

DIFFERENTIATION AND DIVERSIFICATION OF TERTIARY EDUCATION

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BY

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1. Introduction

In a commentary on a World Bank Report entitled “ *Higher Education in Developing Countries-Peril and Promise*”, the authors observe, and I quote,

As knowledge becomes more important to the global economy, so does higher education. The quality of knowledge generated within higher education institutions, and its accessibility to the wider economy, is increasingly critical to national competitiveness. However, developing countries are falling behind. Their higher education systems are chronically under-funded, Faculty under qualified and poorly motivated, and students often badly taught. Developing countries need to teach more students to a higher standard, and develop the research capacity that will help them connect to the knowledge society.

Without more and better higher education, developing countries will find it increasingly difficult to benefit from the global knowledge-based economy.

But it is this same World Bank which, from 1986 to 2011, strongly urged developing countries to shift emphasis from higher education onto primary education on the grounds that returns from primary education contributed more to economic growth than those of higher education. This was rammed down the throats of many developing countries including Ghana, with commensurate financial enticement, for over twenty years and against evidence-based advice from some of us who were then in leadership positions in Higher Education. By the time the World Bank realised the grievous harm they had done to education in general in the developing countries and started changing their theories, a lot of damage had already been done. The World Bank could simply not understand or accept that a strong primary education could only be built if the products of higher education were increased to a certain critical

mass and up to a certain optimum level of quality. They would not accept the that primary school teachers needed to be trained by people who had received higher education up to post graduate level, and that secondary school teachers of necessity needed to have higher education up to university level. If these two categories of teachers were not well trained or unavailable, there was no way one could build a strong primary education system. However, from about 2006, the Bank slowly recognised that none of the UN Millennium goals could be achieved without the products of tertiary education, no matter how much one invested in primary education. It was only when stronger voices like Jeffrey Sachs began to tell the world through the UN, what some of us had been telling them for two decades that they began to sit up. We are still grappling with the consequences of that ill-advised World Bank policy. I sincerely hope that the outcomes of this national policy dialogue will go a long way in helping us to resolve some of the critical issues. Policies thought out, evolved and implemented by our own indigenous experts and stakeholders are always far better than those rammed down our throats by outside experts simply because they come with financial attractions.

2. What is Higher Education?

It is very difficult to give a universally acceptable definition of Higher Education. Some experts contend that higher education is a constituent of tertiary education, but not all tertiary education can be classified as being equivalent to Higher Education.

The right of access to **higher education** is mentioned in a number of international human rights instruments. The UN International Covenant on Economic, Social and Cultural Rights of 1966 declares in Article 13 that "higher education shall be made equally accessible to all, on the basis of capacity, by every appropriate means, and in particular by the progressive introduction of free education".

Some countries however lump all learning that takes place after secondary or high school together and call this Tertiary education, and the institutions providing such education as Tertiary Institutions.

In the United Kingdom and certain other countries, Higher Education is normally limited to education that takes place in Universities. All other post-secondary school education below the level of higher education is referred to as “further education”.

In the US and Canada, Higher education specifically refers to post-secondary institutions that offer degree courses from Bachelor to Doctor of Philosophy, or their equivalents, and also higher professional degrees in areas such as law, medicine, optometry, Pharmacy, and dentistry. Such institutions may also offer non-degree certificates or courses, but the granting of such certificates is not the primary purpose of the institutions. Tertiary Education is not a term used in reference to post-secondary institutions in the United States or Canada.

In many developed countries such as the United States, Germany and Canada, there are large differences in wages and employment associated with different degrees. Medical doctors and lawyers are generally the highest paid workers, and have the lowest unemployment rates. Among undergraduate fields of study, science, technology, engineering, mathematics, and business generally offer the highest wages and best chances of employment, while education, communication, and liberal arts degrees generally offer lower wages and a lower likelihood of employment. In Russia, Singapore and China, teachers, especially those in the sciences and technology, are among the highest paid professionals.

Ghana’s education system has undergone several reforms over the years. From the colonial and immediate pre-independence system of elementary, Secondary/technical/vocational, post secondary and higher educational systems, the country has undergone several educational metamorphoses to the current Basic, High School (including some technical and vocational schools), and Tertiary Education levels. Until recently, the term Higher Education was limited entirely to the universities. It was not until the 1996 education reform process that the universities and polytechnics were amalgamated to constitute one level of education and reclassified as Tertiary Education. The old National Council for Higher Education (NCHE) under the Office of the President was converted to the National Council for Tertiary education (NCTE) under the Ministry of Education. During the past few years, certain institutions which remained in the old Post Secondary or post High School education system have been absorbed into the tertiary system, thus expanding the tertiary level of education considerably.

Ghana now has nine public universities and over 55 accredited private universities and university colleges. The public universities are the University of Ghana (UG) (1948), Kwame Nkrumah University of Science and Technology (KNUST) (1951), University of Cape Coast (UCC) (1962), University of Education Winneba (UEW) (1992), University for Development Studies (UDS), University of Mines and Technology (UMaT) (2001), University of Professional Studies (UPS) (2012), University of Health and Allied Science (UHAS) (2012) and the University of Energy and Natural Resources (UENR) (2012). There are also five specialised tertiary institutions which run mainly university level specialised courses, and a few non university courses. These are the Ghana Institute of Management and Public Administration (GIMPA), the Ghana Institute of Journalism (GIJ), the Regional Maritime University (RMU), The National Film and Television Institute (NAFTI) and the Ghana Institute of Languages (GIL). The Ghana Telecom University College which emerged out of the former Ghana Telecommunications Training School in 2007 is a Government-owned but non-subsidised, full-fee-paying institution affiliated to the KNUST. Government endorsed the tertiary status of these institutions in the White Paper on “The Report of The Education Reform Review Committee” of 2002 (Anamuah-Mensah Committee) [2]. But even before this, the University of Ghana and the Ghana Armed Forces Command and Staff College entered into an agreement in which the University ran and awarded post graduate degrees at the Masters level to students of the College. The College was classified as a Faculty with a Dean appointed from the University in collaboration with the Staff College. In 1998 discussions also began with the Ministry of Defence to enable the Ghana Military Academy to run undergraduate degree programmes in the sciences and a few selected social sciences under the supervision of the University. A memorandum was signed to this effect but this is yet to be implemented. Government may wish to revisit this laudable initiative.

Every private university at its inception is **normally** expected to be affiliated as a College to one of the existing public universities or a university approved by the National Accreditation Board to undergo a period of mentoring and tutelage and the award of degrees of the mentoring institution, before such a private university or tertiary institution can be granted a charter as a full-fledged university that can award its own degrees and diplomas. So far only three former private university colleges have grown into full-fledged chartered private universities. These are Valley View University, the Akrofi Christaller Institute at Akropong Akwapim and the Trinity Theological Seminary, Legon. The regulation of starting as a College of an already established university used to apply also to the public universities. All of Ghana’s older universities went through this process to become full-fledged universities. It

is only in recent times that public universities have been created directly without going through this process of tutelage and affiliation, with all its attendant consequences. UDS and the two recent universities at Ho and Sunyani did not go through this process.

The affiliation and mentoring process, however laudable, is now facing considerable challenges. Only three of the older public universities are mentoring over fifty private university colleges. The University of Ghana alone is mentoring 22 of these university colleges. Only UCC and UEW are taking care of all the 38 public and 3 private Colleges of Education. This situation is bound to result in ineffective supervision and guidance, thus leading to considerable compromising of standards.

Table 1 Type and Number of Accredited Tertiary Education Institutions

Type of Institution	Total Number
Public Universities/university colleges	9
Public Specialized/Professional Colleges	6?
Chartered Private Tertiary Institutions	3
Private Tertiary Institutions	>50 (51?)
Polytechnics	10
Public Colleges of Education	38
Private Colleges of Education	3
Public Diploma-awarding Nursing Training Colleges	15 (13?)
Private Diploma-awarding Nursing Training Colleges	4
Total	139 (or more?)

Source: National Accreditation Board, 2011

I had the privilege of presenting and speaking to a memorandum I submitted to the parliamentary subcommittee on education during the consideration of the Bill to establish these institutions. In my memorandum and in my oral submission to the committee, I pointed out among other issues that

- Only a Chartered University Institution is empowered by law to AWARD degrees. An affiliated institution is empowered to receive degrees awarded by such a chartered institution. The Colleges of Education can therefore only run courses under the supervision of their affiliate institutions for the affiliate institutions to award the degrees.
- Whereas by law only Chartered tertiary institutions can award degrees, there is no such restriction on the award of diplomas and certificates. While it may be good for the image of an institution to receive its certificates from a chartered affiliate

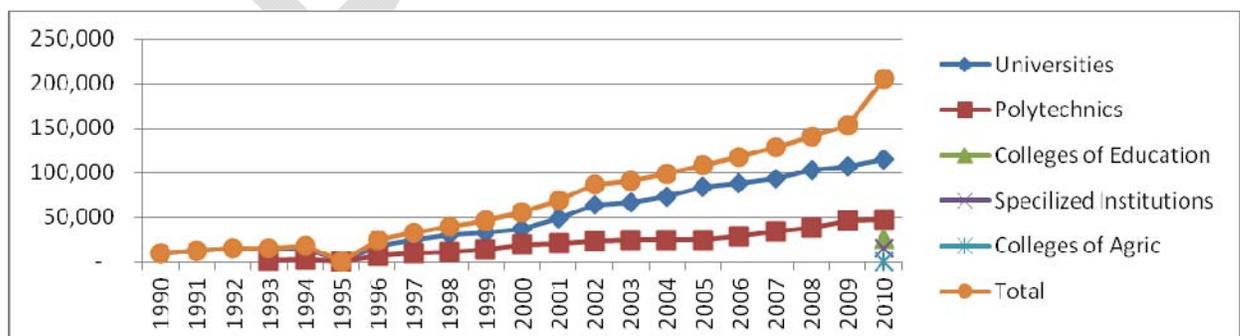
institution, perhaps some provision could be made for the Colleges of Education and Nursing also to award their own certificates for certain specified courses while their mother institutions award the diplomas and degrees.

For the best part of their existence, virtually all of Ghana's universities have operated as institutions training mainly undergraduate students, with post-graduate studies relatively underdeveloped. But after sixty five years of the existence of higher education in Ghana, it is about time some of our universities, especially the older ones, began to think in terms of transforming themselves into research institutions capable of standing on their own within the comity of world universities.

4. Enrolment Constraints in Tertiary Institutions:

Tertiary education in Ghana has in recent times experienced very large increases in enrolments without corresponding adequate expansion in physical and academic infrastructure. This situation has placed undue pressure on facilities and staff in all the institutions, public or private. In the public universities, enrolment increased from 9,000 in the then three public universities in 1987 to 115,346 in six public universities in 2010. This increase has been due in very large measure to the abolition of the O/A level system for entry into University, to the SSCE and WASSCE system, which considerably opened up and expanded eligibility for entry into university. This created a situation where every product from the secondary level viewed university education as the first choice before considering any other option. All one needed to do to qualify for consideration for admission was to obtain the minimum of aggregate 24/36 at the SSCE/ WASSCE.

Figure 1 Tertiary level enrolments, 1990-2010



For about five years, the new SSS system operated alongside the old O/A level system, with graduates from the two systems competing at the same time for admission into the very few universities then in existence. This put a lot of physical and moral pressure on the existing universities and to some extent the polytechnics who were also empowered to run tertiary level diploma and limited degree programmes. Secondly, a long 15-month strike in 1994-95 by university teachers which led to the closure of the universities for over a year also meant that there were no admissions in 1995, thus putting further pressure on enrolment in subsequent years.

Contrary to expectations, the phenomenal increase in private tertiary institutions has not been matched by a commensurate increase in enrolment in these institutions, neither has it resulted in a lessening of the pressure on the public institutions in enrolment. The proportion of students in private universities, which was 26.3% (about 24,300) of total enrolment in 2003/04, dropped to 20.5% (about 28,700) of total enrolment in 2005/06 and currently stands at 58,731 (28.6%, 2012 Figures) For the 48 institutions that submitted returns to the NCTE in 2012, this comes to an average of 1224 students per university, compared with an average of about 19,200 per university in the six public universities that existed in 2011. This suggests that even though private university enrolment has been increasing in real numbers, the rate of increase has not as yet made the expected impact in absorbing excess capacity and reducing the pressure on the public universities. The relatively low enrolments in private universities may be due to several factors including their full fee paying policies, unlike the public institutions where over 90 percent of the students pay less than 10% of what it actually costs to train a student in a university or polytechnic.

5. Polytechnics

In 1963, the Accra, Takoradi and Kumasi Technical Institutes were re-designated as polytechnics. They were however regarded as post secondary institutions of further education similar to the Teacher Training and Nursing Training Colleges. Two others at Tamale and Ho achieved polytechnic status in 1984 and 1986 respectively. Cape Coast Polytechnic which was planned as a polytechnic from inception was opened in 1986. These six post-second-cycle polytechnics were elevated to tertiary status under the Polytechnic Law of 1992. Later, in 1997, Sunyani and Koforidua Technical Institutes became Polytechnics and enjoyed similar tertiary status. The establishment of Bolgatanga and Wa Polytechnics in 1999 and

2000 respectively has ensured that there is a polytechnic in each of the ten administrative regions of Ghana.

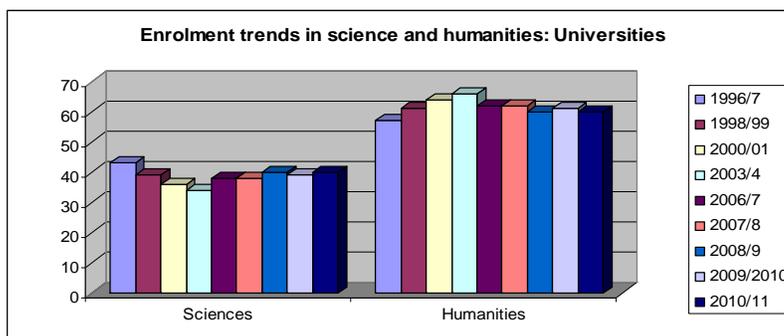
The Polytechnics Act 745 (1992) establishes polytechnics in Ghana as public tertiary institutions with the objects to provide

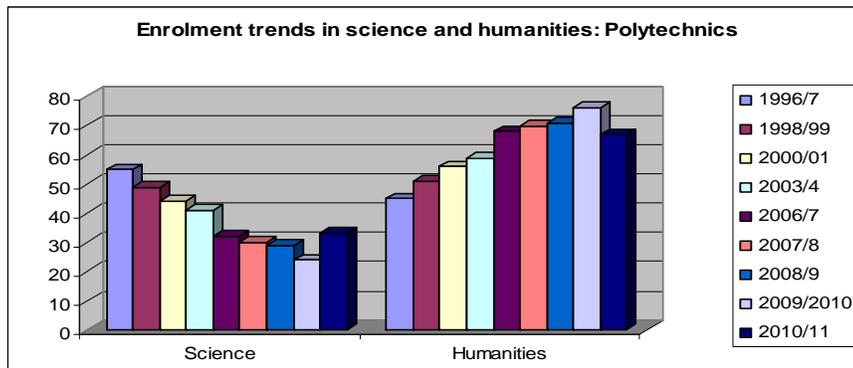
- a) tertiary education in the fields of manufacturing, commerce, science, technology, applied social science, applied arts and any other field approved by the Minister of Education; and
- b) opportunities for skills development, applied research and publication of research findings.

Total enrolment in the ten polytechnics as at 2011 is 43,113, an average of 4,311 per polytechnic, a drop in enrolment of 7% from the previous year's enrolment of 46,079. This again indicates that the polytechnics are not attracting the sort of numbers that will make a significant impact on diversification of tertiary education. Moreover, available statistics indicate that against a norm of 60:40, the science/humanities ratio in the polytechnics which was 55:45 in 1996/97, very close to the national norms, steadily dropped over the years to 30:70 in 2007/2008, then to 24:76 in 2009/2010 before improving rather insignificantly to 33:67 in 2010/2011(NCTE 2011).

Table 2 Trends in Science/Humanities Enrolment Ratios in Universities and Polytechnics

	1996/7	1998/99	2000/01	2003/4	2006/7	2007/8	2008/9	2009/2010	2010/11
Universities	43:57	39:61	36:64	34:66	38:62	38:62	40:60	39:61	40:60
Polytechnic	55:45	49:51	44:56	41:59	32:68	30:70	29:71	24:76	33:67





One can therefore suspect a case of “mission creep” in the polytechnics which were established to offer technical and technology based programmes but are now dominated by business and humanities programmes. In addition, the issue of academic drift in tertiary education, that is, the tendency of say polytechnics to want to be like universities is a serious threat to differentiation and diversification of tertiary education and defeats the main objective of expanding students’ choice. The answer to these challenges is not the establishment of yet more polytechnics with all the attendant problems of cost of construction, staffing and equipment. The answer, to me, will be to rather invest the scarce resources available to equip and strengthen the existing polytechnics, and make them more attractive to fulfil their requisite mandates. If and when we are able to raise the existing polytechnics to their optimum enrolment and operational levels of efficiency, we can then think of building new polytechnics. Sheer numbers do not necessarily connote cost effectiveness, quality and efficiency.

The growing perception that every post-secondary institution must be equated in status and content to a university is affecting the traditional or designated roles of the polytechnics. This perception must be critically addressed to ensure that the polytechnics fulfil their mandate of filling the competency gap in technology. The emerging oil and gas industry for example requires a considerable number of middle level manpower, especially in the technology-based activities, and it is only the polytechnics which can train such middle level manpower.

However, deliberate policy measures must also be put in place to provide attractive post-graduation training opportunities for graduates of the Polytechnics.

The Polytechnics offer mainly Higher National diplomas, with a very limited number of degree programmes. During the immediate post-independence era, the Higher National Diploma (HND) was the next stage in polytechnic education after the Ordinary National Diploma. The OND was taken mainly at the post primary technical schools. This smooth transition has virtually been abandoned and polytechnic students are now almost invariably recruited from the “grammar-school” type SSCE/WASSCE graduates, with very little or no basic background in the practical aspects of technical education. With very few lower technical institutions in the country (less than 30), these cannot be a satisfactory or sufficient source of polytechnic students with the appropriate technical background. This may also be one of the reasons for the gross distortion of the science/humanities ratio in the polytechnics over the past two decades. There is therefore the need to expand lower technical education up to the Ordinary National Diploma, to serve as the main source of students to the polytechnics. That will be one way of creating the polytechnic line of production as a unique career path entity that will succeed in removing the notion that polytechnics are inferior types of university institutions. Fortunately, according to the new government TVET programme, the products of technical and vocational institutions will be made the primary source of recruitment into polytechnics. Although this is the expressed intention, implementation of this laudable objective is yet to be started. Even when this is started, it can only succeed if the lower level vocational and technical schools or institutions are strengthened and well equipped to offer the type of preparation in the basic sciences that will make the students eligible for entry into polytechnics without the need for any remedial course.

6. Non-Polytechnic Diploma-Awarding Training Institutions:

6.1 Colleges of Education

The upgrading of the old Teacher Training Colleges to the level of tertiary education and their renaming as Colleges of Education (CoEs) was to produce Basic Education teachers with a minimum qualification of *Diploma in Basic Education*. There are 38 of these Colleges in the Public sector, and 3 in the Private sector. The 38 Public colleges are distributed regionally as in Table 2. Tutors in these Colleges must be professionally qualified to teach and must therefore have a minimum qualification of a Master’s degree. All these 38 Public Colleges of Education need to be resourced to meet the requirements for tertiary education.

This is one major policy decision that is most likely to bring about or is already bringing about significant diversification of tertiary education. But it carries with it its own problems or challenges with regard to implementation.

Table 3. Regional distribution, enrolment and staff strength of Public Colleges of Education, 2010/2011 Academic Year

Region	Number of Colleges	Total Enrolment	Total Staff	STR	Average Enrolment per College
Western	3	1783	98	18:1	594
Central	3	2567	150	17:1	856
Greater Accra	2	1369	88	16:1	684
Volta	6	3620	249	15:1	603
Eastern	6	4240	239	18:1	707
Ashanti	7	5366	318	17:1	767
Brong Ahafo	3	2298	113	20:1	766
Northern	5	3656	181	20:1	731
Upper East	1	859	60	14:1	859
Upper West	2	945	60	16:1	472
Total	38	26,703	1556	17:1	703

Government has to be extremely careful in implementing this policy to avoid the potential inevitable situation where all these 38 Colleges of Education will begin to see themselves as equivalent to universities, begin to crave for university status with their staff aspiring to Professorial status, and agitate to be allowed to convert their diploma courses to degree courses, thereby defeating the original objective of diversifying the nature of tertiary education in the country.

Other aspects of the creation of the Colleges of Education, including government's intention to establish ten new Colleges of Education will be dealt with later

6.2. Specialised Professional Training Institutions:

Two other categories of specialised professional training institutions have recently been upgraded into diploma-awarding tertiary institutions. These are the three Agricultural Colleges and the Nursing Training Colleges. The three Agricultural Colleges are the Animal Health and Production College in the Northern Region, the Kwadaso Agricultural Training College in Ashanti and the Ohawu Agriculture College in the Volta Region. These three Colleges together have a total enrolment of only 555 students (185 per college). There are 35 Nurses Training Schools of which eleven are private. Eight of these 35 institutions are

university based and offer degree programmes. Only the University of Ghana’s School of Nursing also offers post graduate Master’s degree programmes. Whereas all the agricultural training colleges are fully tertiary, only 15 public and 5 private nursing colleges offer full tertiary level diploma courses. The number of students currently pursuing tertiary level non-university based diploma courses is 15,437, with a teaching staff strength of 345. This gives an average STR of 45:1. This is indicative of understaffing of these institutions for the purposes of offering tertiary level education, in spite of the very low enrolment levels.

7. Student Enrolment and its implications:

Student enrolments determine the main volume of activities in tertiary institutions and the level of funding required for such activities. Increase in enrolment without a corresponding increase in funding compromises quality. Gross enrolment ratio (GER) is a measure of the percentage of persons in a designated age group (normally 19-22) that is expected to be in tertiary institutions, that is actually enrolled at any given time.

Notwithstanding the high rate of increase in student enrolment in the Universities which led to the congestion of and deterioration in facilities and by extension a decline in quality, the Gross enrolment Ratio (GER) tells a different story. Ghana’s GER has grown from about 3% in the 1990s to the current 9%. This indicates that the vast majority of eligible Ghanaians do not access tertiary education. Ghana therefore finds itself in a catch 22 situation; a situation where sheer numbers qualified from the secondary or high school level gives the impression that there is overproduction of students who are qualified to enter tertiary institutions, yet only 9 percent of these students get the opportunity to take their education beyond the

Table 4 Gross Enrolment Ratio in Tertiary Education

Country	Gross Enrolment Ratio % (GER) /2009	GDP (2010) (US\$)
Bostwana	8	7,403
Zimbabwe	3	595
Ghana	9	1,283
Mauritius	26	7,593
South Africa	14**	7,275
USA	86	47,184
Sweden	72	48,832
UK	59	36, 100
Swaziland	4	3,073
Senegal	8*	1,042
Malaysia	36*	8,373
South Korea	95**	20,757

*2008 **2007 Source: World Bank 2011

secondary level, compared to situations in countries such as Mauritius, Malaysia and South Korea, where the percentages range from over 25 percent to almost 100 percent. The challenge confronting the tertiary institutions and the Government is to find a way to increase access beyond the 9% GER while at the same time improving quality through enhanced facilities and funding. But to do that one must also take cognisance of the fact that the apparent over-enrolment is mainly at the university level. Even the present ten polytechnics do not appear to have reached their optimum absorption capacity with regard to their installed infrastructure. The problem lies with inadequate staffing and woefully inadequate equipment and other training resources, including opportunities for practical attachment with requisite industrial establishments. The remaining tertiary institutions are grossly under-enrolled, and can therefore absorb far more students than at present, with very little increase in the facilities available and staffing in these institutions.

8. National Manpower Requirements and Enrolments in Private Tertiary Institutions.

Various studies have shown that for a successful industrial and technological takeoff to occur in the country there is the need to train a higher number of science and technology graduates up to the tertiary level, and create the necessary favourable environment for their absorption into the labour and production sector of the economy. There is a national policy that tertiary institutions should on the average have 60% of their total student enrolment as science or science-related students, but this norm is far from being achieved in both the Private and public tertiary institutions. The private tertiary institutions pose an even bigger problem as these institutions are unable to mount science-based courses due to the high cost, and are also striving to enrol the critical mass of students that will enable them to make their institutions financially viable. This requires that they go in for larger enrolments in the less expensive option courses in the humanities and social sciences.

Table 5. Private Universities Enrolment by Programme

Sciences	Humanities	Total	Cert/Dip	Undergrad	PGD/Masters	PhD	Total
11,950	46,228	58,178	2017	55,120	1067	0	58,204

The current (2012) science to humanities enrolment ratio in the 48 private universities who submitted returns to the NCTE is 20:80. Only 1.8 percent of the students are pursuing postgraduate studies, and none of these is enrolled in a PhD programme. This situation also distorts the national manpower targets.

Any attempt to improve the situation will involve adequate funding of studies in science and science-related courses. This would involve the provision of equipment at the workshops, studios and laboratories as well as ICT infrastructure. While government is obliged to do this in the public institutions, is government obliged to do the same for the private institutions, especially if they are “for-profit” institutions? Can they be compelled by law to meet the national norms by increasing the offering of science and science-related courses? Can prospective students pay for such courses in the private institutions? Diversification and differentiation of tertiary education will therefore not succeed if a way is not found for programmes in the private as well as the public institutions to meet national manpower development requirements.

9. Post Graduate Training and its implications for differentiation and diversification:

One obvious outcome of any differentiation and diversification of tertiary level institutions will be the type of emphasis that will be placed on the programmes offered by the various institutions. At the University level, it will be expected that post-graduate training for the production of the next generation of academics to meet the requirements of the tertiary institutions will be very crucial. Universities will have to be empowered to enhance their post-graduate training programmes, with all the attendant financial implications. Postgraduate education is at the apex of higher education.

Current statistics however indicate that both the private and public universities are concentrating more on training at the certificate and undergraduate levels, with very low post graduate and research output. Table 6 below shows the programme enrolment levels of the six older public universities for 2010/2011.

In 2007-2008, out of a total of 93, 973 in the six public universities in Ghana, 92.44 percent were pursuing undergraduate courses and only 4.85 percent were post-graduates. By the 2010/2011 academic year, the situation had only slightly improved, with post-graduate students constituting 7.34% out of a total of 115,454 students, with undergraduate degree students constituting 88.85% and diploma/certificate students constituting 3.81%

The PhD production rate in Germany is 25,000 per annum from 140 institutions. This gives an annual rate per institution of 178. The rate in South Africa is around 1500 from 13

universities out of the total of 23 public universities. The other 10 are mandated to concentrate mainly on undergraduate

Table 6. Universities of Ghana Total Student Population by Programme 2010/11 Academic Year

Faculty/Programme	Cert/Dipl	Undergrad	Postgrad.	Total	% Postgrad
1. The Sciences					
Agriculture	438	7826	570	8834	6.45
Engineering	35	5251	370	5656	6.54
Science	279	22,295	1489	24,063	6.20
Health Sciences	136	5659	535	6330	8.45
Pharmacy	0	756	69	825	8.36
Nuclear and Allied Sciences	-	-	107	107	100.00
Subtotal	888	41,787	3140	45,815	6.85
2. Humanities					
Education	129	12,239	663	13,031	5.09
Law	-	786	6	792	0.76
Business	1151	9703	1993	12,847	15.50
Arts/Social Sciences	2211	38,084	2529	42,824	5.90
Subtotal	3491	60,812	5191	69,494	7.46
Unspecified	-	-	143	143	100.00
Grand Total	3491	60,812	5334	115,452	7.34

studies. This gives a rate of 115 PhDs per university per annum. South Africa produces 26 PhDs per million of population. Ghana's current rate is just around 2 PhDs per million of population. The University of Ghana, with the highest rate in Ghana, has produced only 140 PhDs in the last eleven years, an average of just about 12 PhDs per annum. It has a total postgraduate enrolment percentage of about 10, with most of them enrolled in master's degree programmes, especially master's in Business Administration. The university still hovers around a PhD enrolment rate of just about 0.5% percent of total student population and about 8 percent of total postgraduate enrolment. The top three universities in South Africa, namely Stellenbosch, University of Cape Town and University of Pretoria, which are also the top three African universities in world ranking, have post graduate enrolments of 35.2, 28.5 and 28.2 percent respectively. With these comparative rates the top Ghanaian Universities cannot as yet regard themselves as research universities, and produce the requisite numbers of academics to cater for its intended expansion of tertiary education. If Universities in Ghana are to achieve the status of World Class Research Universities, then they need to aspire towards an overall postgraduate enrolment of about 20 percent within the next five years, with a sizeable proportion of these pursuing PhD programmes. The need to intensify postgraduate training cannot therefore be overemphasised.

11. Employment, Human Resource Development and Diversification of Tertiary Education:

Diversification has implications for the employment prospects of graduates. There is a general perception that employment prospects of graduates in the humanities are quite weak while there are significant shortages of graduates in the sciences. Graduate unemployment is believed to be quite high among non-science-based graduates. But even in the science related professions the slow rate of industrialisation and the collapse of certain types of industries in the country are creating employment problems for certain professions such as engineering, the physical sciences and some areas of the biological sciences. This must be indicative of the lack of proper planning of human resources for the country. The tertiary institutions have made some efforts to address this situation by introducing innovations in their curricula that can make graduates more suitable for employment in industries as well as capable of becoming self-employed. Apparently, these measures have not made enough impact on the labour market.

Many parents desire to secure tertiary education for their wards to enable them compete effectively for the limited jobs available in certain high profile employment openings such as the Banking and financial sectors, medicine, engineering, pharmacy, and to some extent law and ICT. This has resulted in considerable pressure for admission into only certain few fields of study while other equally important but low profile fields such as teaching at all levels including the universities and polytechnics do not appear to attract the requisite numbers of qualified students.

To help students to acquire hands-on skills before graduating in the relevant fields, there is the need for them to engage in practical training in industry or a requisite professional setup as part of the academic training. This aspect has suffered greatly due to the lack of adequate funding, and poor university/industry partnership, which have led to employers, particularly, those in manufacturing, complaining that the graduates are not adequately prepared for the job market. In any case the industrial sector itself is so small, and has been shrinking further each year to such an extent that it is simply impossible for them to take on any students on practical training or internship programmes, when they themselves are so threatened that they want to lay off even some of their regular staff. Therefore I will contend that the issue is not just the lack of adequate skills of students graduating from the tertiary institutions. It is also a question of the inability of the few industries taking up the numerous students who will

require this practical attachment. In years gone by when the GIHOC group of industries existed and were reasonably productive, and student numbers were also relatively low, every science or engineering student had the opportunity for industrial attachment for at least two to three months, normally during the long vacation. The State Construction Corporation (SCC) could absorb several civil engineering students both for practical attachment and post graduation employment. The Railway system was big and efficient enough to absorb a large proportion of the degree and diploma graduates in mechanical engineering from the universities and technical institutions. The mining sector absorbed several geologists, mechanical engineers, chemists, chemical engineers, metallurgists and geophysicists. Those who advocate that the tertiary institutions should train students to a level where they should be ready to immediately get their hands on the job after graduation should also realise that such acquisition of pre-graduation experience cannot be obtained from the four walls of the university or polytechnic, but only from industrial attachment, which they the industries are the best placed to provide. It has been suggested, and rightly so, that preparing human resources solely for today's labour markets may not be the wisest thing in the long-run due to the volatile nature of the labour markets and the rapid change in global technologies. Therefore it will be better for our tertiary institutions to be structured in such a way that they will emphasize both job-specific and broad liberal arts education while developing universal skills and aptitudes that will make the graduate adaptable to fluctuations in the labour market (World Bank, 2011). Students must therefore be trained to be able to think, innovate, adopt and adapt to changing situations.

12. Staffing the Diversified and Differentiated Tertiary Institutions:

Any attempt to differentiate and diversify tertiary education in Ghana cannot succeed without paying due attention to the number, type and quality of staff in these institutions. There can be differences in the categories of staff depending on the type of tertiary institution one is considering. The numbers and academic qualifications one will need for a College of Education or diploma-awarding Nursing institution will not necessarily be the same as will be required at a Research University.

The NCTE uses the student teacher ratio (STR) as the standard performance indicator. The STR, which is adapted to each academic field, varies from 12 students per teacher in medicine to 27 in humanities for the Universities and 18 in engineering to 25 for humanities

for the Polytechnics. Currently there is no STR norm for the newly created diploma awarding colleges of education and nursing institutions. For the sake of argument, we shall assume that what applies in the polytechnics also applies to these newly created tertiary institutions.

Currently, enrolments in all the disciplines in the universities and polytechnics are above the NCTE's norms while those in the Colleges of Education are below the norms (Tables 7, 8 and 9). For example the STR in the 38 Colleges of Education averages 16:1. The public universities have an average STR of 41:1 while the average for the private universities is 32:1. It must be noted however that a very significant proportion, (in some cases over 50%) of the teachers in the private universities are part time teachers from the existing public universities. Many of the permanent members of staff in these universities are also retired staff from the public universities who have taken up post retirement contracts. If one accepts that the current student enrolment in the universities and polytechnics in particular is generally much higher than the institutions can cope with, then one can only conclude that the very high STR is an indication of the tertiary institutions' inability to attract lecturers. If they could attract lecturers, or if the requisite qualified personnel were available, the rate of recruitment ought to have kept pace with the rate of growth of student numbers to maintain the requisite STR. In the Colleges of education, the lower than envisaged STR is an indication that these institutions can still increase their current enrolment significantly without having to engage too many new staff.

It must also be emphasized that these NCTE STR norms presuppose that the academic staff will have the requisite complement of post graduate students to assist as teaching or graduate assistants as is the case in most of the world's top universities. For example, Manchester University has a total academic and research staff of 5600 for 39,953 students, (2013) compared with only 845 for 37,257 students in the University of Ghana (2012). In Manchester 1846 of the academic staff are purely for research while 1889 are engaged in teaching only. The rest are engaged in both teaching and research. There are 11,957 (about 30% of total student population) graduate students to assist in research. The Ghana STR situation including the NCTE norms is therefore certainly unsatisfactory and unrealistic. Even if the universities were to achieve the NCTE norms, with the current level of post graduate enrolment in the universities, there will still be a lot of pressure on the academic staff.

Table 8 Operating STR in Tertiary Institutions for 2010/2011

	Universities	Polytechnics	Colleges of Education	Specialised Institutions	Total
No of Students	115,346	47,949	25,651 (26,703)	15437	204,383 (205,435)
No of Teachers	2903	1666	1556	345	6740
STR	40:1	29:1	16:1 (17:1)	45:1	32:1

Source : NCTE ,2011

Table 9. Private Universities, Enrolment and Staffing by Gender 2011/2012

Enrolment			Teaching Staff			Av. STR
M	F	T	M	F	T	
33,409	25,322	58,731	1558	280	1838	32:1

The sciences have so far managed to keep their STRs fairly close to the national norms, partly because of lack of bench and laboratory space to absorb all the qualified science students. Currently the cut-off aggregate points for admission into science based courses are extremely stringent. Despite the lower output of science students from the secondary level, a very significant number of very qualified students (aggregate 12-16) are unable to gain admission

Table 10: Student/Teacher Numbers and Ratios in Broad Disciplines in the Universities 2010/2011

Institution	Disciplines	Enrolment	No. of teachers	STR	Norm
UG	Science	5,141	274	19:1	18:1
	Medicine	2,390	135	18:1	12:1
	Engineering	248	37	7:1	18:1
	Humanities	29,478	399	74:1	27:1
KNUST*	Science	8,874	264	34:1	18:1
	Medicine	1,927	99	19:1	12:1
	Engineering	3,961	113	35:1	18:1
	Pharmacy	825	33	25:1	15:1
	Humanities	10,197	166	61:1	27:1
UCC	Science	4,395	193	23:1	18:1
	Medicine	192	19	10:1	12:1
	Education	5,707	86	66:1	23:1
	Humanities	5,823	163	36:1	27:1
UEW	Science	6,102	113	54:1	18:1
	Education	2,042	65	31:1	23:1
	Humanities	6,501	163	40:1	27:1
UDS	Science	8,354	259	32:1	18:1
	Medicine	1,821	97	19:1	12:1

	Humanities	9,746	97	100:1	27:1
UMaT	Science	138	9	15:1	18:1
	Engineering	1,447	62	23:1	18:1

Source: NCTE 2012 Statistics for 2010/2011 Academic year.

Current STRs for KNUST (2012/2013).

Programme	Actuals	NCTE Norms
Engineering	33:1	18:1
Medicine	22:1	12:1
Pharmacy	22:1	15:1
Humanities	56:1	27:1
Sciences	80:1	18:1
Applied Sciences	80:1	18:1

Source: Prof K.K. Adarkwa, Former VC of KNUST. Presentation at NCTE/Carnegie SALT III Workshops.

into the natural science, the medical sciences including pharmacy and nursing, and engineering courses. In the 2012/2013 academic year for example KNUST had to admit only students with aggregate 6 with eight grade ones in all the eight WASSCE subjects, and even with that highly stringent cut off point there were more students with that level of qualification than the university could absorb into medicine. In 2012 46% of students enrolled in the University of Ghana Medical School came from only 15 of the country's over 700 SHSs, while the corresponding percentage from virtually the same 15 schools at KNUST was 82%.

The high STRs in the universities have implications for quality and tend to create unacceptable workloads for the teachers. The low STRs in the colleges of education confirm my belief that even with the current facilities the 38 existing colleges of education still have the capacity to absorb more students. Currently there is on the average about 700 students per College of Education, less than total number of students even in an average Senior High School with similar infrastructure. The highest is 1000 students at Akrokerri in the Ashanti Region with a staff strength of only 48 (STR21:1), while the lowest is 443 students at St Theresa's at Hohoe in the Volta Region, with a staff strength of 35 (STR 13:1). There is therefore no need to rush into establishing ten new colleges of education with all the cost implications. The Colleges of Education can easily double their intake without the need for provision of the sort of extra facilities and personnel that brand new colleges will require. Indeed, from the regional distribution of these colleges as shown in Table 2, if any new

colleges will be necessary at all, then maybe one additional college in the Upper East Region could be justified on grounds of equity.

14. CONCLUSION AND RECOMMENDATIONS:

14.1 What should and should not be done in diversification and differentiation of tertiary education:

1. There is currently a great demand for tertiary education in the country. However, for as long as this demand is perceived or equated with the demand for university education as opposed to other types of tertiary education, this will not augur well for the diversification of the tertiary system. To address this issue, the following steps can be considered.
 - Improvement of the public perception of non-university tertiary institutions in the country. Non university tertiary education should be seen as an alternative career pathway that can also lead to fulfilment of one's potential, not an inferior or second rate career pathway. Going to a polytechnic for example should be a matter of deliberate choice, not a last resort choice when other avenues have failed.
 - Classification of the various tertiary institutions in terms of their mission and scope. Even universities can be classified in different ways and assigned specific missions.
 - Expansion and improvement in the facilities of the existing reclassified institutions, especially the various specialised and diploma awarding tertiary institutions in the areas of Health, Agriculture, Education, Technical and Vocational Training. It is my contention that this expansion can be easily undertaken without resorting to the creation of any new institutions.
2. The 38 Colleges of Education which have been created by conversion of the old teacher training colleges are under-enrolled. They also need to recruit or upgrade their teaching staff to befit their new status as institutions of higher or tertiary education. But these institutions, even with their current facilities, can

easily double or triple their enrolment without seriously adversely affecting their quality. It is believed that the main obstacle to this is the increase in allowances that government will have to pay to students of these institutions if enrolment is increased. If that is the case, then it is rather odd that Government still intends to create ten additional colleges of education, with huge financial implications.

If there is no money to pay the allowances of those who enter the colleges of education, then where is the money going to come from to build even the basic infrastructure that the ten new institutions will require? Or are we once again going to fall into the trap of going to borrow money from donors at exorbitant interest rates against our oil revenue? Can the same loan not be used to expand and strengthen the capacity of the existing institutions to absorb even more students than their current capacity can still absorb? To me this idea of building ten new colleges of education, ostensibly one in each region is nothing but political expediency and needs to be abandoned and alternatives sought. We should not be told that it will be done willy-nilly because it is in the manifesto of any political party which finds itself currently in power. What happens if another party comes and says the policy was ill- advised? What studies and what evidence have been gathered to clearly show that this policy is the right one? Expanding the current enrolment in the existing colleges of education and ensuring that post graduate training is stepped up to staff these institutions over the next five to ten years will be a far more rational and cost-effective policy than merely creating ten extra colleges of education just for mere political expediency.

3. Whereas by law only Chartered tertiary institutions can award degrees, there is no such restriction on the award of diplomas and certificates. Provision should be made for the Colleges of Education and Nursing also to award their own certificates for certain specified courses while their mother institutions award the diplomas and degrees.
4. Post Secondary tertiary institutions should be seen as institutions with their own clearly defined objectives that complement each other.

5. Within the tertiary system, there should be clear subdivisions designated for specific purposes that, though not equal, mutually complement each other. Even within what is normally regarded as higher education within the university system, there should be differentiation. There should be

- Universities classified as Research Universities where most of the country's research and post graduate training programmes will be based. Clearly defined criteria should be laid down to qualify a university as a Research Institution. For example it can be said that for a university to qualify as a Research University, it should initially have at least ten percent of its students as post graduates, with at least 30 percent of these enrolled for PhD programmes. The percentage should then be gradually raised within the next five years to 25 percent or more post graduates, with at least 40% of that number enrolled for PhD programmes. For universities designated as research institutions, research and knowledge generation should be the core functions, and postgraduate work must be high on the agenda.
- The existing research institutes of the CSIR could be affiliated or made complementary institutions where some post graduate training can take place with the affiliated universities awarding the requisite higher degree, especially PhD. That will be an effective way of increasing post graduate output for both the tertiary institutions and the research institutes themselves. But this should never be translated to imply that those research institutes are also universities. The model at the GAEC is a very good one that can be multiplied initially in certain selected research institutes.
- The non-research universities should be further categorised. For example a category "A" non-research university will concentrate mainly on undergraduate training with limited post graduate activities. These could be mandated to aim at a maximum post graduate enrolment of not more than 15 percent, and should run mainly job-

oriented limited-research or taught-course Masters' degree and/or post-graduate diploma programmes.

- A non-research institution can however gradually grow to become a research institution, based on clearly defined criteria which must be rigorously applied.

6. The agreement between the University of Ghana and the Ghana Armed Forces Command and Staff College to run and award post graduate degrees at the Masters level to students of the College may be expanded to include the Police, Prisons and Fire Service Staff Colleges.
7. Government may also revisit the 1998 discussions between the University of Ghana and the Ministry of Defence to enable the Ghana Military Academy to run undergraduate degree programmes in the sciences and a few selected social sciences under the supervision of the University of Ghana. A memorandum was signed to this effect but was not implemented. Government may wish to revisit this laudable initiative.
8. The nation should accept that Government alone cannot continue to fund education. We should not deceive ourselves that the oil revenue is the sole panacea to education funding. A critical examination of expectations from oil revenues for the next ten to twenty years will clearly show that this is not a viable option. We therefore need to look for other avenues to fund tertiary education. Cost sharing and full fee paying with a strong, well funded and transparently and efficiently operated scholarship scheme, especially for science and technology, is probably still the best option.
9. Promotion of international admissions both as a means of enhancing the reputation of our universities and as a good source of revenue should be vigorously pursued. Records indicate that of the 25,000 PhDs produced per annum in Germany, 18,000 are overseas students, with India being the largest source of these students. Manchester University has a total student population of almost 40,000, from over 450 countries.

10. Funding in the Colleges of Education should be critically re-examined. The question should be asked whether the system of paying allowances to all students of the colleges of education should necessarily continue. Such allowances used to be paid to university students. The practice was discontinued when numbers increased. Will the alternative of making the end product more lucrative by paying teachers a lot more than they are getting now AFTER THEIR TRAINING not be a better long-term solution? Will a system of a combination of scholarships and cost sharing not be a better option in addition to better conditions of service after training?

Virtually everything we have discussed here today has been said before, with only very slight variations. As far back as November 1998 the NCTE published a Technical Report entitled “Evaluation of the Policy Objectives of the Reforms to the Tertiary Education System. How much of the recommendations in that report have since been implemented? Our problem in this country is not the lack of policy documents. We have them in abundance. Our problem is how to implement what we recommend. So may I conclude by asking the question: “HOW CAN WE BE SURE THAT THE OUTCOMES OF THIS POLICY FORUM SHALL BE IMPLEMENTED?”

Thank You for your attention.

References: to be listed later in the final manuscript before publication.