

Effective Teaching & Learning in Higher Education

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Abstract

Higher education plays an important part in developing a knowledge economy and human capitals all over the world. However, the quality of education offered in many higher education institutions in developing countries especially in science and technical courses, is questionable leading to release of half-baked graduates to the labour market. This study intends to use a mixed methods approach to examine the quality of science and technical courses in Kenya institutions of higher learning. The study will be guided by three research questions: How is teaching and learning conducted in Kenya institutions of higher learning for effective achievement of learning outcomes?, What challenges do Kenya institutions of higher learning encounter that hinder effective achievement of learning outcomes?, What can be done to ensure there is effective teaching and learning in Kenya institutions of higher learning? Both cross sectional survey and phenomenology techniques will be used to cater for Quantitative and Qualitative research paradigms. Questionnaires and interview guides will be the key data collection tools. Six public and private universities will be sampled to participate in this study. Probability and non-probability sampling techniques will be applied to sample 240 university students and 24 lecturers, 4 from each faculty of science in the respective universities. (SPSS). Closed and open ended questionnaires will be used to collect data which will be analyzed through descriptive and inferential statistics by help of Statistical Package Software for Social Sciences. Ethical consideration will be adhered to throughout the study.

Key terms: Effective teaching, Institutions of higher learning, learning outcomes.

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I. INTRODUCTION

Higher education plays an important part in developing a knowledge economy and human capitals all over the world. Asiyai (2013) describe higher education as the education offered in colleges of education, monotronics, polytechnics and universities and those institutions offering correspondence courses to individuals who have completed secondary education. It is the facilitator and bed rock of strong socio-economic, political, healthier and industrial development of a nation (Peretomode, 2007). As such, it is increasingly being recognized as wealth and human capital producing industries as it offers human capital that sustains economic growth (Kors, 2008). In its report on how to improve tertiary education in Sub-Sahara Africa, the World Bank (2004) pointed out that higher education is fundamental to all developing countries if they are to prosper in a world economy where knowledge and innovation capacity has become very important. The quality of knowledge generated in these institutions is therefore critical to a nation's economic growth and competitiveness. The quality of education offered to students in these institutions determine the level of competency of the graduates and therefore the level of economic, social and political development and growth of a nation. However, the quality of education offered in many higher education institutions, especially in science and technical courses, is poor leading to release of half-baked graduates in the labour market. This paper examines the quality of science and technical courses in Kenya's higher education institutions.

Quality of Education in Kenya's Higher Education Institutions

Higher education is at the heart of Kenya's economic growth. As part of its vision 2030 strategy, the government emphasizes that university education and training must achieve the following:

- a) Imparting hands-on skills and capacity to perform multiple and specific national and international tasks.
- b) Creation of dependable and sustainable workforce in form of human resource capital for national growth and development.
- c) Creation of entrepreneurial capacity for empowering individuals to create self-employment and employment for others.
- d) Offering opportunities for advancement of learning beyond basic education with strong leaning towards scholarship and research.

- e) Creation of a strong national research base at various sectors of economic and national development.
- f) Bridging the gap between theory and practice in various disciplines of education and training.
- g) Creation of a strong sense of nationalistic and global development.
- h) Incultation of a culture of precision, moral discipline and work ethic which are necessary in modern industrial and technological world. (Republic of Kenya, 2006).

The objectives underscore the importance of the universities and justify current concern that they provide the kind of education and training expected of them. According to Asiyai (2013), good quality higher education should possess the characteristics of conformance to expectation as well as conformance to requirement. Quality in higher education is defined by the worth of the inputs into higher education systems, lecturers, instructional facilities, teaching content, methods of content delivery, adherence to set standards, and evaluation procedures. Ekong (2006) notes that quality education builds knowledge, skills, perspectives, attitudes, and values. Good quality higher education should lead to competent graduates who are able to perform according to expected standards and compete favourably with their peers in other parts of the world. When the quality education offered to students meets the set standards, the outcome of the education should be able to perform well in the world of work. When quality is low, performance cannot meet the expected standards. Stakeholders need assurance that there is quality in provision of university education in Kenya. Manji and Dunford (2016) note that the lack of effective quality assurance and the inadequate capabilities of accrediting bodies justify the concern that stakeholders, especially employers, have about the quality of graduates from Kenyan universities.

While there have been serious efforts over the past few years to increase access to higher education for the Kenyan population, there has been little investment on quality improvement. Today, there are 30 public chartered universities, 18 private chartered universities, and 13 private universities with letters of interim authority offering various courses. However, the quality of education in science and technical courses offered in most of these institutions remain a major issue of concern. Gudo, Olel and Oanda (2011) observed that graduates are deficient in written communication and technical proficiency which make them unfit for the market.

Following public outcry on the quality of graduates graduating from the Kenyan institutions of higher learning, the Commission of University Education (CUE) launched an audit of the universities. The 2017 status of Kenyan higher education report released by CUE revealed serious rot in Kenyan universities leading to poor quality education in these institutions. The report indicated that the quality of teaching and the way the programs are organized defy established rules. The rot has been attributed to the exponential expansion without proper supervision. As a result, the quality of courses offered by many universities was found to be wanting. For example, the commission found that in many universities, students were not exposed to quality research, while some universities were offering degrees that were not approved (Muli, 2017).

The outcome of the rotten system is half-baked graduates to the extent that the Kenya Engineers Registration Board refused to recognise or register engineering students from some universities including public universities. In many cases, established telecommunication and engineering firms have been forced to outsource engineers from outside the country or to set up their own training programmes to meet their skills needs. Safaricom is one of the companies, which have created their own academies, Safaricom Academy, to help them acquire individuals with the technical skills that they need. Section very well presented

Causes of Poor Quality Education in Science and Technical Courses

Poor Policy Implementation

The biggest challenge to quality education in Kenya is lack of commitment to policy implementation (Muricho & Chang'ach, 2013). The lack of commitment from the quality assurance team at the ministry of education and the Commission of University Education is squarely responsible for the poor quality education and training in Kenyan universities. The low quality of education offered by Kenyan universities is certainly due to little attention given to teaching effectiveness since institutional policies meant to ensure that students are offered quality learning experiences are ignored. The recent report by the Commission of University education revealed serious weaknesses on the part of higher education system's quality assurance team. According to Odhiambo (2011), education policies are written by knowledgeable educators and experts in various fields who have foresight and who have strong belief in where Kenya should be. However, the implementation side is always a mirage. For some reason, those charged with the mandate of ensuring quality in higher education have consistently slept on the job, while some have integrity questions! Several factors could be adduced as inhibitors to smooth implementation of educational policies and thereby resulting to poor quality delivery. These factors include but not limited to: state underfunding of the education ministry especially on monitoring and evaluation and injudicious utilisation of available funds by implementation agencies. The Kenyan ministry of education does not take seriously monitoring and evaluation of education programmes offered in these universities,

leaving the university to choose the level of quality of education they offer to students. In almost every university the country, the university top administration and deans of faculties embezzle the funds meant for ensuring quality education monitoring within their universities and faculties. When funds meant to deliver quality education are misappropriated or embezzled, the education delivered to students becomes

Inadequate Funding

Inadequate funding is the most critical challenge that has threatened the attainment of quality higher education in Kenya, especially in science and engineering courses. State funding for colleges and universities has not increased commensurate with the increasing number of students joining universities and the shift in teaching technology and advances in the real world of work. According to Manji and Dunford (2016), it is the inadequate funding that has forced public universities to increasing their appetite for parallel degree programmes while paying little attention to the quality of the programmes they offer. Report shows that government funding for Kenya's 33/34 public universities has been on the downward trend. The average per capita expenditure per student has also fallen significantly. Meanwhile, not all the money the government allocates to the management of institutions of higher learning gets to these institutions, and the little that reaches these institutions is sometimes wasted by the university administrators. This funding crunch obviously has a detrimental effect on quality, which manifests in poorly trained academic staff, inadequate libraries, overcrowded classrooms, and low-quality graduates (Mulinge, Arasa & Wawire, 2017; The Conversation, 2016). No wonder university academic staff are always on strike almost every year. This year alone, the university academic staff have downed their tools for a good part of the first semester.

Financial constraints make many academic and non-academic staff to work under difficult circumstances. Many of these institutions are unable to build lecture halls, students' hostels, equip laboratories and workshops, fund research activities, and pay staff salaries. Meanwhile, student enrolment in these universities keeps growing. The situation is worse in private universities that wholly depend on tuition fees especially in the face of strong competition from established universities offering degree programmes (Manji & Dunford, 2016).

The Market-based Model of University Management

The higher education system in Kenya has adopted market-based policy of financing public universities, allowing the government to cut down financial support to universities. Under this model, universities are expected to raise extra revenue through tuition fees, cost-recovery measures and by commercialising their activities. As a result, universities have established numerous low-quality satellite campuses nationwide to help them reap from the growing number of people in need of university education (The Conversation, 2016). These cheap, low-quality satellite campuses do not have even the most basic facilities. They have no libraries or internet access yet they offer science and technical courses. Most of them are established within busy streets in Kenya's cities and big towns in buildings shared by other businesses including pubs, restaurants, supermarkets, and even brothels! In these satellite campuses, there is normally a full-time campus director together with a handful of academic staff who usually hold no more than a master's degree. Sometimes even the degree is of questionable credibility. But these campuses raise money for the parent university and meet the country's high demand for tertiary education. It is for these reasons that the Commission of University Education had to close Kisii University's 10 out of 13 satellite campuses in 2016.

Some universities, such as Kenyatta University have taken an entrepreneurial route to raise more money by setting up shopping malls, funeral homes, upcoming Referral Hospital, industrial parks, rented-out property or ventured into catering. As such, funds that could be used to improve the quality of education offered by these universities are diverted to support these activities to generate more money. Experience has shown that the return on investment in these activities is rarely used to improve the quality of education in the university.

Shortage of facilities

According to Okwakol (2008), most African universities do not have adequate physical facilities such as lecture rooms, library and laboratory spaces to provide a suitable learning and teaching environment. In many Kenyan universities, science and engineering laboratories are not adequately equipped and whatever equipment that exists is likely to be out-dated. She noted that 55% of laboratory equipment in most departments in universities was not in a state in which they could be used to carry out experiments. The net effect of this scenario was that only about half the experiments were done. Shortage of physical facilities in public universities in Kenya is well documented. World Bank (2004) and Cheboi (2006) noted that financial resources directed to university education were inadequate. Cheboi (2006) observed that shortage of facilities affected the quality of higher education. He further observed that poor recreation facilities affected quality of higher education.

Further, report of The Public Universities Inspection Board (Republic of Kenya, 2006) noted that quality and quantity of teaching and learning materials particularly information technologies impact in a very significant way on the quality of teaching and research. The Board further noted that accelerated growth in student numbers in the public universities had not been matched by expansion of physical facilities and academic infrastructure and that some of the existing infrastructure was inadequate, dilapidated and in bad state of despair. In some universities, including established public universities, students undertake their practical lessons in technical institutions offering diploma and certificate courses. This means that they have something like less than 2 hours per week practical training using equipment meant to provide diploma level training.

Libraries in most Kenyan institutions of higher learning are stocked with obsolete text books; most of them donated by foreign organisations and institutions years ago (Mulinge et al., 2017). The library is at the heart of the academic effort in a college or university. For an institution to be strong academically, it must have well-equipped library. This explains why the top universities of the world, such as Harvard, Cambridge, Tokyo, and university of California, are renowned for producing high quality graduates. On the contrary, most Kenyan universities are no longer investing in buying up-to-date books. Meanwhile, most of them are yet to adopt the digital library concept that gives students broad access to journals and text books from the comfort of their laptops or university computers within the libraries. As Mulinge et al (2017) further noted, some of the universities which have adopted the digital library concept only provide link to the books and journals, expecting the students to subscribe on their own to read the books and journals.

Despite the role of information communication technologies (ICT) in enhancing teaching and learning, researches abound in support of lack of ICT tools in institutions of higher learning in the country (Asiyai, 2010, 2013; Mulinge et al., 2017; Sulaiman, 2008). The lack of adoption of digital libraries is largely due to the slow adoption of ICT facilities in some of these institutions of higher learning (Makokha & Mutisya, 2016), especially those situated outside the capital city. Many universities have been slow to adoption of information technologies in all levels of education. Information communication technology integration in educational practices is supposed to improve teaching and learning, enhance higher education research, enhance collaboration among peers and improve quality of education. Unfortunately, most of our institutions of higher learning in the country suffer acute short of basic equipment and facilities like computers, multi-media projectors, electronic white boards, and automation of lecture halls and lecturers offices. There are even institutions not linked to properly functioning internet, mainly due to their geographical location.

Inadequate Teaching Staff /Poor Quality of Teaching Staff

A major challenge to the attainment of quality education in the science and technical courses in Kenya's higher education institutions is the lack of subject-expert academic staff. Coombs (1970) noted that teachers are the bedrock of any educational system. They determine the quality of education offered to students because they are the ones who transmit educational policies into practice and action. Without adequate number of inspiring, well-informed teachers, fully prepared to meet their responsibilities in our schools, it is impossible to have good education (Asiyai, 2013). In the Kenyan higher education institutions, there is serious shortage of qualified instructors in technical fields such as geospatial engineering, computer science, information communication technology, and so on. The problem has been compounded by the difficulty in recruiting experts in these fields due to lack of competitive salaries offered by universities and the growing demand for real experts in the technical fields. Students in technical courses are at the mercy of less knowledgeable teachers or teachers who underwent training many years ago but have failed to keep up with research and advancements in the industry. Therefore, they cannot transfer prevalent knowledge to students enrolled in these courses. Besides, in Kenyan institutions of higher learning, little attention is paid to teaching effectiveness of academic staff. The "publish or perish" practices which is often emphasised to ensure that university instructors keep up to date with current knowledge and practice is not taken seriously in Kenyan universities. In most cases, when the academic staff engage in research, the research is not geared towards contributing to innovation but rather to produce basic knowledge which exist and is common. The main focus is to have many publications under one's name, of course for promotion purposes. The research is just about replication of an existing in a different context, thereby creating no new knowledge or innovation.

Most institutions of higher learning in Kenya do not have staff development programmes for training and re-training of their academic staff. This is their academic staff's knowledge become obsolete over time. They are left to transmit outdated information and experiences. The most important qualification to become an instructor in Kenya's universities is a PhD education attainment. In Nigeria, Asiyai and Oghuvbu (2009) found that lack of staff development programmes accounted for the decline in quality of tertiary education in Nigeria. Adeogun, (2006) explain that an employee who is not trained and exposed to continuous retraining in the modern methods and new discoveries in his or her field is likely to be rendered irrelevant to the organization. Besides, due to lack of opportunity for retraining and non-mentoring of junior lecturers by professors, the junior lecturers are not exposed to new ideas, facts, theories and research findings in higher education.

II. DISCUSSION

The combination of high enrolments and low funding has hit even established universities hard. They do not have enough academic staff and many lecturers aren't properly qualified. They don't have decent teaching or learning facilities or access to innovative technology. This means that teaching often does not advance beyond traditional methods. Due to inadequate funding, Kenyan institutions of higher learning are not able to employ the right number of academic staff. Bamiro (2012) also attributes the problem of de-intellectualization of the academia to low quality of staff of some institutions of higher learning. In most cases, diploma graduates operate university laboratories and research/innovation centres, yet they are expected to offer guidance even to PhD students. It is the diploma graduates who oversee bachelor students carry out their researches and mark their laboratory research assignments. This erodes the quality of training and learning experience offered to students in technical courses.

Competent teachers are needed for quality education (Ajayi, 2007). Unfortunately, this is mostly lacking in the Kenyan higher education system. Despite the importance of teachers in the attainment of quality education, institutions of higher learning in Kenya are short of competent and committed instructors to deliver teaching and learning content in the most appropriate way. The importance of expert trainers in science and technical courses cannot be over emphasized. The few available lecturers are seriously over worked. Even in some institutions of higher learning in the country, because of shortage of lecturers, their programs are not accredited by the accreditation agencies. Attainment of good quality in higher education requires right quantity and quality teaching staff. Where there is inadequate teaching staff and poor quality of lecturers, the attainment of good quality in higher education is almost impossible.

The acute shortage of educational facilities in institutions of higher learning in Kenya has led to decline in the quality of higher education in the country. In most universities and colleges, research laboratories, research centres, and technical training workshops are empty or lacking appropriate and modern equipment needed for effective teaching and learning. It is not uncommon to see a student graduating from chemistry department without handling volumetric analysis apparatus. The undesirable conditions of institutions of higher learning in Kenya are worrying (Mulinge et al., 2017). Meanwhile, many universities have failed to adopt information and communication technologies to enrich the teaching-learning process (Makokha & Mutisya, 2016). Asiyai (2013) noted that information and communication technology in education has been continuously linked to higher efficiency as well as higher productivity, and higher educational outcomes, including quality of cognitive, creative, and innovative thinking. Information and communication technologies can be used to prepare lesson plan, collect data and analyze students' achievement. Curriculum content can be enriched through search from the internet by teachers so that they present much updated content/information to learners. It is not a secret that the course content for today's technical students is old. In fact, many of the topics and even entire course unit are irrelevant to today's industry.

Improving the quality of education and training in Kenya requires implementation of vibrant staff development programs, which has to run on a continuous basis. Staff development is paramount because knowledge of is not static but dynamic. Knowledge keeps being modified through research and advancements in technology and industry practice. As such, today's knowledge may not be useful for creating meaningful and relevant products tomorrow. It has to be acknowledged that we are in the era of knowledge explosion and emergent knowledge-based economy. Therefore, staff development must be the priority of any institution. According to Asiyai (2013), this can help academics and non-academics to clarify and modify their behaviours, attitudes, values, skills and competencies. This is the way to grow and develop the knowledge of the academic staff and make them become more effective and efficient in delivery of course content in their various fields. equipment needed for effective teaching and learning Peretomode, (2008) argued that the weakness of post graduate programmes of some institutions of higher learning in Nigeria required a strong staff development programme for staff. He maintained that universities are staffed by lecturers who are not familiar with the topography of educational landscape and have never been expected to formulate their own philosophies of education or their own views about teaching and learning. This calls for additional training of teachers if quality in higher education is to be attained in the country.

In the face of these weaknesses in Kenya's higher education system, it is important to acknowledge that the existing regulatory framework is weak and cannot help save the situation. The Commission of University Education which has been mandated to monitor the quality of education offered in the country's universities has mainly focused on the accreditation of private universities even after expanding its mandate 5 years ago. It has failed to establish continuous monitoring system that is able to ensure that the quality of education offered in each course and in each university meet the expected standards in terms of programme content, facilities, equipment, human resource, and /real-world experience. The commission has failed because it lacks the organisational, technical and human capacities to monitor and enforce quality compliance. The efforts of the commission, such as closure of institutions found to be offering poor quality education, can only be categorised as reactionary because they should have stopped such programmes right at the beginning.

Restoration of quality education in Kenya's higher education system requires a combination of strategies to restore quality, particularly at Kenya's public universities. The state has done well in bringing together regulatory authorities and the universities to work together to revert the situation. The country probably needs a differentiated public university system where specific universities offer specific courses so that universities with adequate resources for teaching certain courses or with established research institutes/centres specialising in high level research and technical courses as well as graduate training. For example, established universities like the University of Nairobi, Moi University, Egerton University, Jomo Kenyatta University of Agriculture and Technology, and Technical University of Kenya can be improved to offer high-level science and technical education and training. These universities would require fewer resources to improve to the expected standards compared to the universities which received their charter just a few years ago. Besides, more established instructors prefer to work in these universities. Other newer institutions established to meet demand should focus on good-quality undergraduate and master's level instruction in courses that they can offer with ease.

Universities must also establish faculty development programmes where they can train their academic staff about the complexities and changing nature of an academic career. This training must introduce Kenyan academics to modern teaching strategies that appeal to an evolving student demographic. More importantly, the training must seek to improve the academic staff's subject knowledge especially on new advancements and inventions.

It is also important to improve the state funding programme to the institutions of higher learning to reduce the over-emphasis on the market-based model to run the universities. The state must change its funding model. Its current "one-size-fits-all" approach is not working, and instead programs should be financed according to how expensive they are to prepare and teach. Cheaper programmes must get less money so that the universities are able to acquire funds that can improve the quality of education offered in the science and technical courses.

Finally, regulatory oversight has to be strengthened. The commission of University Education requires enough money to harness its technical and human resources for effective monitoring and quality enforcement. It should always work together with professional associations and internal university quality assurance units to achieve its mandate.

III. CONCLUSION

The discussions in this paper have re-emphasized the focus on Kenya's national goals of education which are outlined in its blueprint for vision 2030. However, there are serious challenges on the grounds that compromise the quality of education offered in the country's institutions of higher learning. The consequence of these challenges is half-baked graduates, especially in science and technical courses, who cannot fill industry needs without further comprehensive training. Today, many engineering graduates are told by employers that they do not have relevant skills for industry needs, and are, therefore, unemployable. This trend is common in both local and international companies operating in Kenya. This should be a major concern for everybody, especially those involved in managing or offering education services in higher education in the country.

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