigerian academic to the Southern African Countries, US, Canada and UK is very rampant, because of low salaries and deteriorating facilities in Nigerian universities. However, federal government is encouraging scholars through the provision of scholarships and research grants. Also, the NUC has introduced entrepreneurial programme to the university curriculum. This will enable graduates to acquire the required skills that will make them self-reliant.

6.3 Competitive driven reform

The competitive driven reform introduced by the National Universities Commission is a welcome development. This annual rating of universities will help promote healthy rivalry among the institutions. It will make each university to know their strengths, weaknesses, opportunities and threats. This in essence will help universities to bring innovation into their programmes and this will enhance creativity and resourcefulness. This will have an overall effect on the productivity of labor and higher educational institution. In addition, the National Universities Commission has introduced new initiatives to stimulate quality university system. These include virtual library, best in teaching Nigerian UMIS (University Management Information System), NUNET (Nigerian Universities Network), Nigerian universities COMPULIE (Computer Literacy Programme), e-learning, pedagogic and management training programme for university staff and managers and database of expert in higher education.

6.4 Finance driven reforms

Government in recent times has introduced the finance-driven reforms, particularly the issue of cost sharing as government alone. This is not unconnected to the International Monetary Fund which has played an important role in setting the conditions for nation/states to develop economically. A major part of the IMF (International Monetary Fund) package for countries preparing the IMF package for countries preparing themselves for "sound" economic growth to reduce the size of the public deficit and shifting national resources form government control to the private sector. This in turn means the reduction of public spending relative to the private sector.

The IMF is concerned primarily with reducing the cost of public service delivery. They have settled on 3 main finance driven reforms: (1) the shift of public funding for education from higher to lower levels of education; (2) the privatization of secondary; and (3) higher education.

This issue of commodification of knowledge has been resisted by both academic staff unions and students unions. Their stand is based on the fact that, knowledge has always been power as well as a public good and access to it and its role in innovation determine both the place of nation in the world order and of individual in the society, but that commodification displaces the creation and passing on of knowledge. The issue has not been resolved.

6.5 Science & technology

The Federal Ministry of Science and Technology was created in 1979 by the Federal Government to provide leadership in the Development of Science and Technology in Nigeria. A policy on Department of Science and Technology in the country is woven into the teaching of the subjects at the higher institutions of learning, and is therefore relevant to education policy.

It is only at the secondary school level that the Federal Ministry of Science and Technology has encouraged good performance in science and mathematics through various inter-school competitions and awards, which always include girls' colleges, as well as boys' colleges.

Further efforts to promote science and technology have been noted more amongst non-governmental organizations and international networks, such as GASAT (Gender and Science and Technology) and the TWOWS (Third World Organization for Women in Science). These organizations conduct Seminars and competitions for girls at the secondary school level and also work to sensitize parents and girls to the benefits of science education. Special academic grants and research awards have also been given via these organizations to encourage retention of women in the field and to showcase role models. The Helena Rubenstein Award for women in science has promoted this and 2 Nigerian female academics won this global award consecutively in the late 1990s.

The NUC has ratified the establishment of pre-degree remedial programmes in science in most of the universities. However, it has no gendered targets. It is expected that, while this has enhanced access for many

students through bypassing the UME (University Matriculation Examination) examinations in favor of internal examination, more girls than hitherto now have the opportunity to improve their eligibility for entry into the science courses. Statistics are required to show if this has positive affect on girls' access.

7. Recommendation

Based on the above discussions, the study therefore recommends that budgetary allocations to higher education be increased in order to meet that ever-increasing demands of the institutions. This obviously will facilitate the development and competitiveness of local universities with their foreign counterparts.

Since education is perceived as a public good and therefore its demand always surpassed its supply, in developing countries, the adoption of multi-campus system should be encouraged among the higher institutions of learning for both regular and distance learning students in order to increase accessibility to higher education among the populace of the nation. E-learning could also be strengthened to further boost this cause.

Finally, a standard procedure for quality control should be embarked upon by the higher education regulatory body, such as NUC, in order to ensure favorable comparison and competitiveness with the foreign counterparts.

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(Edited by Nicole and Sunny)