
Kwame Nkrumah University of Science and Technology

The Founding of a Technical University

The Kwame Nkrumah University of Science and Technology (KNUST), was founded as a technical university, charged in its establishment Act of 1961 (Act 80) to ‘... provide higher education, to undertake research, to disseminate knowledge and to foster relations with outside persons and bodies....’ The KNUST was therefore set up to carry out the traditional activities of higher education, which is to produce and transmit knowledge; in addition, to influencing the larger community through the knowledge that is generated. The pursuance of this mandate is appropriately captured in the University’s Ten-year strategic plan for the period 2005-2014 (Plan 2K14) which posits a vision of ‘[A]dvancing knowledge in science and technology in Africa’ (KNUST 2005:7). The mission statement of the Corporate Plan (Plan 2K14) of the University states that the institution would provide...

an environment for teaching, research and entrepreneurship training in science and technology for the industrial and socioeconomic development of Ghana, Africa and other nations. KNUST also offers service to the community, is opened to all people and positioned to attract scholars, industrialists and entrepreneurs from Africa and the international community (KNUST 2005:7).

Certainly the vision, and mission statements of the KNUST’s corporate plan (Plan 2K14) places lot of responsibilities on the leadership of the University. The strategic plan also reveals the long standing expectations from society about the

vital role the institution was to play in the development of the country. Indeed, the motivation for advancing a vision of this sort was even stronger when the University was founded in the early 1950s; given the development deficit of the time. The eagerness on the part of the state managers to bridge the development gap was severely handicapped by the dearth of personnel with the requisite technical skills, and opportunities, for science and technological education at the higher education level in the country.

The Achimota School, in Accra, had provided some amount of basic Engineering programmes up to the intermediate level; but that was inadequate to propel the country's development agenda. It was, therefore, expected that the Engineering Department in Achimota was going to be made part of the University College of the Gold Coast; but those plans fell through (Agbodeka 1998). The failure to incorporate the Engineering Department of Achimota School into the system of the University College of Gold Coast therefore created the urgency for having a higher education institution in the country, which would principally be devoted to technical education. In consequence, it was for the need for boosting the training of the critical human resources in the fields of technical and scientific education that informed the Colonial Ordinance of 6 October 1951 upon which the Kumasi College of Technology was established. The College of Technology actually became Ghana's version of the British colonial policy of establishing Regional Colleges in West Africa.

It was clear from the ferment of political and social events in the country since the end of World War II that ongoing political transformations were going to culminate in political independence. This realisation pushed the agenda for accelerating the production of technologically savvy indigenous human resources to take up the leadership mantle in various fields. In prosecuting this agenda, the need to address the low level of technical human resources became imperative.

The Bradley Committee, in 1946, did promise the Asantehene that they would do their best to have a College for tertiary education established in Kumasi.²² In implementing the policy of establishing a Regional College in the country, an Interim Standing Committee for a Regional College was put in place in March 1949. Subsequently, it was disclosed in 1950 that the Regional College was to be sited in Kumasi. The unfolding events in the direction of the Regional College led to the passing of the Colonial Ordinance upon which the Kumasi College of Technology was to be founded in August 1951. Being part of the post-World War II British colonial policy for the establishment of higher education in West Africa, the colonial office took a particular interest in the development of its infrastructure. Of the estimated initial cost of £2 million, the Colonial Development and Welfare

Fund (CDWF) devoted £1.5 million to the infrastructural development of the College (Agbodeka 1998). The rest of the funding was provided by the Ghanaian government. It is this College of Technology that metamorphosed into today's Kwame Nkrumah University of Science and Technology (KNUST) (Pitcher 1976).

The country's attainment of internal independence in 1951 resulted in the transfer of substantial governmental business to the indigenous administration under Kwame Nkrumah. This quickened the pace at which matters concerning the College were brought to the fore and dealt with. The Asantehene Agyeman Prempeh II who had, for a considerable period, desired for the establishment of an institution of higher education in Kumasi as part of the modernising project of his Asante kingdom, provided the necessary support for the institution's takeoff.

The Kumasi College of Technology began academic work in January 1952, when 200 teacher trainees were transferred from the Achimota College in Accra to become the nucleus of the new institution (Bening 2005; Agbodeka 1998; Pitcher 1976). In the debate leading to the establishment of the Kumasi College of Technology, it was indicated in the Legislative Assembly that the institution, generally, was for the 'purpose of providing studies, training and research in technology, science and arts' (Gold Coast 1951). The College's founding Principal J. P Andrews had to carry the burden of building a premier technical higher education in the country. This was amidst the high expectation that it was that sort of institution, which was to unlock the development potentials of the country (Pitcher 1976).

Amidst the high expectations that the College was expected to play in the development process of the country, the Principal, J. P Andrews, indicated quite cogently that the institution would "... never confine its studies to 'bread and butter' subjects but will freely encourage research into recondite matters, though with an eye on application. In some respect this is an undeveloped country. Research into 'resources, and into their use, will be one of our functions' (Pitcher 1976:10). In this sense, the College was expected to pursue knowledge not only in its complex form, but also with the view of engaging in research that would benefit Ghana as an underdeveloped country. When the founding principal departed in 1954, W. E. Duncanson served as the second principal in the period 1954 to 1960, in continuing the task of building a modern higher education. In this period the current iconic School of Engineering was barely in its embryonic stage of development.

The Growth of the Kumasi College of Technology

The Kumasi College of Technology, as was the case of all the other colonial higher education projects, was placed under the University of London for the purpose of mentorship and for academic quality assurance. Due to its affiliation to the University of London, the certificates that the graduates of the Kumasi College of Technology were issued were in the name of University of London. The superintendence exercised by the University of London was quite extensive; and it embraced the determination of the programmes and courses, the recruitment of lecturers, the moderation of examination questions, the marking and grading of examination papers (Pitcher 1976). The tutelage period lasted from 1952 to 1961; when the institution was granted autonomy to run its own programmes and to award its own degrees, diplomas and certificates (Agbodeka 1998; Pitcher 1976). Equally manifest, during the tutelage period of the College of Technology to the University of London, was the kind of institutional governance structure that emerged.

The Kumasi College of Technology from October 1952 began to establish a number of academic departments with the establishment of the School of Engineering and the Department of Commerce (Manuh *et al.* 2007). The School of Engineering in the period 1952 to 1955 trained students for professional qualifications. Thereafter, the School began courses that led to the award of University of London's Bachelor of Engineering (External Degree). The Pharmacy Department was also started in January 1953; the pioneering students for the Department were transferred from the Korle-Bu Hospital in Accra where there was an existing School of Pharmacy. The Department ran a two-year comprehensive course in pharmacy that led to the award of Pharmacy Board certificate (Pitcher 1976).

Indeed, it became apparent that 1953 was significant as the growth year for the College as the Department of Agriculture came on stream. The Department of Agriculture from its beginning provided various types of courses to students than ran between few terms to three years. The graduates of the Department of Agriculture were mainly trained for the Ministry of Agriculture that needed them to provide agronomic extension services to the mostly illiterate farmers in food crop cultivation and in the burgeoning cocoa business.

Again in 1953, the Department of General Studies was established to prepare students for the Higher School Certificate Examinations in both Science and Arts subjects. The Higher Education Certificate Examinations were otherwise taken in the Sixth Form departments of secondary schools. The intervention of the Department of General Studies helped in expediting the preparation of academically gifted students to abridge the period that they would otherwise have

spent in accessing higher education programs (UST 1974). The Department of General Studies also served as a service department to the others on the campus.

The College grew rapidly in terms of academic programmes and by 1957 the School of Architecture, Town Planning and Building was added. The first students to this School were admitted for professional courses in Architecture, Town Planning and Building. Thence forward, it was decided that the College of Technology should have a narrower focus. The College from its inception was meant to focus on science and technology training. But the growth of the College was accompanied by non-core programmes that blunted its institutional focus. In returning to its core mandate, the College began shedding off some of the non-core disciplines by transferring the Teacher Training Department to the Winneba Training College in 1958. In doing so, however, it was decided that the Art School which was part of the Teacher Training Department was to remain in Kumasi.

Again in acting to refocus the Kumasi College of Technology to its core mandate, the Department of Commerce was also moved to Achimota in 1959. The Department of Commerce was later incorporated into the University College of the Gold Coast in Accra.²³ The decision to transfer the departments to Winneba and Accra was unilaterally taken by the CPP government to the exasperation of the Council of the College (Pitcher 1976). Thus, before the Kumasi College of Technology was transformed into a full-fledged university, it was made to slough off some of the programmes that were deemed not to fall in line with its mandate; never mind that such decisions were taken by the government.

Attainment of Autonomous University Status and Challenges

The placement of the country's two existing higher education institutions in a 'special relationship' with the University of London had been a matter of concern for the CPP government. When the country became a republic in 1960, the CPP government with an apparent sense of relief, felt the time was nigh to rethink the nature of higher education. The International Commission on Higher Education, which was set up to examine nature of higher education recommended the transformation of the Kumasi College of Technology into an autonomous university (Ghana 1961a).

Thus, the Kumasi College of Technology was upgraded into a full-fledged university and incorporated initially as the University of Science and Technology (UST) by an Act of Parliament of 22 August 1961. However, on 21 November 1961, the institution was renamed the Kwame Nkrumah University of Science and Technology (KNUST) (Ghana 1961c).

In its establishment law Act 80 (1961), the KNUST was expected to chart a path of studies, which would make its programmes and research activities relevant to the Ghanaian and African situation. The aims assigned the KNUST and the principles to realise them are stated as follows:

- a. That in determining the subjects to be taught, emphasis should be placed on those which are of special relevance to the needs and aspirations of Ghanaians, including the furtherance of African unity;
- b. That higher education should be available to all Ghanaians who are capable of benefitting from it;
- c. That so far as practicable students should be given an understanding of world affairs and in particular the histories, institutions and cultures of African civilisations;
- d. That students should be taught methods of critical and independent thought, while being made aware that they have a responsibility to use their education for the general benefit;
- e. That research should be undertaken on all subjects which are taught in the University, but with special attention to subjects which relate to the social, cultural, economic, scientific, technical and other problems which exist in Ghana or elsewhere in Africa;
- f. That for higher education and research should be provided for students from other countries in Africa;
- g. That the fruits of research and knowledge generally, should be spread abroad by the publication of books and papers by any other suitable means;
- h. That the University should develop close relationship with the people of Ghana and other cultural institution, whether within Ghana or outside.

Obviously, these principles were meant to enhance the extrinsic value of KNUST as its faculty performs roles that were to enhance the social and development needs of their immediate communities. The expectation was that the institution will move from the colonial ivory tower model that had received a barrage of attacks from the government for being separated from the real African situation. In a word, the effort was to endogenise research and knowledge for the development of Ghanaians and African peoples (cf. Adesina 2006).

Even so, the zeal by the political leaders to apply the envisaged utilitarian notion to the operation of the University brought the government into a collision course with the traditional adherents of the liberal principles of academic freedom and institutional autonomy (Manuh *et al.* 2007; Sawyerr 2004; Hagan 1994). The

eagerness of the government to engage intrusively into the University's governance was not shared by its opponents. The University became a hotbed for political opposition against the government especially among its academic staff (Agbodeka, 1998). They accused Nkrumah of pursuing a self-gratifying agenda, by naming the University after himself. It was for this reason that the institution was renamed the University of Science and Technology (UST) once Kwame Nkrumah was ousted on 24 February 1966 (Ghana 1966).

Leadership and Governance Structure in KNUST

As a corporate entity, the KNUST was established to achieve well defined objectives. The establishment law of 1961 (Act 80) provides that context, as spelt out in the preceding section. The context and organogram for leadership and governance are derived from Act 80 and the statutes of the University. With minor modifications the current corporate governance structure of the KNUST is very much in line with what was established by its mentor institution, the University of London. The antecedent institution, the Kumasi College of Technology, much the same way as the other post-World War II colonial higher education projects in Africa, was controlled in its leadership by expatriates that transferred unto the College a British higher education governance culture. Nonetheless, the government acting through the University Council pursued a vigorous indigenisation policy meant to create space for Ghanaians to eventually take over the leadership of the University.

During the period of affiliation, what was of primary concern was for the University of London to provide the required guidance for quality academic service. The governance structure that emerged in the Kumasi College of Technology was a familiar one; in which institutional autonomy was guided through an independent College Council, which was responsible for policy formulation. The founding Principal J. D. Andrews provided the initial linkage between London and the College in Kumasi. The extended period of the second principal W. E. Duncanson, who served from 1954 to 1960, helped in anchoring the Kumasi College of Technology within the community of technical higher educational institutions with acceptable standards (Pitcher, 1976).

The departure of W. E. Duncanson in 1960 and the assumption of R. P Baffour (the first Ghanaian head) as the Principal in 1960 and later as the first Vice-Chancellor in 1961 began the process of a vigorous effort at indigenising the management of the University. The funding of the University in all aspects, including scholarship for students was provided by the state. The state considered the institution as a public good that formed an integral part of the country's development agenda.

Nonetheless, the transition period was a difficult one. It was characterised by a clash of ideas regarding the intrusive path the government was pursuing on the one hand, as against the notions of academic freedom and autonomy on the other hand. It was the conviction of the government of the CPP government that a section of the academic staff of KNUST was abusing the tenets of academic freedom to pursue a political agenda (cf. Mamdani 2006). The political agenda in question was an anti-Nkrumah politicking that worked for a regime change. The government was also frustrated by the fact that KNUST was not keen in pursuing African Studies, which Nkrumah thought was necessary for bringing young undergraduates to appreciate their position in the global situation and for them to understand their roles in uplifting the status of the continent (Agbodeka 1998). The altercations that resulted between the government and academic staff of KNUST were decried within the academic community as being an infringement on academic freedom (Agbodeka 1998; Hagan 1994).

Despite the transition difficulties, the commitment to develop the indigenous academic class to take over from the expatriate staff was strong. The processes of building capacity of academic staff were similar to those of the University of Ghana; except that in the case of KNUST, some of the staffs were sent to Eastern Europe to train (see Mkandawire 1995). This was especially the case for engineering programmes. The Cold War-induced solidarity scholarship programmes provided by the Eastern bloc countries facilitated this process, as engineers were trained in Eastern Germany, Soviet Union, Poland and Czechoslovakia, among others.

The institutional governance structure of the KNUST was designed to largely ensure autonomy of the university as a higher education institution. The governance of the University is carried through the University Council, which is broadly composed of government appointees, representatives of academic staff, representatives of unionised groups in the University and students' representatives. In this governance structure, the KNUST has such key office holders as the Chancellor, Chairman of the University Council, the Vice-Chancellor, the Pro-Vice-Chancellor and the Registrar. Even though institutional autonomy has been at the heart of the liberal system that was bequeathed by the University of London, the implementation of the underlying principles suffered many setbacks in Ghana. The context within which national politics played affected the governance of the University.

Like many other higher education institutions, the KNUST has witnessed massive expansion in terms of departments, student numbers, faculty and programmes over the years. This has generated governance challenges pertaining to efficiency in the delivery of academic service. To deal with this problem, the University became the first higher education institution in Ghana to adopt the

collegiate system on 29 November 2004. The Colleges are headed by Provosts.

Under the collegiate administrative system, a semi-autonomous status is granted to the constituent colleges to be financially independent of the central administration of KNUST. The overall purpose of this arrangement is to bring efficiency into the governance processes through devolution of power in an expanding University.²⁴ The collegiate administrative system as it operates in KNUST consists of both a 2-tier and 3-tier academic/administrative systems. While in the 2-tier system, there exists a Provost and Heads of Department, in the administrative structure, the 3-tier academic/administrative system on the other hand, operates with the Office of Provost, Deans of Faculties and Heads of Department. The University is structured into six Colleges and these are: (a) College of Art and Social Sciences; (b) College of Agriculture and Natural Resources; (c) College of Architecture and Planning; (d) College of Science; (e) College of Engineering and (f) College of Health Sciences.²⁵ The authority structure in KNUST is depicted in Figure 5.1:

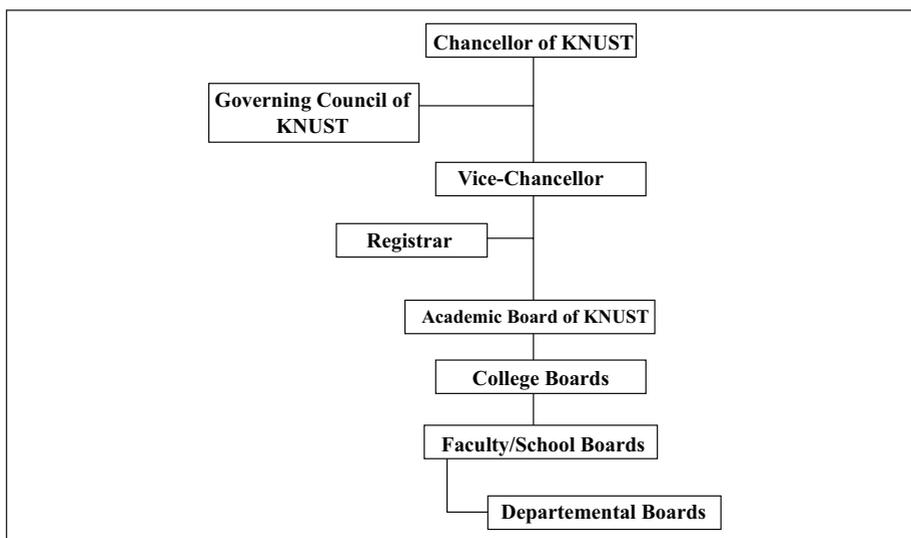


Figure 5.1: Governance Structure of Kwame Nkrumah University of Science and Technology

The University Council of KNUST

The Governing University Council of the KNUST is the highest decision making body of the institution.²⁶ It is chaired by the Chancellor and in his absence, the Council Chairman presides over meetings. The University Council, just as it is the

case in the other public universities in Ghana, is mainly concerned with providing broad policy guidelines for the institution (Manuh *et al.* 2006).

The composition of the University Council is broad, with representation from its various constituent units. The University Council is composed as follows:

- Chancellor
- Government appointees;
- Vice-Chancellor;
- Pro-Vice Chancellor;
- Representation of Students' Representative Council (SRC);
- Representative of Conference of Assisted Secondary Schools (CHASS);
- Representative of Convocation (Non-Professorial);
- Representative of Convocation (Professorial);
- Representative of Teachers and Educational Workers Union (TEWU);
- Alumni Representative;
- Representative of University Teachers Association (UTAG);
- Representative of Graduate Studies Association of Ghana (GRASAG);
- Executive Secretary of the National Council for Tertiary Education (NCTE);
and
- Registrar (The Secretary of the Council).

Academic Board of KNUST

The governance of the University is, however, carried out primarily through the Academic Board, which has the responsibility for:

1. formulating and carrying out the academic policy of the university;
2. devising and regulating the courses of instruction and study, and supervising research;
3. regulating the conduct of examinations and the award of degrees, diplomas and certificates;
4. advising the University Council on the admission of students and the award of scholarships; and
5. reporting on such matters as may be referred to it by the University Council.

College Boards in KNUST

The College Boards are constituted by Provosts, Deans and Heads of Department. The College Boards are organs for the implementation of policies that are reached

by the University Council and the Academic Board. The College Boards are responsible for directing academic programmes that are run in the respective Colleges and for the assurance of quality in the programmes that are rolled out.

Quality Assurance in KNUST

In line with the national policy of ensuring that universities prioritise quality assurance, the KNUST in 2003 set up the Quality Assurance and Planning Unit (QAPU) and placed it under the office of the Vice-Chancellor (Yankson 2013). The QAPU was established to deal with several challenges that tend to undermine the delivery of quality service. The challenges include, among others, the relevance of programmes, meeting the expectations of industry, increasing number of students, competition from emerging private and public institutions of higher education within the country, and cross-border provision of education among others.

The University has a vision of becoming the ‘Premier Centre of Excellence in Africa for teaching Science and Technology ... to support the industrial and socioeconomic development of Ghana and Africa;’ and in line with this vision the University’s Statute No. 47 caused for establishment of the Quality Assurance and Planning Unit (QAPU) (KNUST 2014). The QAPU, among other things, is charged with the responsibilities of data management, student assessment, and to interface with the national regulatory bodies like the NCTE and NAB; as well as other national and international quality assessing bodies.

The QAPU has an expanded influence in the University through a number of initiatives meant to build the capacity of academic and administrative staffs. This is mostly done through capacity building workshops that target newly recruited personnel, Heads of Department, Deans and other categories of staff in positions of responsibility in the University (KNUST 2010). To ensure that quality assurance issues are taken seriously, the QAPU has decentralised its operations by setting up College and Unit Quality Assurance Sub-Committees, which are manned by qualified personnel at those levels. In addition to this, the QAPU has also rolled out a policy of Internal Accreditation System (IAS). These Sub-Committees are designed to carefully review all documents for programmes that emanate from Colleges and Faculties; and to report the outcomes to the University’s Academic Board before the documents are forwarded to the NAB. The University Web Ranking Committee was also formed as part of the quality assurance process to coordinate issues related to the international visibility of the University. As part of the efforts of assuring quality and visibility of the KNUST, the QAPU introduced

the Summer School concept as a way of continuing the professional education that would build the capacity of staff (KNUST 2014).

Academic Staff Capacity and Classroom Situation in KNUST

While the efforts made for quality assurance in KNUST are commendable, it is important to add that the quality that is sought depends on staffs' capacity, facilities and the organisational culture within the institution. It is significant for us, therefore, to examine the capacity of the academic staff that the institution relies on for the realisation of specified quality assurance objectives. Figure 5.2 provide us with a view of the highest academic attainment of academic staff.

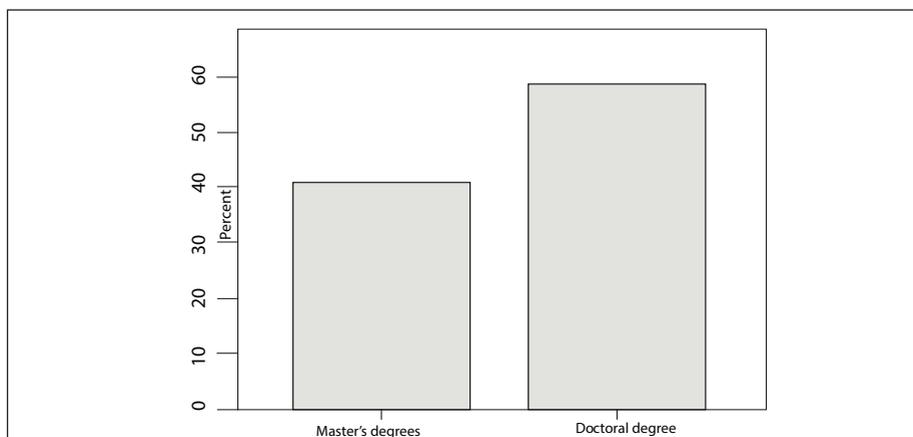


Figure 5.2: Highest Academic Qualifications in KNUST

As shown in Figure 5.2, out of the 78 academic staffs that were covered, 59 per cent of them indicated that they were holders of Doctoral degrees while 41 per cent have Master's degrees. This suggests that there were still considerable percentage of the academic teaching staffs that were yet to meet the required minimum academic qualification of Doctoral degree for teaching in the university.

The professional ranking of the teaching academic staff in the KNUST is shown in Figure 5.3

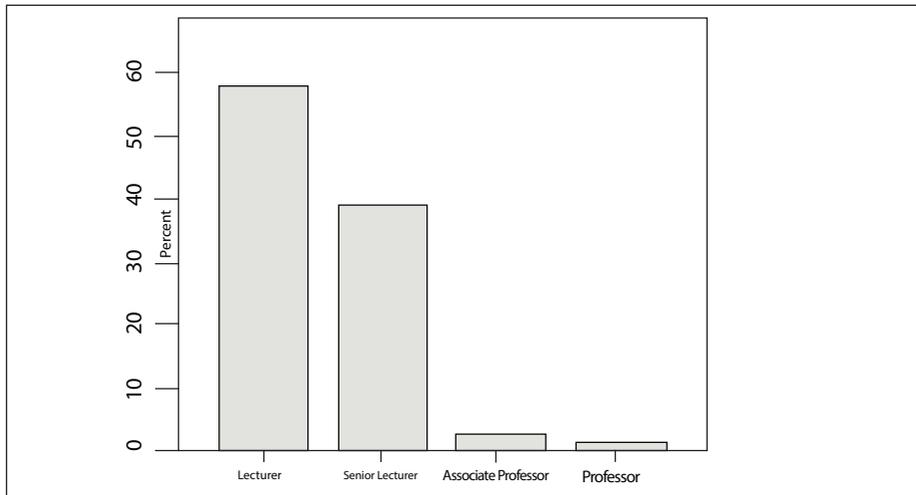


Figure 5.3: Professional Designation of Teaching Staff in KNUST

It is shown in Figure 5.3 that 58 per cent of the teaching staff is within the rank of Lecturers; 39 per cent fall within the category of Senior Lecturers. Associate Professors and Full Professors respectively constitute 3 per cent and 1 per cent. This indicates that 42 per cent of the teaching staffs have adequately built capacity, through research work and publications, to have been promoted to the next rank of the professional order. This is normally the cohort of teaching staff that is available for teaching at the graduate level and for mentoring newly recruited teaching staff.

The experience acquired in the field of teaching is also an important ingredient in higher education staffs' capacity. The experience acquired over the years strengthens the individual lecturer's ability in dealing with such issues as in knowledge transmission, student guidance and skills for class management. Figure 5.4, provides us with an overview of length of teaching of the lecturers.

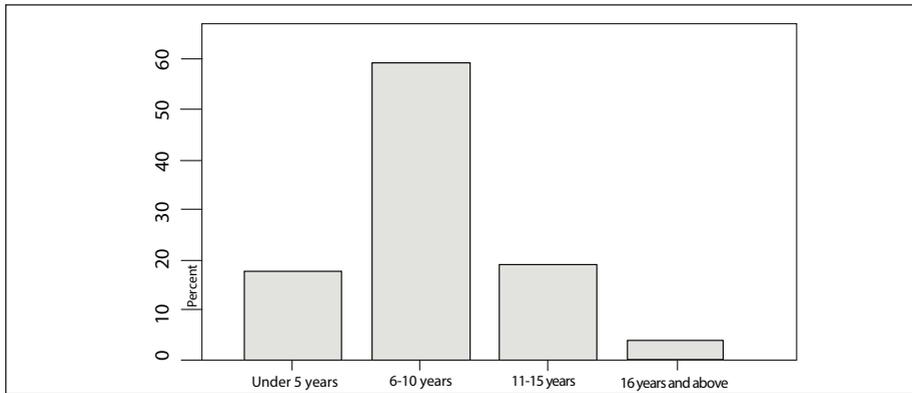


Figure 5.4: Length of Teaching of Academic Staff in KNUST

As shown in Table 5.4, the modal group with regard to the length of teaching is those who fall within the ranks of 6-10 years. This group constitutes 59.0 per cent of the teaching staff. While those who have taught for 11-15 years constitute 19 per cent, those who have taught for five years or less constitute 18 per cent. The most experienced group, that is the group that has taught for more than 16 years, comprised only four per cent of the staff. If we discount the under five-year group, we can state that the teaching staff is quite experienced. Those who have taught for more than six years constitute 82 per cent of the teaching staff. Nonetheless, the effectiveness of lecturers depends on some other factors; among which are: teaching load in respect of the number of courses that lecturers handle and the number of students they teach. These factors as they do occur in KNUST, and how they affect the teachers, are respectively shown in Figure 5.5 and Figure 5.6.

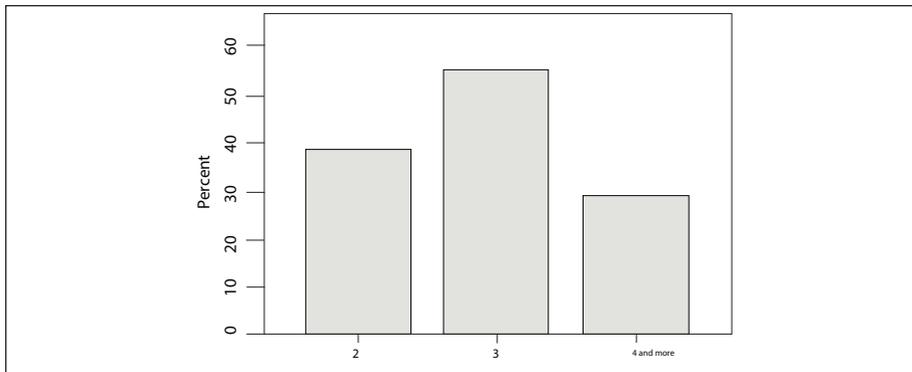


Figure 5.5: Number of Courses Taught Per Semester in KNUST

As indicated in Figure 5.5 those who teach three courses constitute 55 per cent of the lecturers. This is followed by 39 per cent of lecturers that teach two courses per semester and those who have the burden of teaching four courses or more constitute six per cent.

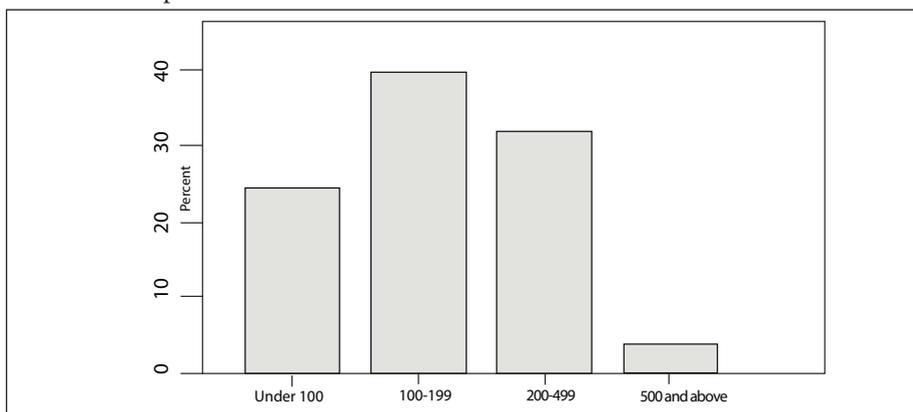


Figure 5.6: Average Class Sizes of Core Subjects in KNUST

It is shown in Figure 5.6 that those lecturers who teach core courses with class sizes in the range of 100-199 constitute 40 per cent; while those who handle core class sizes of between 200 and 499 students constitute 32 per cent. Those who teach core courses with numbers that are 500-plus are just four per cent. The indication is that 70 per cent of class sizes in KNUST are between 100 and 499.

As the size of classes can result in overcrowding and thereby interfere with teaching and learning, the effort to seek information from students on this factor became necessary. Table 4.1 indicates the responses of students as regards whether or not class sizes of core courses result into overcrowding in the lecture spaces.

Table 5.1: Whether Class Size Results in Overcrowding

| | Frequency | Per cent | Valid % | Cumulative Per cent |
|--------------|------------|--------------|--------------|---------------------|
| Yes | 76 | 35.8 | 35.8 | 35.8 |
| No | 136 | 64.2 | 64.2 | 100.0 |
| Total | 212 | 100.0 | 100.0 | |

As it is shown in Table 5.1, whereas 35.8 per cent of the students indicated that their classes get crowded, 64.2 per cent of the students, on the other hand, do not have problems with overcrowding in their lecture halls.

It is pointed out in chapter 4 that interactive teaching, according to Paulo Freire (2006) creates positive ‘mutual humanisation’ effect in the teaching and learning environment. Thus, interactive teaching facilitates knowledge impartation than what is otherwise the case through banking pedagogical approaches. In a multimedia environment, interactive teaching processes are enabled further by the deployment of requisite electronic media which creates the appropriate connectivity between teachers and students. It is for this reason that we sought to find out from the students whether class sizes affect interactive teaching processes. The statistics as captured in Table 5.2 reveals the students’ view on this matter.

Table 5.2: Whether Class Size of Compulsory Courses Affect Interactive Teaching

| | Frequency | Per cent | Valid % | Cumulative Per cent |
|--------------|-----------|--------------|--------------|---------------------|
| Yes | 17 | 38.6 | 38.6 | 38.6 |
| No | 25 | 56.8 | 56.8 | 95.5 |
| Do not know | 2 | 4.5 | 4.5 | 100.0 |
| Total | 44 | 100.0 | 100.0 | |

From this inquiry, it is shown that 56.8 per cent of the students responded ‘no’ to suggest that class sizes do not interfere with interactive teaching processes. However, 38.9 per cent of the students responded ‘yes’ to indicate that class sizes do interfere with interactive pedagogical processes. Apparently, 4.5 per cent of the student respondents expressed no idea by checking ‘do not know’ on this matter. Having dealt with some of the concerns that can affect quality service delivery in the lecture halls, the study moved on to investigate how some other factors also affect the output of lecturers. These matters are discussed in the sections that follow.

Effects of Classroom Situations on Lecturers’ Output in KNUST

The outputs of lecturers are affected by classroom situations in many ways. In this section we examine some of these factors, which include: time spent on marking of examination scripts; the number of research papers written and published in a year. These cases are examined in turns.

Time Spent on Marking Examination Scripts in KNUST

The adoption of the continuous assessment model by higher education institutions in Ghana has worsened the burden of not only teaching large student numbers but also the task of continuous assessments through various test arrangements. Besides that, the examination arrangement in Ghanaian universities provide for an elaborate end-of-term examination. Here the weight of student numbers do manifest on the length of time lecturers spend on marking. Table 5.3 provides us with some insight on the time spent by lecturers in the KNUST in marking and processing results.

Table 5.3: Duration for Marking and Processing Examination Results

| | Frequency | Per cent | Valid % | Cumulative Per cent |
|--------------|-----------|--------------|--------------|---------------------|
| 1-2 weeks | 17 | 21.8 | 21.8 | 21.8 |
| 3-4 weeks | 47 | 60.3 | 60.3 | 82.1 |
| 5-6 weeks | 14 | 17.9 | 17.9 | 100.0 |
| Total | 78 | 100.0 | 100.0 | |

It clear from Table 5.3 that 60.3 percent of lecturers spend 3-4 weeks in marking and processing of examination results. This is followed by lecturers who spend just 1-2 weeks for the same task. It is also indicated that a significant group of lecturers that constitute 17.9 per cent spend five to six weeks in carrying out the task of marking and processing of examination results.

The knock-on effects on lecturers having to spend extended periods for teaching and assessing students are varied. One of the obvious effects has to do with research output in the form of publications. Table 5.4 shows the number of peer review publications to the credit of lecturers.

Table 5.4: Number of Peer Reviewed Publications to Credit in KNUST

| | Frequency | Per cent | Valid % | Cumulative Per cent |
|--------------|-----------|--------------|--------------|---------------------|
| 0-2 | 25 | 32.1 | 32.1 | 32.1 |
| 3-5 | 24 | 30.8 | 30.8 | 62.8 |
| 6-10 | 26 | 33.3 | 33.3 | 96.2 |
| 11 and more | 3 | 3.8 | 3.8 | 100.0 |
| Total | 78 | 100.0 | 100.0 | |

As shown in Table 5.4, 33.3 percent of the lecturers indicated that they have 6-10 publications to their credit. While a cohort of lecturers, 32.1 per cent, have 0-2 publications to their credit, those who have 3-5 publications consists of 30.8 per cent. Lecturers that indicated that they have 11-plus peer review publications to their credit constitute only 3.8 per cent.

To investigate into the rate of papers written per year the statistics as shown in Table 5.5 provide us with this information.

Table 5.5: Average Number of Research Papers Written in a Year in KNUST

| | Frequency | Per cent | Valid % | Cumulative Per cent |
|--------------|-----------|--------------|--------------|---------------------|
| 0-1 | 42 | 53.8 | 53.8 | 53.8 |
| 2-4 | 22 | 28.2 | 28.2 | 82.1 |
| 5 and above | 14 | 17.9 | 17.9 | 100.0 |
| Total | 78 | 100.0 | 100.0 | |

From Table 5.5 it is shown that more than half (53.8 per cent) of the lecturers, on the average, write 0-1 paper in a year, Those who write on the average of 3-4 papers in a year consist of 28.2 per cent and those in the higher bracket (5-plus) in terms of writing constitute only 17.9 per cent.

It is already pointed out that a fundamental principle in the academia is one that relates to lecturers' contribution to knowledge through publication of research findings. The rigorous processes for publication in peer review journals or books become an important ingredient for measuring the capacity of academic staff. It became incumbent in the circumstances to ascertain the average rate of publications in KNUST. The data available in Table 5.6 provide us with what the situation is in this regard.

Table 5.6: Average Number of Papers Published in a Year

| | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|--------------|-----------|--------------|----------------|---------------------|
| 0-1 | 60 | 76.9 | 76.9 | 76.9 |
| 2-4 | 15 | 19.2 | 19.2 | 96.2 |
| 5 and above | 3 | 3.8 | 3.8 | 100.0 |
| Total | 78 | 100.0 | 100.0 | |

It is obviously the case that a large percentage 76.9 per cent of lecturers publishes averagely 0-1 paper in peer review journals per year. Again, it is apparent that those who indicated that they publish more than two papers in a year do not have the same success rate in publishing the papers they write. For instance, whereas those who stated that they write 2-4 papers a year on the average constitute 28.2 per cent, in Table 5.5 and in Table 5.6, the percentage that publish within this range dropped to 19.2 per cent. And the category that publishes 5-plus number of papers is only 3.8 per cent as depicted in Table 5.6. This drop in percentage should be compared with the 17.9 per cent that are able to write this number of papers in a year.

To find out from the lecturers what could be accounting for the state of affairs in their rate of publications, the suggestions in Box 5.1 are illustrative.

Box 5.1: Factors that Inhibit Research and Publication in KNUST

1. Teaching load enervates efforts at doing independent research work. Funding for experimental research is inadequate and it requires pooling resources from colleagues, in the face of a lack of dedicated donor support. (Lecturer, Department of Animal Science)
2. Fees charged by journal publishers tend to be a disincentive. (Lecturer, Department of Economics)
3. Carrying out research work with colleagues for the purposes of publication can sometimes be discouraging as free riding behaviour crops up (Lecturer, Department of Accounting and Finance)

Administrative Responsibilities and Impact on Academic Work in KNUST

Academic staffs in KNUST perform administrative duties in various capacities. These include headship of academic departments, units, students' residential management duties; and students' guidance and counselling responsibilities. The time spent in the discharge of these responsibilities take a certain toll on the academic output of the lecturers in various forms. We sought, therefore, to find out from the lecturers in KNUST the amount of time that they spend on administrative responsibilities. Figure 5.7 provides some indications regarding the average number of hours lecturers spent on administrative duties.

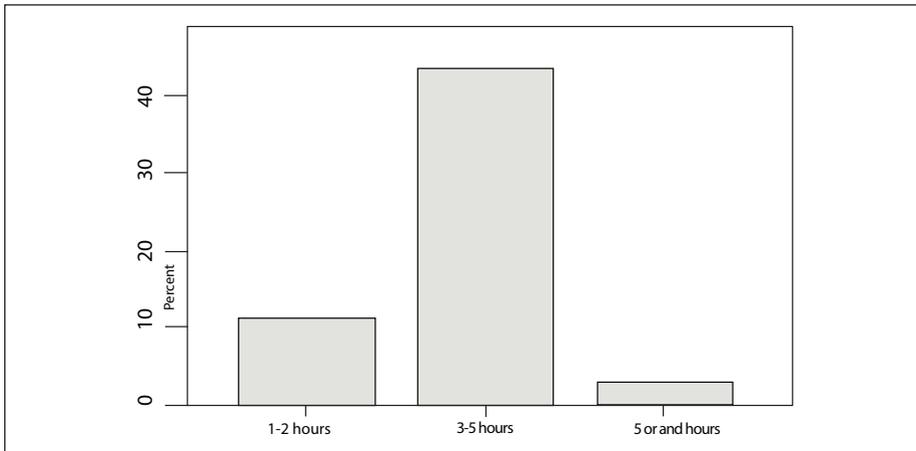


Figure 5.7: Hours per Day Spent on Administrative Work

It is the case that most (76 per cent) of the lecturers who have administrative responsibilities spend 3-4 hours per day on their duties. Those who spend 1-2 hours constitute 20 per cent and the lecturers who spend 5-plus hours represent 5 per cent.

To find out from those who have such responsibilities whether or not such engagements affect their performance in teaching and research, the data Figure 5.8 indicates the responses.

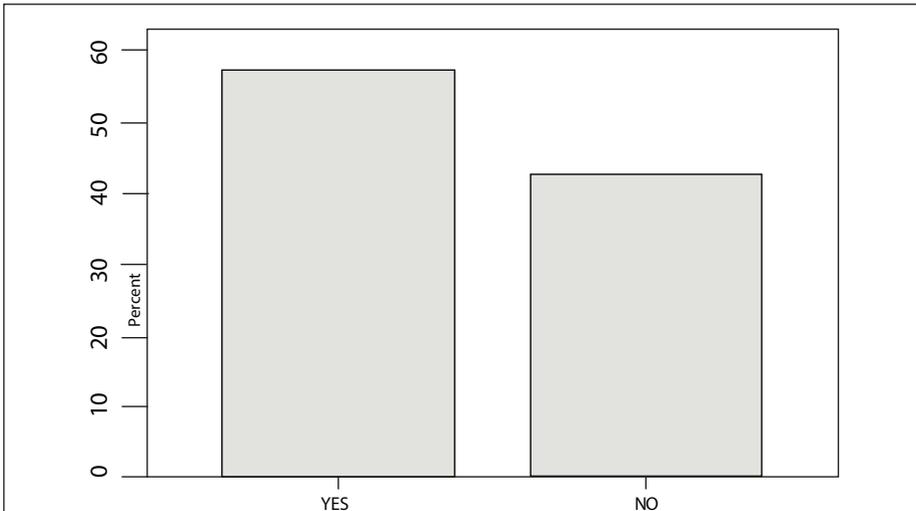


Figure 5.8; Whether Administrative Responsibilities affect Teaching and Academic Work

The evidence as shown in Figure 5.8 is that 58 per cent of the lecturers with administrative responsibilities in KNUST indicate that their duties affect their teaching and research output. On the other hand, 42 per cent of the respondents answered 'no' to suggest that their administrative duties do not have any effect on their academic and teaching output.

Box 5.2: Nature of Effects of Administrative Responsibilities on Teaching and Research

1. I get tired because of spending several hours in the office (Head of Department)
2. I spend hours attending to students' concerns in the Hall (Tutor, University Hall)
3. Commitments to administrative and teaching loads are physically and mentally demanding. It leaves very little space for continuous academic research (Head of Department)

Commercialised Programmes and Effects in KNUST

As discussed, public higher education institutions in Africa have largely switched into managerial mode that demands that various institutions operate to mobilise funds from their clientele. The leadership of the KNUST has thus put in place structures to run commercially driven programmes in a bid to generate funds for the institution. The Institute of Distance Learning (IDL) was particularly established in 2005 to champion the course of bringing higher education to prospective students who are unable to study on the KNUST campus in Kumasi. The IDL has campuses in all the ten administrative regional capitals in the country. The IDL rolls out a myriad of fee paying programmes to students in the regions who may otherwise not access university education. While the commercial services provided by the IDL are important sources of Internally Generated Funds (IGFs) for the KNUST, our interest in this section is on the parallel programmes that the University runs.

The KNUST is actively involved in running parallel and sandwich programmes. Specifically, the College of Humanities and Social Sciences and the College of Arts and Built Environment, are the key players in the parallel programmes, which the KNUST rolls out. The parallel programmes are normally run in the afternoons and evenings by the same lecturers who are responsible for the mainstream

programmes. All the parallel and sandwich programmes are fee paying for both undergraduate and graduate students. The KNUST School of Business (KSB) is a conspicuous actor in the parallel programme space. The KSB capitalises on the high demands for business-based programmes, to run courses that lead to the award of MBA, MPA and Commonwealth Executive MBA and Commonwealth Executive MPA degrees.

Several other departments in the College of Humanities and Social Sciences run parallel undergraduate programmes leading to the award of B.A and BSc degrees in such fields as Culture and Tourism, English, Economics, French, Geography, Law, Political Studies, Social Work and Sociology, among others. The College of Art and Built Environment also offers parallel undergraduate programmes for the award of B. A. degrees in such areas as Communication Design, Publishing Studies and Integrated Rural Art and Industry. All the parallel programmes are essentially commercial in nature, directed at generating funds for the University; as it also serves as income supplement for the teaching staff.

While the income from the extra teaching responsibilities are financially rewarding to the lecturers involved, the repercussions on the quality of academic service could be glossed over. The revelation of a lecturer at the Department of Commercial Law is indicative of the stress that the lecturers bear. He states that the long hours involved in teaching throughout the academic year 'limits the time available to focus on research activities.' Another lecturer in the Department of Social Work and Sociology bemoans 'physical and mental exhaustion' at the end of the day. Apparently, the lecturers involved in the commercially driven courses by their own accounts do not seem to have the time and physical fortitude to engage in activities that will help in contributing to knowledge. The institutional remedies for dealing with academic staff needs in KNUST so as to meet the various challenges within the institutional environment are addressed in the next section.

Capacity Building for Academic Staff in KNUST

The KNUST, as it is already indicated, has always had policies for building the capacity of its staff, and those of promising students. This has largely been carried out through scholarships for further studies in or outside the University. The obvious purpose has been to improve the scholarly capacities of beneficiaries for the challenges of academic and leadership roles. The necessity of pursuing staff development programmes is the recognition of faculty reproduction and acquisition of skills that are required in contemporary higher education environment. For the lecturers, staff development processes are realised through

the pursuit of higher academic qualifications and also through on-the-job training programmes. The desire for the acquisition of terminal degrees remains an imperative for those in the academia, especially when that constitutes the basic qualification for lectureship in Ghana. It is for this reason that queues for PhD sponsorships can be long, and the anxiety over delays can be frustrating. As part of conditions of service, the University has laid down procedures for meeting such needs. The implementation of such policies according to laid down procedures, however, remains matters of concern for those in the queue. To find out whether the laid down procedures for sponsorship are being followed, the views expressed on the issue are shown in Table 5.7

Table 5.7: Laid Down Procedures for Academic Staff Development

| | Frequency | Per cent | Valid % | Cumulative Per cent |
|--------------|-----------|--------------|--------------|---------------------|
| Yes | 48 | 61.5 | 61.5 | 61.5 |
| No | 14 | 17.9 | 17.9 | 79.5 |
| Do Not Know | 16 | 20.5 | 20.5 | 100.0 |
| Total | 78 | 100.0 | 100.0 | |

The evidence as shown in Table 5.7, regarding whether the laid down procedures are being followed, shows that 61.5 percent indicated 'yes' to affirm their position that the procedures are being followed. However, 17.9 per cent of the respondents thought otherwise. Those who 'do not know' comprise 20.5 per cent of the respondents, and this could possibly be explained by the fact that those who do not need to avail themselves of such opportunities may not be too keen on the developments on that front.

In-service Capacity Building in KNUST

As part of quality assurance measures in KNUST, in-service training programmes for newly recruited staff have been institutionalised. In-service trainings are conducted on regular basis to equip academic staff on matters that deal with teaching, research, publication, and on the ethics of leadership. The trainings are recognised by the KNUST internal quality assurance bodies, and the national regulatory bodies as an assured way of building capacities of staff to enable them function well in the academic world. The benefits that the respondents in KNUST indicated they derived from in-service training programmes are shown in Table 5.8.

Table 5.8: Type of Benefits from In-service Capacity Building Programs

| | Frequency | Per cent | Valid % | Cumulative % |
|---------------------------------------|-----------|----------|---------|--------------|
| Improved teaching and research skills | 49 | 62.8 | 62.8 | 62.8 |
| Improved research skills only | 19 | 24.4 | 24.4 | 87.2 |
| Improved teaching skills only | 6 | 7.7 | 7.7 | 94.9 |
| No benefit in particular | 4 | 5.1 | 5.1 | 100.0 |
| Total | 78 | 100.0 | 100.0 | |

It is shown in Table 5.8 that 62.8 per cent of the respondents said their benefit came in the form of ‘improved teaching and research skills.’ While those who indicated that they had benefited in the form of ‘improved research skills only’ constitute 24.4 per cent, the cohort that checked ‘improved teaching skills only’ comprise 7.7 per cent. The remaining group of respondents that indicated ‘no benefit in particular’ was just 5.1 per cent.

Prospects and Challenges of the KNUST

The strategic plan of the KNUST has a mission of creating an environment for research, teaching and entrepreneurship training in science and technology for industrial and socioeconomic development of Ghana. The prospect of realising this goal is greater today than it was the past. This is partly due to the operation of the corporate governance system of the University in an atmosphere of tranquility. The turbulence that had characterised the students’ front has significantly ebbed, as the major stakeholders have come to accept the reality of commoditisation of higher education.

From its inception as the premier technical higher education institution, the KNUST has come to carry the burden of meeting the expectations of an underdeveloped country that seeks to accelerate its development process through technological and scientific breakthrough. The refocusing of the training regime to embrace entrepreneurship is meant to train new corps of scientists and technologists that imbibe business ethos to enable them become creators of jobs.

But the evidence of the University’s ability to deliver on this mission is best shown by the capacity that is displayed by the lecturers. In the competitive technological age, it is obvious that the development gap between Africa and the rest of the world is a technological one; and hence research within higher

education is expected to provide that leverage for bridging the gap. But the commercialisation of academic programmes, especially the concentration on evening and weekend schools; as well as sandwich programmes has become so enervating for lecturers. The imperative to optimise on these additional teaching responsibilities for economic gains to the University and the individual lecturers leaves little room for effective research output.

The effort to deal with the shortfalls in academic service delivery through in-service workshops needs intensification, and the organisation of such workshops would be most effective if they are based on needs assessment.

