



Towards Arresting the Decline in Academic Standards of Engineering Education in Nigerian University

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ABSTRACT

Technological advancement serves as a major key to a nation's development. On the other hand, proper engineering knowledge (acquired through appropriate structures) plays significant roles in the attainment of a high level of technological advancement. Most developing countries find it difficult to impart adequate knowledge and training to engineers at different levels of training. An overview of the problems confronting engineering education, and factors that affect engineering education in Nigeria is taken in this paper. The paper identifies lack of adequate or competent human resources, government attitude towards vocational education or technological development in terms of funding, poor maintenance, lack of relevant adequate infrastructures, and political situation as the dominant problems faced by engineering education in Nigeria. The paper, in addition to finding solutions to the above problems, recommends proper care in admitting students, infrastructural inadequacy needs to be recognized and properly articulated with a view to being redressed, appropriate government policy and disposition and intervention of professional and international bodies (through provision of financial and material assistance) for assisting in the training and practice of engineers in Nigeria and in order that the country may achieve meaningful development comparable with foreign countries.

Keyword: Engineering education, Academic standards, Technology education, Nigeria Institutions.

INTRODUCTION

Engineering education, in general terms, means a systematic training and instruction given as it relates to science and technology to develop the skill and mental ability of men so that they can make use of resources at their disposal for the benefit or betterment of the society [1].

Engineering education should be able to provide young engineers with technical ability, imagination and good engineering judgment. It should also provide for them sufficient scientific and mathematical tools with which to analyse engineering problems, and at the same time allow them to make engineering judgments based on empiricism and practical experience [2].

The status of the academic standard of engineering and technology educational system in the Nigerian university at the moment is unenviable. It is low in quality and standard, limited in its reach and disturbing in its future. There have been some efforts by government to find a panacea to the declining fortune of university educational system. Some International donor agencies, like UNICEF, the World Bank, UNESCO, and DFID are also collaborating with government at all levels with a view to coming

up with a holistic approach in addressing educational concerns. The intention of this paper is to critically look at the origin of decline in academic standards, problems confronting engineering education, factors that affect engineering education, and attempts to improve fall in academic standard of engineering and technology educational system in the Nigerian university. The paper is of the view that Nigeria requires a system that will insulate education from unnecessary politicization. Education formulation and policy consideration should be for the good of all.

The origin of decline in academic standards

It is a relatively more straightforward matter to promptly establish the quality of knowledge imparted on products of our primary and secondary educational systems. One simply looks at the results of the candidates in standardized examinations like Common Entrance Examinations, the West African School Certificate (WASC) Examinations, and the National Examination Council (NECO) Examinations, the Joint Admissions Matriculation Board (JAMB) Examinations. The same cannot be said of the quality of knowledge imparted on

graduates of tertiary institutions in Nigeria as the classifying examinations are significantly decentralized and much less standardized the use of external moderation of these examinations may be noted for its ineffectiveness [4].

The onset of standards decay in Nigeria predates 1964, the onset of the political crisis in the Western Region just as that political crisis itself had incubated over a long period of time before blowing up at its exponential growth phase. Though standards were high initially, the sentiments that fuel decay were already evident in the Nigeria of the late 1940s and early 1950s at the premier university in Ibadan [5,7]. Education was not seen as a means for the constructive development of society but rather as the means to a larger share of the wealth of the nation, the same sentiments that ruled in national politics then and particularly still rules today, giving birth and prominence to issues and measures associated with distrust and inequity, insecurity, quota, and the principle of rotation. We had a nation founded on the merits of synergy degenerate to one where everyone literally must fend for himself minding and protecting very narrow personal interest. Thus, the educational system today has to contend with examination malpractices of various types, admissions racketeering, and records falsification and misrepresentation as well as other vices that threaten its survival.

Problems confronting engineering and technology education in Nigeria University

The status of the Nigerian educational system at the moment is unenviable. Beneficiaries of the education system in the period before mid-1970 claimed that this sorry state is something of very recent history. The contention is that the quality of education in Nigeria before this period compared favourably with any educational system in the world; but the state of education today is far from being ideal. Teachers' strikes at all levels of education and incessant closure of schools have become the norm. Cultism and violent crime are common in institutions of higher learning in most parts of the country. Examination malpractices and admission racketeering is a common phenomenon. Un-conducive teaching and learning environment abound everywhere, teacher quality and quantity, poor remuneration, dilapidated infrastructure, and inadequate learning and teaching materials at all levels of education are the lots of education in Nigeria. One area of profound concern in education is the number and quality of teachers in schools at all levels. Students admitted to read engineering courses are not only of low quality, some are mostly reluctant students. The major reason adduced for this is perhaps the poor remuneration for teachers and the status of the teachers in the society. For instance education students are not considered as worthy of benefiting from the Industrial Attachment Fund (ITF) programme. Hence, most graduates of teacher education are incensed about the idea of taking up teaching as a profession. Consequently, more than 55% of teachers in the education sector are ill-equipped, ill-trained, ill-motivated and unqualified for the system.

Poor remuneration of teachers is another challenge facing engineering education in Nigeria. To make ends meet, teachers' resort to 'self-help projects'. While academic teachers in public tertiary institution became 'emergency book sellers', publishers

and printers. Indeed, students who refuse to buy the books or hand out produced by these teachers are guaranteed carry-over in such courses. Others demand 'money for grades'. High grades and scores are reserved for the highest bidders. Thus most teachers spend little time helping students to learn. Little wonder then that quality in most institutions has been compromised. Another profound challenge to engineering education is the problem of incessant disruptions of academic program. At the heart of these disruptions is the issue of funding of education. Academic staffs at all level declare strike for improved funding, better and improved working condition and upgrading of teaching and learning facilities. On the other hand, Students' riots are reaction to increase in school fees. These disruptions lead to school closure for weeks or months. Most times students are denied opportunity to make up for lost times. This results in low quality of student academic accomplishments.

Cultism in school is another problem. It is now a phenomenon in virtually all levels of education. Thus, cult groups became an attraction to bad students. It has been observed that majority of students in cults are those who gained admission with arrangee (fake) school certificates or products of the diploma program. They also constitute majority of those involved in one form of examination malpractice or the other [5].

Factors affecting engineering education

The problems of engineering education in Nigeria university have been articulated by many stakeholders [9]. Teaching and research efforts are frustrated by the obsolescence of laboratory and workshop equipment, lack of current books, journals, and a flawed admission processes which most times does not properly reward merit.

The quality of engineering education is affected by the following:

- Lack of adequate or competent human resources

Today, it is worrisome that qualified and competent lecturers are difficult to attract to the engineering education industry [1]. Many senior engineers in the education industry have moved to greener pastures elsewhere. Those that are still found in the system are more or less part-time lecturers having side line jobs they are doing in order to make the two ends meet. What one can find is mostly young engineering graduates standing before classes of one hundred or more students and reading out their lecture notes [1]. The definitions of the key technical works they do not really understand. They dodge the mandatory hours of practical and convert them to theory classes. So, they can only teach what they know or have learnt.

- Government Attitude Towards Vocational Education or Technological Development in term of Funding

The formulation of policies by the Federal Government for the engineering education should aim at technological growth and enhancing the remuneration of engineering teachers in order to attract them to the engineering education industry. The Federal Government should release enough funds for the purchase of equipment for meaningful teaching, laboratory practices and developmental work which in support for the desired standard.

Federal Government should embrace the funding of the engineering education in Nigeria university. Bureaucracy that hampers immediate release of funds when approved by the federal government should be restructured. The Federal Government should encourage the implementation of Supervised Industrial Training Scheme in Engineering (SITSIE) as it would serve the nation and the engineering profession well in enhancing the quality of the graduate engineers offered to the employment market.

- Poor Maintenance

Today, almost all laboratories and workshops in the Nigeria university are littered with scraps of obsolete equipment, tools and instruments. Finance is needed to maintain and replace obsolete equipment, tools and instruments. This must cover the cost of project consumables and prototype development with a view to manufacture and produce exhibitable machines or components or pieces [2]. However the financial resources from the government for the maintenance and replacement of the obsolete equipment, tools and instruments are depleting.

So the training of engineering manpower is done theoretically without the use of equipment, tools or instruments and this consequently brings embarrassment to the graduates when they are expected to apply the theory they were taught to the reality of life. Of course, this affects the quality of engineering education and training in Nigeria.

- Lack of relevant adequate infrastructures

This can be attributed to lack of adequate teaching spaces such as lecture rooms and theatres. They are mostly over-crowded. This also includes offices for teaching and non-teaching staff of engineering program.

The laboratories and workshops are not mostly equipped with current facilities, while some components are obsolete. In order to properly train an engineer, he or she needs to have a balance between theory and practical, and this can only be achieved through well-equipped laboratories and workshops that are regularly updated with facilities.

- Political situation

Education in general has been grossly neglected in Nigeria. In which technical education programs is the major victim, such that technical educators have the greatest challenge of convincing the law makers on why the law makers should give priority to the programs in allocating resources [3].

The government is playing a lopsided attitude to the proper development of engineering education in Nigeria University. However, this problem will remain unsolved until they begin to change their attitude towards the programs, Nigeria will ever remain technologically backward and dependent nation.

Attempts to improve fall in academic standard of engineering and technology education

There have been some attempts by government to redress the declining fortune of the educational system. The Federal government has at various times established institutions to

formulate and ensure the quality of education at all levels. For instance, the National University Commission (NUC) was established to cater for the university.

The NUC is the agency set up by government to oversee developments in the university across the nation. This agency act as interface between the government and the institutions' administrations. They issue policies and monitor compliance with established regulations. Their effectiveness in guiding the institutions to a path of success in the latter's missions should be a measure of the regulators' own success [4].

This institution has the mandate to set Minimum Academic Standard (MAS) for the university education. The Federal Ministry of Education in collaboration with some International donor agencies, like UNICEF, the World Bank, UNESCO, DFID are collaborating with government at all levels with a view to coming up with a holistic approach in addressing educational concerns.

Attempts at curbing major decadence among students especially in higher institutions have been mounted in most schools. Some institutions and faculties have started enforcing dress codes for students. Examination malpractice issues at Nigeria polytechnics are being addressed. Aside from various sanctions given to culprits in schools, major examination bodies have devised various means of minimizing the menace. Some institutions have streamlined or reduced the number of diploma and part-time programs, in a bid to reduce incidences of cultism and violent crimes in their institutions. It should be added that the adoption of the Post - UME: screening exercise in universities, which is expected to improve student quality, is capable of redressing and reducing the incidences of examination malpractices, cultism and violent crimes in engineering education on the long run. Teacher quality is expected to be addressed with the introduction of the Teachers' Registration Council (TRC). Various institutions are adopting various measures to address indecent behaviour among teachers. For instance most universities, with perhaps the exception of some universities, are enforcing the ban on sales of hand outs, and un-standardized books. All these measures are efforts aimed at setting and improving education standards, thereby building the confidence of stakeholders in the quality of the education system.

CONCLUSION

The social, economic, and environmental factors that have led to the prevailing poor academic standards in the nation's institutions of higher learning have been discussed in this paper.

The factors affecting the engineering education were examined in relation to the search for means of redressing the undesirable situation which has denied the nation of vital support for developmental processes. The influence of society itself through an irrational scale of values was noted as not only a factor but also as a key trigger to several other factors that have acted in concert to drive the decay of standards. Observing that the academia has a duty of positively affecting society, this paper decried the reversal of roles and suggested ways of making amends. In conclusion, academia would be better placed to influence government and society.

RECOMMENDATIONS

From the foregoing discussion, the followings are recommended:

- ❖ The danger of infrastructural inadequacy needs to be recognized and properly articulated with a view to being redressed. This will be helped by greater probity in the management of available funds and improved maintenance of facilities and by resisting excessive student enrolment.
- ❖ Appropriate government policy and disposition and intervention of professional and international bodies (through provision of financial and material assistance) for assisting in the training and practice of engineers.
- ❖ Students need to be counselled on the true value of their education and on best practices at achieving success in their quest for it. The administration and the teachers have roles to play here.
- ❖ Proper care needs to be exercised in admitting students but cheating to gain admission into the institutions must be discouraged through internal measures that quickly prevent undeserving students from fraudulently earning institutions' certification.
- ❖ Proper handling of the institutions' examinations and records using appropriate information technology to ensure the sanctity of these processes, appropriate classification of students, and to elicit the zeal, in students, to excel academically.

- The academia should articulate the necessity for improved conditions of service for teachers as a means of redressing the staffing inadequacy of the institutions.

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