UNIVERSITY OF CAPE COAST

ASSESSMENT OF PHYSICAL FACILITIES AND QUALITY ASSURANCE PRACTICES: A COMPARATIVE STUDY OF TAKORADI AND CAPE COAST TECHNICAL UNIVERSITIES

ISAAC MENSAH

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BY

ISAAC MENSAH

Thesis submitted to the Institute for Educational Planning and Administration, School for Educational Development and Outreach, College of Education Studies, University of Cape Coast, in partial fulfilment of the requirements for award of Master of Philosopher degree in Education Planning

AUGUST 2020

DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature …….. Date…….....

Name: Isaac Mensah

Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature…… Date ….....

Name: Prof. Ephraim Oluchukwu

Co-supervisor's Signature ……. Date …….....

Name: Dr. Francis Ansah

ABSTRACT

The study sought to assess the extent to which quality assurance practices of Takoradi and Cape Coast Technical Universities in Ghana capture physical facilities as a way to achieve an enhanced quality. The study employed the quantitative approach of data collection to establish how quality assurance practices of Takoradi and Cape Coast Technical Universities captured physical facilities as a driver of an enhanced quality, and make a comparative evaluation between the two technical universities. The researcher employed simple random sampling and stratified sampling technique in selecting a total sample size of 210 lecturers as lecturers for Cape Coast and Takoradi Technical Universities and 380 respondents were selected as respondents for students for both Cape Coast and Takoradi Technical Universities. A questionnaire personally structured by the researcher was used to collect data. Descriptive statistics (means and standard deviation) was used to analyze the data. The findings reveal that some of the physical facilities in the Cape Coast and Takoradi Technical Universities were not covered by regular and routine quality assurance. Owing to this, there are some difficulties that come with teaching and learning in the two Technical Universities. It is therefore recommended that stakeholders in the two Technical Universities must as a matter of urgency address the inadequate physical facilities issues that overwhelm the Technical Universities in order to meet the standard that they have been raised to and also those that are not disability friendly must be addressed.

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DEDICATION

To my family, priests in Sekondi-Takoradi Catholic Diocese and the Apostolic Administrator of Sekondi-Takoradi Diocese, Most. Rev. John Bonaventure Kwofie CSSp.

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LIST OF ABBREVIATIONS

APFQ	Assessment of Physical Facilities Questionnaire
AUQA	Australian Universities Quality Agency
BTech	Bacholar of Technology
EQA	External Quality Assurance
HEIs	Higher Educational Institutions
HND	Higher National Diploma
IQA	Internal Quality Assurance
MDGs	Millennium Development Goals
MoE	Ministry of Education
NAB	National Accreditation Board
NCTE	National Council for Tertiary Education
QECs	Quality Enhancement Cells
QPA	Quality Assurance Practice
QAPQ	Quality Assurance Practice Questionnaire
SPSS	Statistical Packaged and Services Solutions

CHAPTER ONE

INTRODUCTION

Background to the Study

One of the distinctive characteristics of formal education is that it is structured and systematic. In other words, formal education takes place in well-structured institutions such as colleges, polytechnics and universities. Thus, every higher institution is built to serve the tertiary with the physical assets and facilities. Physical facilities therefore give educational institutions their complete teaching and learning environment since formal education does not take place in a vacuum (Musa & Ahmad, 2012). It is imperative to state that the provision of physical facilities in education has become a necessary condition. The school facility is therefore much more than a passive container of the educational process: it is, rather, an integral component of the conditions of learning.

It is in the light of this that many countries, regions and communities are becoming extremely concerned about the issues of educational physical facilities such as maintenance of ageing facilities, the reuse and adaptation of educational buildings, up-to-date furniture and equipment, the use of premises for more than one purpose and the reduction of premises, space utilisation as well as related expenditure (Hinum, 1999).

According to Earthman (2004), an effective school facility must be responsive to the changing programmes of educational delivery, and at a minimum should provide a physical environment that is comfortable, safe, secure, accessible, well illuminated, well ventilated, and aesthetically pleasing.

For him then the mission, vision and programmes of an educational institution will inform the kind of physical facilities that must be provided.

The school facility consists of not only the physical structure and the variety of building systems, such as mechanical, plumbing, electrical and power, telecommunications, security, and fire suppression systems. The facility also includes furnishings, materials and supplies, equipment and information technology, as well as various aspects of the building grounds, namely, athletic fields, playgrounds, areas for outdoor learning, and vehicular access and parking (William, 1998).

Isa and Wan Yusoff (2015), also maintain that school facilities consist of all types of buildings for academic and non-academic activities; equipment for academic and non-academic activities, areas for sports and games, landscape, farms and gardens including trees, roads and paths. Others include furniture and toilet facilities, lighting, acoustics, storage facilities, parking lot, security, transportation, and special facilities for physically challenged persons.

There is a growing conviction backed by experience and plethora of research that suggests that a relationship exit between student achievement and behaviour and the condition of the built environment. In other words, there is sufficient research to state without equivocation that the buildings in which students spend a good deal of their time learning does in fact influence how well they learn, (Earthman, 2004). Therefore, the quality of the physical environment significantly affects student achievement.

Earthman (2004) contends that good quality and standard institution of learning depend largely on provision, adequacy, utilisation and management

of educational facilities. Nonetheless, the quality and duration of a building are affected by how it is looked after the ways in which servicing and repairs are carried out and the rate at which needs and requirements change. This brings to the fore the issue of quality assurance in physical facilities at higher educational institutions in general (HEIs) and Technical Universities in particular.

In a globalized and competitive world the issue of quality assurance has now become a phenomenon that higher educational institutions (HEIs) have taken keen interest in. This has become necessary because every nation and its graduates are competing in an environment shaped by its own local and national needs as well as international expectations and standards. However, the word 'quality' seems to be elusive in terms of its definition and has been defined differently in different contexts, yet scholars seem to accept that it borders on "standards and excellence" in all facets of the educational system (Asheroft & Foreman-Peck, 1996, p.21).

Stephenson (as cited in Uvah 2005), for example also defines quality as fitness of purpose. This suggests that quality in a product meets the exact reason for which the product was made. In educational context, fitness of purpose refers to the capacity of the university or polytechnic to satisfy the national goals of higher education. Quality is concerned with preventing faults from occurring in the first place, a "zero defect" and ensuring highest level of satisfaction of the stakeholders.

It must be stated that since the term quality assurance encompasses all that an institution does to maintain standards and ensure excellence, certain indicators or determinants have been developed. One of such indicators is

quality learning environment. Eneahwo (as cited in Musa & Ahmed, 2012) insists that the quality assurance of the institutional physical assets and facilities can only be guaranteed if basic conditions and guidelines are followed. Basically, this means that infrastructural development must make provision for adaptability or alteration probability, flexibility in user demands, accessibility to students, staff and society and due regards for aesthetic and clean environment.

Sallis (1995) has also developed a quality indicator checklist which shows what the physical environment and facilities in higher educational institutions must require both in qualitative and quantitative terms. These include availability of infrastructural development programmes which is facility provision, adequacy of the facilities in terms of currency and relevance to purpose.

It is in line with this benchmark of quality assurance that the Technical committee charged with upgrading the polytechnics in Ghana into technical universities looked at physical facilities as one of the criteria, (Ministry of Education [MOE], 2014).

As tertiary institutions, the polytechnics in Ghana are relatively young, having been upgraded to tertiary status only in 1992. Although the then technical institutes at Accra, Takoradi and Kumasi were re-designated as polytechnics in 1963, they continued to operate essentially as non-tertiary, second-cycle institutions, offering mostly advanced craft courses and a few technician-level courses until 1992. Tamale and Ho Technical Institutes were similarly elevated to polytechnic status in the mid-1980s followed by Sunyani and Koforidua Polytechnics in 1997. Cape Coast Polytechnic was the first

polytechnic which was actually planned and established as a polytechnic in 1986; however, like all the other polytechnics, it did not gain tertiary status until 1992. Only Wa and Bolgatanga Polytechnics were conceived as tertiary institutions but even then, they became polytechnics simply by government pronouncement, (Ministry of Education [MOE], 2014).

In a recent report on Conversion of Polytechnics into Technical Universities, it is stated that the polytechnics Act 1992 (PNDCL 321) elevated the polytechnics to the status of public tertiary institutions. The upgrading of the polytechnics conferred on them the authority to award Higher National Diplomas (HND) and other certificates. Since then the institutions have had their mandates strengthened and expanded under a new Law, the Polytechnics Act, 2007 (Act 745) to offer qualifications in a wide range of applied arts and science disciplines at sub-degree, degree and postgraduate degree levels. Specifically, the mission of the polytechnics is to, among other things, provide:

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

Even before the enactment of Act 745, some of the polytechnics had started offering Bachelor of Technology (BTech) degree programmes in selected disciplines in affiliation with some public universities. Although the introduction of degree programmes was regarded as premature by a section of the public, the BTech programmes were expected to deepen the practical

orientation of the HND qualification and provide HND graduates with advanced technical knowledge and skills as well as offer them a more logical avenue for academic and professional progression. The running of degree programmes was also expected to improve the public image of the polytechnics (Reports on Conversion of Polytechnics into Technical University, 2015).

Again Act 745 states the mission of the polytechnics as skills development tertiary institutions in the field of manufacturing, commerce, science, technology, applied social science and applied arts with emphasis on skills development and applied research. Furthermore, as vocational-oriented, career-focused Higher education institutions (HEIs), the polytechnics seek to producing highly-skilled personnel to support economic growth and national development (Boakye-Agyemany & Amakie, 2014). As a higher education institution, polytechnic education emphasises the application of knowledge rather than the search for new knowledge. The thrust of polytechnic training is therefore on the acquisition of relevant skills required to perform specific professional tasks without ignoring the underlying theoretical knowledge necessary for a proper understanding of the tasks to be performed. According to the NCTE, total enrolment in the ten (10) polytechnics as at 2011 was 43,113, an average of 4,311 per polytechnic (Isaah, Abubakari & Wuptiga, 2015).

Recently out of the 10 (ten) polytechnics in Ghana, seven of them have been earmarked to be upgraded into Technical Universities. They include; Takoradi, Kumasi, Accra, Koforidua, Sunyani, Ho Polytehnics and Cape Coast. The rationale and justification for converting some of the polytechnics

into Technical Universities is to achieve parity of esteem with the Traditional Universities without departing from the practice-oriented philosophy of polytechnic education and training. Thus these upgraded polytechnics would be required to remain focused on their core function of training technicians and technologists at the higher level of education to meet the exigencies of the rapidly changing technology-driven work environment. The technical universities are not to mimic the traditional universities or depart from their original mandate of training for the world of work; rather they would provide training opportunities at all levels of skills, development in particular at higher levels (Reports on Conversion of Polytechnics into Technical University, 2015).

From the above discourse it is clear that Institutions of higher learning such as the technical universities require quality structures. This is because there is no institution that operates in a vacuum. Every institution requires a structure in order to operate. In other words, physical assets and facilities give educational institutions their complete shape and teaching and learning environment. Thus facilities and infrastructure constitute one of the benchmarks for quality assurance in higher education. Educational curriculum cannot be sound and well operated with poor and badly managed school facilities.

Statement of Problem

Every educational institution requires structures in order to operate and that there is no institution that operates in a vacuum. The structures include physical facilities. Thus physical facilities for education comprise land,

building and furniture and it includes physical facilities for teaching spaces and for ancillary rooms.

The technical universities in Ghana are saddled with infrastructure and facilities challenges; a situation which is seriously impeding the progress of the institutions in realizing and ensuring quality education (Atepor, 2013). Currently some polytechnics have been upgraded to technical universities and one of the criteria used in their upgrading was the availability and adequacy of infrastructure, equipment and training facilities (MOE, 2014). The steering committee that was mandated to work on the conversion of the polytechnics into technical universities reiterated that the polytechnics must satisfy the National Accreditation Board (NAB) standards for physical facilities development.

The minimum standard for physical facilities development at the tertiary level according to NAB can be categorized into: (i) Teaching accommodation-this is the major component (about 60% when the learning accommodation is added on) and includes general teaching and specialized teaching, (ii) Learning accommodation-this comprises libraries, resource centres and spaces used for untimetabled projects or research, (iii) Non-Teaching/Learning accommodation 15% Staff areas, administration, catering communal areas and student support areas and, (iv) 25% Circulation, lavatories, storage and services etc (NCTE, 2012)

According to Hinum (1999), the quality and duration of physical facilities are affected by how it is looked after, the ways in which servicing and repairs are carried out and the rate at which needs and requirements change. This is why physical facilities have become a key component of

higher education quality assurance. According to Ansah, Swanzy and Nudzor (2017), quality assurance of higher education institution must cover people, programme physical facilities in a balanced manner in order to enhance quality.

However, little is known about how quality assurance practices of Technical Universities in Ghana cover physical facilities. This study therefore seeks to investigate the extent to which quality assurance practices of Technical Universities in Ghana capture physical facilities as a way to achieve an enhanced quality.

Purpose of the Study

The purpose of the study is to establish how quality assurance practices of Takoradi and Cape Coast Technical Universities captured physical facilities as a driver of an enhanced quality, and make a comparative evaluation between the two technical universities.

Research Questions

1. What physical facilities are available in the Cape Coast and Takoradi Technical Universities?
2. How are the physical facilities captured under the regular practice of quality assurance?
3. What physical facilities in the Cape Coast and Takoradi Technical Universities are covered by regular and routine quality assurance?
4. How can quality assurance practices for physical facilities of Cape Coast and Takoradi Technical Universities be improved?

Significance of the Study

The findings of this research will help facility planners, higher institutions' administrators, architects, contractors and stakeholders in the Technical Universities in particular and in the country's education as a whole to see the need to provide and maintain the physical facilities at the various Technical Universities campuses in line with the established standards. This will go a long way to ensure quality at the highest level of education in Ghana.

The study again is specifically important because it would help Principals, Rectors and Vice-chancellors and others in the Technical Universities and other higher institutions to know the state of their facilities in order to maintain them in ensuring quality delivery of education.

The study will also help parents, guardians and students to know the importance of facilities in quality delivery of education so as to help in providing and maintaining these facilities towards the fulfilment and achievement of the goals and objectives of higher education.

Also the study is going to add unto the academic literature on the subject. This is because, there is a plethora of research that examines the effect of the physical conditions of teaching spaces (which includes seating, furnishings, spatial density, privacy, noise and acoustics, climate and thermal control, air quality, windowless classrooms, vandalism and play-yards, light and colour) on students' engagement, attainment, attendance and wellbeing (Keep, 2002; Higgins et al, 2005; Lackney & Jacobs, 2002; Earthman, 2004; Sundstrom, 1987; McNamara & Waugh, 1993; Weinstein, 1979). Thus this study intends to add unto the copious and voluminous literature on the subject.

Delimitation of the Study

There are about seven (7) Polytechnics which have been upgraded to Technical Universities in Ghana. However, this study focuses on both the teachers and students in the Cape Coast and Takoradi Technical Universities. These category of participants are used because they are direct beneficial and users of the physical facilities in the Technical Universities and presumably would be in a better position to make a fair assessment. The study is also limited in scope to physical facilities and quality assurance in the technical universities of Ghana.

The physical facilities under study will not capture all the physical facilities in the technical universities but will encompass the following: classrooms and lecture theatres, laboratories, library, ICT and computer rooms, demonstration and practical theatres and medical facilities. They will include again furniture, seats and desks, water and electricity, hostel for students, general environment ambience and space and offices.

Again the research will not focus on all the benchmarks of quality assurance in higher education as espoused by Owlia and Aspinwall (2006) but on only the tangibles which include: sufficient equipment/facilities; modern equipment or facilities, ease of access, visually appealing environment, support services (accommodation, sports etc).

Limitations of the Study

The study was limited by the following. First, the delimitation of the study to only Cape Coast Technical University and Takoradi Technical University made it difficult to represent all the other technical universities in the country. As a result, the findings of the study cannot be generalised for all

the technical universities in the country. Possibly, another study can be considered to look at what pertains in other technical universities regarding their present physical facilities and their impacts on quality of academic delivery.

Secondly, the perception of what constitute adequate physical infrastructure may be difficult to define. Consequently, the perception of respondents may differ widely regarding the physical facilities in the technical universities in relation to quality of academic work.

Organization of the Study

This study is organized into five chapters. Chapter one presents the background, statement of the problem, purpose of the study, research questions, and significance of the study, delimitation and limitations of the study. Chapter two contains the review of related literature. The methodology and procedures that were used to gather data for the study have been presented in chapter three. It covers the research design, population, sample and sampling procedure, data collection procedures and mode of data analysis. The chapter four concentrates on the results and discussions of findings whilst the chapter five entails the summary, conclusions and recommendations.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

The literature review seeks to demonstrate a familiarity with the body of knowledge in the area of research. It is therefore intended to show the path of earlier researches and how the present study is linked to them, thereby placing the study in the context of existing knowledge. It focuses on theories and the concept of educational physical facilities, the management and maintenance of physical facilities, the concept of quality assurance, benchmarks of quality assurance in higher educational institutions (HEIs) and physical facilities and educational achievements. It also reviews empirical literature and contains the conceptual framework of the study.

The study is guided by the works on educational physical facilities, management and maintenance of physical facilities, educational facilities and academic achievement. The concept of quality assurance, quality assurance in education, and the benchmarks of quality assurance in education would also be reviewed. Finally review of empirical literature on physical facilities and quality education will also guide the study.

Educational Physical Facilities

One of the distinctive characteristics of formal education is that it is structured and systematic. In other words, formal education takes place in well-structured institutions such as colleges, polytechnics and universities (Mensah, 2015). Thus for operationalization of a school system standardized educational facilities are required. Facilities in schools can be defined as the entire school plant which school administrators, teachers and students harness, allocate and utilize for the smooth and efficient management of any

educational institution, for the main objective of bringing about effective and purposeful teaching and learning experiences (Asiyai, 2012). According to Adeboyeje (2000) and Emetarom (2004) facilities in schools are the physical and spatial enablers of teaching and learning which will increase the production of results. School facilities serve as pillars of support for effective teaching and learning. Teaching facilities include all of the infrastructure and material resources that are used to support the delivery of quality education. Infrastructure refers to basic physical and organisational structures needed for the successful running of the institution (Bakare, 2009).

Anifowase and Lawal (2013) also assert that the school facilities consist of all types of buildings for academic and non-academic activities, areas for sports and games, landscape, farms and gardens including trees, roads and paths. Others include furniture and toilet facilities, lighting, acoustics, storage facilities, packing lot, security, and transportation, ICT, clearing materials, food services and special facilities for the physically challenged persons. They again emphasized that those educational facilities play pivotal role in the actualization of the educational goals and objectives by satisfying the physical and emotional needs of the staff and students of the school.

This assertion by Anifowas and Lawal gives a very broad concept of what constitutes educational facilities. Some of the items captured as educational facilities may have little or no impact on the delivery of education. For example, what does parking lot, trees and paths got to do with the teaching and learning process? Notwithstanding this, it is important to reiterate their point that educational facilities play a vital role in the actualization of the

educational goals and objectives. This is because every institution has its goals and objectives and therefore the physical structures of that institution must help in the realization of these set goals.

This also goes to support the view of Earthman (2004) that all organisations need some type of structure in order to function effectively and efficiently and to fulfil their established objectives and goals. And that this applies regardless of what the organisation does and the size of its staff. For Earthman (2004) then, physical facilities of education constitute the structure of the school system.

Musa and Ahmad (2012) posit that physical facilities for education comprise land, buildings and furniture. It includes facilities for teaching spaces and for ancillary rooms. They further intimated that physical facilities give educational institutions their complete shape and teaching and learning environment. A cursory examination of this assertion shows that they limit physical facilities to that which has direct impact on teaching and learning process and that anything which does not necessarily facilitate teaching and learning cannot be included. Even though this tends to limit the scope of physical facilities for education to that which is essential, it is too myopic and ignores certain important educational facilities that may not have direct impact on teaching and learning process. For example, play grounds cannot be overlooked when assessing educational physical facilities since "a sound mind lives in a healthy body". Moreover, education cannot be limited to the acquisition of knowledge and development of skills alone but the holistic and total development of the individual.

On the other hand, Asfaw (2014) maintains that school facilities consist of all types of buildings that are used for academic and non-academic purpose, equipment, classroom facilities, furniture, instructional materials, audio-visual aids, toilet, ICT, library and laboratory materials and others play a pivotal role for the smoothly run, teaching and learning process. Buckley, Schneider & Shang (as cited in Asfaw 2014) also affirm this definition by stating that the importance of school facilities cannot be overemphasized as they enable the teacher to accomplish his/her task as well as help the learner to learn and achieve effectively. This definition seems to encompass all that involves in educational physical facilities but conspicuously missing are the utilities (lighting and water) which are very important because without them some of the above-mentioned facilities such as audiovisual aids, ICT, toilet and so on cannot function.

In addition, Isa and Yusof (2015) also opine that facilities include buildings, grounds, utilities and equipment and will typically represent the majority of an entity's capital asset. They added that facilities are normally designed or selected based on the needs of operation processes of the organization. Isha and Yusoff added utilities to educational facilities thereby complimenting what Asfaw (2014) touted as educational physical facilities.

From the above discussion so far, it is clear that researchers are unanimous on educational physical facilities as those tangibles or structures of the school system. However, the issue of what constitutes physical facilities or the components of physical facilities in education is the point of departure. In a nutshell physical facilities in higher education involves provision of buildings, classrooms, hostels, staff quarters, workshops, demonstration rooms,

laboratories, ICT centres, libraries, health centres, parking lot, paths, sports facilities and utilities.

Figure 1: Important Facilities in Tertiary Institutions

Source: Bakare (as cited in Isa & Yusof, 2015)

Educational Facilities Planning

All organisations or institutions regardless of what they do or the sizes have structure in order to operate effectively and efficiently. As a matter of fact, the more complicated the task to be done, the more structure is needed. Likewise, the school system is no different from other organisation in needing some type of structure (Earthman, 2004). This suggests that in providing or constructing any educational facility a well thought- through plan must be laid. This is very paramount since schools are responsible for *People, Place (i.e. location and facilities) and Programme.*

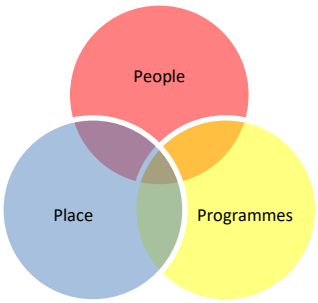

Figure 2: The 3P's of Educational Planning

Source: (21st Century School Fund, 2009)

In other words, in planning for educational facilities, the 3P's must be considered. Thus for instance, *People* as one of the tripartite ring involves, students, parents, teachers, administrators, support staff and community members (all stakeholders). The *Programmes* of the school take cognisance of the curriculum, administration and the services the school renders to its stakeholders. The *Place* comprises the location, facility, grounds, off-site locations, virtual or cyber place. These elements are organized within a governance and accountability structure which may vary, but all schools work to maximise the quality of these elements. Therefore, there is this kind of interplay- or better still they affect and are affected by one another.

Again, commenting on the educational facilities planning, Ukeje (as cited in Quansah, 2015) mentions that educational programmes influence to a large the kind of school buildings or facilities available. Thus in planning educational facilities certain educational specifications ought to be considered. These include the educational philosophy, nature of various activities to be provided, class size, aim and method of teaching and learning envisaged, the curriculum, the possibility of expansion that facility in the near foreseeable future and also using it for other purposes.

Earthman (2004) seems to subscribe to this view when he asserts that in planning for any educational facilities the following must be taken note of; the community, location, resources or constrains, the educational programme, student projections, school facilities and financial plan. For him, when these are duly considered one is in the position to provide for a very quality and excellent educational facility.

Withum (2006) also emphasizes that the articulation of education vision can be seen to some extent or a degree to which facility is a physical representation of the educational vision. This means that the vision of the school will invariably explain the kind of educational facilities that the school must have.

Holcomb (2005) agrees with this assertion when he gives a detailed process of educational facility planning which may include all of the following activities: feasibility studies, school master planning, site selection, needs assessment and project cost analysis. Spatial requirements and relationship between various programme elements are also established. He stresses further that the outcome of the facility planning process is an educational specifications document that outlines physical space requirements and adjacencies and special design criteria the school facility must meet.

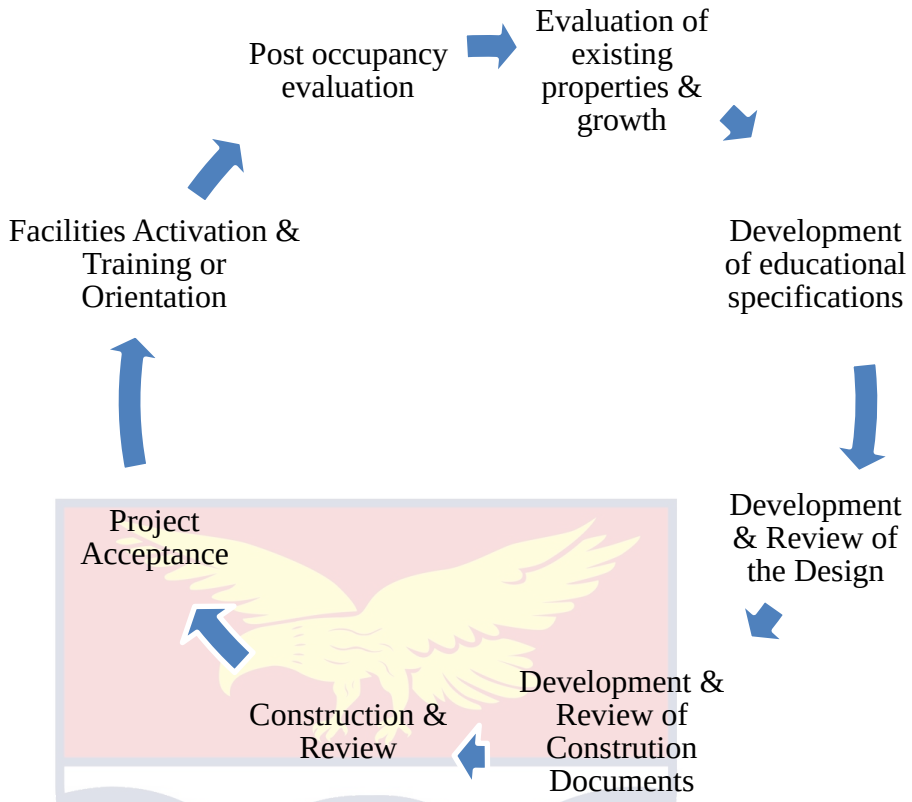

Figure 3: Educational Facility Planning Process

Facility Planning Process Circle as cited in California Department of Education (1997).

From the discourse it is clear that planning for educational facility is a complex and complicated one which involves multi-faceted aspects of the entire human existence. In view of this, it is needless to state that since the school system is a complex one, the task of planning for any educational facility is also complicated, involving a large number of highly trained individuals who possess specialized skills and knowledge Kowalski (as cited in Earthman, 2002).

Educational Specifications

Pearson (2002) defines educational specifications as a written means communication between educators and designed professionals. Through these medium educators describe the educational programmes and identify factors

which affect learning and teaching, thus providing a data base for the architect to use in creating the building plans and specification.

According to California Department of Education (1997), educational specifications are interrelated statements that communicate what the educators believe is required to support a specific educational programme. It goes further to state that educational specifications serve as the link between the educational programmes and school facility.

Pearson (2002) highlights the rationale for the formulation of educational specifications and among the many reasons that he postulates, educational specification is to provide an effective means of communication between the educational agency and the design professionals. It also offers opportunity for all the stakeholders to collect and critically analyse pertinent information in order to reach a consensus. In other words, the educational specifications process provides a forum for discussion and debate and thus when consensus is arrived by actors, it would be communicated to the design professionals.

Who Should Be Involved?

On the issue of who should be involved in the preparation of educational specifications for a proposed school, Pearson (2002) is of the view that all the stakeholders must be brought on board. He however, suggests the following: Professional staff (i.e. teachers, lecturers, principals and supervisory staff who are responsible for planning and implementing the school programmes), Parents (since the school is a social institution, the programmes and facilities must reflect the needs of the society), students (i.e. the clients of the school and those who are mostly affected by the school

facilities), Auxiliary services personnel (i.e. those who maintain and operate the various support systems of the school), Design professionals and educational consultants.

McGregor (2004) asserts that while there can often be a separation between the designer and user in school design, there is a growing movement towards involving users in the design of teaching and learning spaces, with benefits for students and teachers alike – 'making meaning around what they want from education'. Fisher and Wright (as cited in McGregor, 2004) also propose that school designs should not be imposed or bought off the shelf – they must be the result of an articulated vision, which should be facilitated by architects and designers 'to create integrated solutions' (Higgins et al, 2005, p. 3).

From the on-going discussion it suffices to say that educational specifications take into account the philosophy, vision and educational goals and these find expression in the physical facilities of the school. In other words, the physical facilities are the physical representations of the philosophy, visions and educational goals of the school. This is in agreement with Stevenson (2007) who states that one other reason for schools needing to have a clearly articulated vision when considering design is the fact that parents and students now have a greater choice about the school attended. Schools are placed in a position where they can offer specific learning opportunities to students. Thus educational specifications translate the physical requirements of the educational programme into words and enable the architect to visualize the educational activity to be conducted so that the architectural concepts and solution support the educational programme.

Physical Facilities Management and Maintenance

Maciha (1997) posits that while the planning design and construction of the school facility may take two to three years, the management and maintenance of it may last the entire life cycle of the facility. Musa and Ahmed (2012) agree with the above assertion when they maintain that the development of physical facilities in higher education is complex and cost intensive and also to ensure their quality and maintain world standards is very challenging. It is in this light that according to Hinum (1999) many countries, regions and communities are becoming extremely concerned about the issues such as the maintenance of ageing stock, vandalisation, the reuse and adaptation of buildings, up-to-date furniture and equipment, the use of premises for more than one purpose and the reduction of premise as well as related expenditure. Management of facilities in schools therefore involves keeping records of facilities, supervising the facilities, planning for the facilities, motivating students and teachers to participate in facilities maintenance and evaluating the available facilities (Asiyai, 2012).

Facilities Maintenance

Maciha (1997) maintains that historically the costs of managing school facilities have received much less attention than facility planning. He explains further that, best practice requires a comprehensive facility maintenance programme be established and monitored by the school. In other words, under the guise of "saving money", many schools practice what is known as "breakdown maintenance"- a maintenance programme in which nothing is done to a piece of equipment until it breaks down. And then after the

equipment breaks, the least expensive repair option is used to return the equipment to service. While this may sound like a cost-saving approach to maintenance, precisely the opposite is true.

Breakdown maintenance defers repairs and allows damage to accumulate, compounding an organisation's problems. On the other hand, regularly scheduled equipment maintenance not only prevents sudden and unexpected equipment failure, but also reduces the overall life-cycle cost of the building.

In approaches to school plant maintenance in secondary schools in Africa (Ogunu, 2000; Taiwo, 2000; Sani, 2007) identify types of maintenance approaches and they include:

1. The Individual School Custodian Maintenance Approach: With this type of maintenance approach, maintenance is highly centralized and the school custodian ensures that maintenance tools are not only provided but the subordinate staff on daily basis executes maintenance duties. This approach could be effective where the custodian is dedicated to his/her duties. However, it could fail woefully, in cases of negligence of duty by the custodian especially where he/she is not penalised by the school head or authorities.
2. District Wide Maintenance Approach: This is where there is fully staffed maintenance department with expert maintenance crew which handles different aspects of maintenance works. This approach is mostly used in tertiary institutions which have works department. The advantage of this approach is that of specialisation and cost effectiveness.

3. Situational Maintenance Approach: This type depends on the availability of funds that are usually generated by charging the public for their use of school facilities. The money is then used for the maintenance of facilities;
4. Committee Maintenance Approach: This centres on giving maintenance responsibility to a constituted works committee comprising of teachers, students and supporting staff. The committee is in charge of fund raising, receiving complaints of damaged facilities, organizing direct labour, collecting data and data condition of school plant. The school administrators need to delegate authority and provide necessary support to enable the committee to function effectively. The approach also helps to ensure collective responsibility.
5. Community Participatory Maintenance Approach: This is where technical experts and professional brick layers, plumbers, carpenters, welders, mechanics and other artisans and members of the community form a committee jointly with the school to provide maintenance services. This approach helps to strengthen good relationship between the school and the community. It helps to draw the advantage of various experts for quality maintenance of facilities in schools.
6. Emergency Maintenance Approach: Action regarding school plant maintenance is taken only when there is emergency situation or disaster. Maintenance is done haphazardly without a pre-determined plan. This approach has the fundamental weakness of being retro-active as it waits for serious maintenance problems to occur before

action is taken to solve the problems. It is curative rather than preventive.

7. Ad-hoc Maintenance Approach: This is where limited funds for maintenance are kept with an official of the Ministry or School Board to respond to maintenance needs of schools according to the gravity of their needs. Each school requests or demands for funds to tackle specific problems within the limits of the resources available for schools in a particular region, zone or district.
8. Preventive Maintenance Approach: This is well-planned pro-active and systematic maintenance approach that constantly checks and takes preventive measures before problems will arise.

In his work Facilities Maintenance, Hinum (1999), affirms that maintenance entails much more than just fixing broken equipment. In fact, a well-designed facility management system generally encompasses four categories of maintenance; emergency (or response) maintenance, routine maintenance, Preventive maintenance and predictive maintenance. He further explains that the latter is referred to as the "the cutting edge" of facility management in our modern world today, since it uses sophisticated computer software to forecast the failure of equipment based on age, user demand and performance measure. Again according to him the whole phenomenon of facility maintenance can be presented as:

Table 1 – *The Maintenance Spectrum*

No Maintenance	Emergency Maintenance	Routine Maintenance	Preventive Maintenance	Predictive Maintenance
Low ←		Overall Efficiency		→ High

Hinum (1999) thus concludes that the quality and duration of a building and any facility are affected by how it is looked after, the ways in which servicing and repairs are carried out and the rate which needs requirement change.

Maciha (1997) agrees with Hinum's maintenance spectrum but adds that the maintenance programme often includes several distinct programmes, including deferred preventive, repair/upkeep and emergency maintenance. However, because routine and unexpected maintenance demands are bound to arise, every education organization must proactively develop and implement a plan for dealing with these inevitabilities. Therefore, a sound facilities maintenance plan helps to ensure that school facilities are and will be cared for appropriately.

According to Musa and Ahmad (2012), maintenance, renewal and innovation are other determinant of the quality of the physical asset and facilities development effort of the institutions that will attract the students, staff and foreigners to the institution.

Paige and Whitehurst (2003) are also of the view that school facilities maintenance is concerned about more than resource management. It is about providing clean and safe environments for students. It is also about creating a physical setting that is appropriate and adequate for learning.

Adeboyeje (2000) posits that facilities tend to depreciate as soon as they are provided and put in use. Therefore, there is the need for maintenance through repair and servicing of component in order to restore their physical condition and sustain their working capacity. Maintenance enhances performance and durability. It also prevents wastages.

From the above discussion it suffices to say that all facility planners are unanimous on the need to service regularly the facilities in order to ensure their optimal usage. However, the issue of how maintenance can be carried out or the processes of maintenance is the point of departure.

Educational Facilities and Academic Performance

Studies about student academic achievement and building condition conclude that the quality of the physical environment significantly affects student achievement. 'There is sufficient research to state without equivocation that the building in which students spend a good deal of their time learning does in fact influence how well they learn' (Earthman, 2004).

Desirable designs include “having 'friendly and agreeable' entrance areas, supervised private places for students, as well as public spaces that foster a sense of community, with particular attention to the colour used” (Fisher as cited in McGregor, 2004 p.2). Today's schools must create spaces that students want to go to, similar to the way cafes attract people, rather than the space being purely functional (Bunting, 2004).

Research reports have revealed that a significant relationship existed between school environment and students’ attitude to schooling (Ikoya & Onoyase, 2008). Studies have also shown that the condition of facilities in schools have a strong effect on academic performance of students. Chan

(Asiyai, 2012) found that students who were taught in modernized buildings scored consistently higher across a range of standardized tests. Adeboyeje (2000) reported that schools with well-coordinated plant planning and maintenance practices recorded better students' performance.

Other research has acknowledged that 'student achievement lags in shabby school buildings' but go on to say that this research 'does not show that student performance rises when facilities go from decent buildings to those equipped with fancy classrooms, swimming pools, television studios and the like' (Stricherz as cited in Higgins et al., 2005). In one study the significant improvements in the learning environment were attributed to the better attitudes to teaching and learning the improvements in the physical environment created amongst all users (Berry as cited in Higgins et al., 2005).

Educational Facilities and Teachers Efficiency

Decent facilities make additional contributions to teachers' work. Siegel has found there was a direct relationship between architecture and the collaboration of teachers. 'The arrangement of space has immediate and far reaching consequences for teacher's ability to effectively and efficiently accomplish daily activities, the formation of social and professional relationships, and the sharing of information and knowledge' (Siegel,1999). Consideration of the spaces where teachers meet and collaborate is just as important as the design of the classroom (McGregor, 2004).

But it does not all have to be left to the architects. One study concluded that teachers who are more likely to modify their classrooms to produce what they believe is a more effective working environment are also more likely to collaborate with colleagues in the staffroom (Bissell, 2004).

Concept of Quality and Quality Assurance

The word quality comes from the Latin word "*quails"* which means "what kind of". With a variety of meanings and connotations quality has been referred to as a slippery concept (Pleffer & Coot, 1991). In other words, various ways of defining quality have evolved in literature and it has therefore been difficult for researchers to agree on a definition of quality in higher education. Though quality is one of the most important aspects of all higher education worldwide, its definition according to Jonathan (2000) remains "elusive". Quality is a concept long associated with the manufacturing sector. The word quality in normal parlance implies a subjective judgement (p. 46). It is a familiar word to us all; however, it has a variety of uses and meanings. Quality as a concept is quite difficult for many people to grasp and understand, and there is much confusion.

Watty (2006) noted that attempts to define quality in higher education have resulted in a "variety of labels being attached to the concept, yet similar explanations of the concept are evident. That is, quality in higher education is about efficiency, high standards, excellence, value for money, fitness for purpose and/or customer focused" (p. 293).

Uvah (2005) also sees quality as the level of value in a product or a level of achievement, a standard against which to judge others. Beckford (2002) pointed out that the Japanese were the first people to apply the concepts of quality in their production sector despite the fact that the theories emanated from American thinkers. They adopted into the ideas from the gurus and other contributors in the field such as Edward Deming, Joseph Juran,

Philip Crosby, Oakland and others to their production sector and that has been a contributing factor to their technological advancement.

Below are two of the definitions of quality identified in the literature:

> Vroeijenstijn, (as cited in Watty, 2006), concludes that:
>
> Quality is in the eye of the beholder and any definition of quality must take into account the views of various stakeholders. For example, governments may consider quality as represented by attrition rates, throughout and pass/fail percentages; the profession may view quality as the skills and attributes developed during the period of study; students may consider the concept with reference to their individual development and preparation for a position in society; and academics may define quality as knowledge transfer, good academic training and a good learning environment (p. 292).

According to the Australian Universities Quality Agency (AUQA, 2005, p. 5) quality is:

> Fitness for purpose, where the word purpose is to be interpreted broadly, to include mission, goals, objectives, specifications, etc … Fitness for purpose means both that an organization has procedures in place that are appropriate for the specified purposes, and that there is evidence to show that these procedures are in fact achieving the specified purposes

Harvey and Green (1993) observed from a study of the way the term "quality" was used in the literature that different interest groups attach different meanings to the term. The authors contend that "this is not a different

perspective on the same thing but different perspectives on different things with the same label" (p. 10). Again they identify five categories or ways of thinking about quality. As cited in Watty (2003) key aspects of each of these categories can be summarised as follows:

1. *Exception*: distinctive, embodies in excellence, passing a minimum set of standards.
2. *Perfection*: zero defects, getting things right the first time (focus on process as opposed to inputs and outputs).
3. *Fitness for purpose*: relates quality to a purpose, defined by the provider.
4. *Value for money*: a focus on efficiency and effectiveness, measuring outputs against inputs. A populist notion of quality (government).
5. *Transformation*: a qualitative change; education is about doing something to the student as opposed to something for the consumer. Includes concepts of enhancing and empowering: democratisation of the process, not just outcomes.

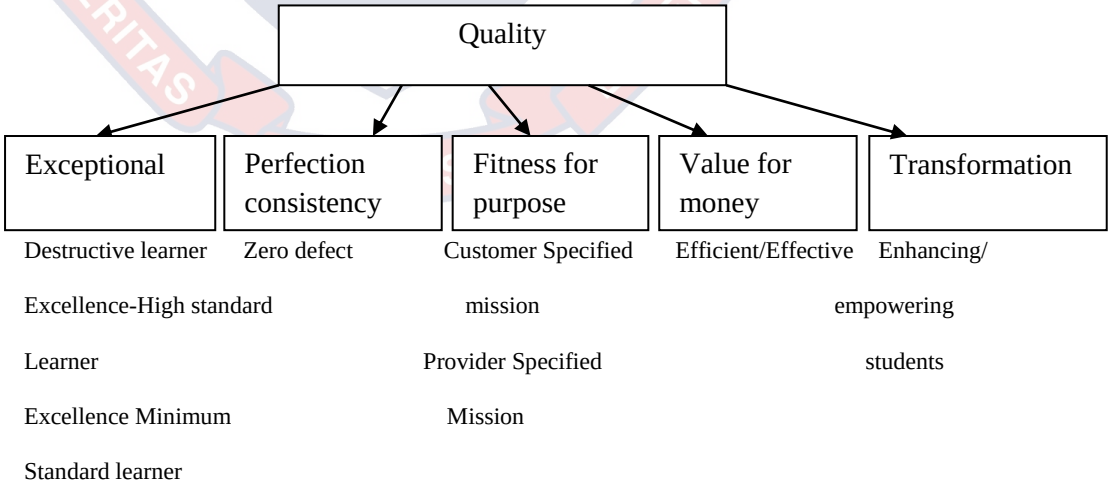

Figure 4: Definition of "Quality"

Source: Watty (2003)

Watty (2003) suggests that the dimension of quality as perfection can be removed, since higher education does not aim to produce defect-free graduates. Lomas (2002) suggests that fitness for purpose and transformation seem to be the two most appropriate definitions of quality, according to small-scale research with a sample of senior managers in higher education institutions.

Quality Assurance

Quality assurance, like quality, is a complex concept that has been defined in different ways according to purpose and context. Stensaker, Brandt and Solum (2008) noted that over the past two decades, the issue of quality assurance has been one of the major concerns in the area of higher education resulting in the establishment of external quality assurance mechanisms for the assessment of teaching and learning. Goetsch and Davis (2005) indicate that a quality management system consists of all the "organization's policies, procedures, plans, resources, processes, and delineation of responsibility and authority, all deliberately aimed at achieving product or service quality levels consistent with customer satisfaction and the organization's objectives" (p. 174).

According to the Finnish Higher Education Evaluation Council (2008), quality assurance "refers to the procedures, processes or systems used by a higher education institution to safeguard and improve the quality of its education and other activities" (p. 9). Other writers, such as Vroeijenstin (1995) also emphasises the dual notions of maintenance and enhancement, and further suggested that quality assurance requires formalised structures and

continuous attention. Lomas (2002) adds the view that attention to the maintenance and improvement of standards is important because of the need for higher education to have relevance for students, employers and financiers.

Mishra (2006) also posits that quality assurance is the process of maintaining standards reliably and consistently by applying criteria of success in a course, programme or an institution. Saiti (2012) emphasizes that quality assurance is achieved by identifying what "quality" means in context; specifying methods by which its presence can be ensured and specifying ways in which it can be measured to ensure conformance.

From the above, we can say that the word “quality” is elusive and therefore can be used in different context to mean different things, and so it would be difficult in finding a universally acceptable definition for quality; thus it is a philosophical concept. Green (1994) agrees with this assertion when he says that “there is no single definition of quality that is right to the exclusion of others” (p. 17). It also shows that “quality” has been a contested concept particularly in the field of higher education.

Quality Assurance in Higher Education

The world has seen tremendous changes in this 21st century and these changes have permeated all facets of social life. And these changes have also led to the concern about how the quality of education as well as the quality of graduates can be assured. Thus in many countries, higher education systems and institutions have undergone major review, leading to much greater emphasis on educational quality and quality assurance. As noted by Peterson (1999) the expansion of higher education worldwide has resulted in a growing focus on quality assurance and external review. Quality assurance and

accreditation have, therefore, become key issues for higher education internationally since the late 1980s (Craft, 1992, 1994; Kells, 1992; Mok, 2000).

Watty (2003), shares similar view when he postulates that "it is increasingly recognized that quality higher education is central to economic and political development and vital to competitiveness in an increasingly globalized world" (p.225). However, quality assurance in higher education according to Barnett (1992) is a high evaluation accorded to an educative process, where it has been demonstrated that through the students, educational developments has been enhanced, not only have they achieved the particular objectives set for the cause but in doing so, they have also fulfilled the general educational aims of autonomy of the ability to participate in a reasoned discourse, of critical self-evaluation and of coming to a proper awareness of the ultimate contingency of all thought and actions.

Quality assurance may be said to range from standard to excellence in an organisation's activities. Quality assurance is restricted to a planned and systematic review process of an institution or programme to determine whether or not acceptable standards of education, scholarship and infrastructure are being met, maintained and enhanced.

However, according to Belawati (2005), the essence of all these definitions is ensuring that institutions provide quality education to students and also to provide qualifications that will be recognized internationally. This implies that quality assurance is not about establishing set of rules or some criteria of sort against which to judge quality or find out the extent to which the product or service meet some agreed specifications, rather quality

assurance is about ensuring that there are systems in place to guarantee that the desired quality however defined and measured is delivered.

Table 2 – *Quality Dimensions in Higher Education*

Dimensions	Characteristics
Competence	Sufficient(academic) staff, theoretical knowledge, qualifications, practical knowledge, up to date teaching, expertise, communication
Attitudes	Understanding students' needs, willingness to help, availability of guidance and advice, giving personal attention, emotional and courtesy.
Content	Relevance of curriculum to future jobs of students, effectiveness, containing primary knowledge/skills, completeness, use of computers, communication skills and team working, Flexibility of knowledge, being cross-disciplinary.
Delivery	Effective presentation, sequential, timeliness, consistency, fairness of examinations, feedback from students, encouraging students.
Reliability	Trustworthiness, giving valid award, keeping promises, match to the goals, handling complaints, solving problems

Source: Owlia and Aspinwall (1996)

Why Quality in Higher Education is Important?

There is a transition of the world towards a knowledge economy, this demands higher skill levels in most occupations. A new range of competences such as adaptability, team work, communication skills and the motivation for continual learning have become critical. Thus, countries wishing to move towards the knowledge economy are challenged to undertake reforms to raise the quality of education and training through changes in content and pedagogy.

Recent studies have demonstrated that for developing countries, higher education can play a key "catch-up" role in accelerating the rate of growth towards a county's productivity potential (Bloom, Canning & Chan, 2006). An increased focus on quality and relevance of higher education would contribute to strengthening the link between higher education and various millennium development goals (MDGs) and more generally with the needs of the labour market. Higher Education institutions educate people in a wide range of disciplines which are key to effective implementation of MDGs. These include the core areas of health, agriculture, science and technology, engineering, social sciences and research. In addition, through research and advisory services higher education contributes to shaping national and international policies.

Siakas, Prigkou and Draganids (2005) note that the main objective of a quality assurance system in higher education is to "create a ground for visibility into the processes that support the study programme and into measurements of learning outcome, capabilities and competences" (p. 2).

Some Factors That Determine Quality in Higher Education

Quality Learner

School systems work with the children who come into them and the quality of children's lives before beginning formal education greatly influences the kind of learners they can be. Many elements go into making a quality learner, including health, early childhood experiences and home support. Healthy development in early childhood, especially during the first three years of life, plays an important role in providing the basis for a healthy life and a successful formal school experience (McCain & Mustard, 1999).

Positive early experiences and interactions are also vital to preparing a quality learner and as research demonstrate that to achieve academically, children must attend school consistently, this is to say that a child's exposure to curriculum that is, his or her 'opportunity to learn' significantly influences achievement and exposure to curriculum comes from being in school (Fuller et al., 1999). Parental and family support also has way of enhancing student quality. In view of the above, Healthy children with positive early learning experiences and supportive, involved parents are thus most likely to succeed in school.

Quality Learning Environments

Learning can occur anywhere, but the positive learning outcomes generally sought by educational systems happen in quality learning environments. Learning environments are made up of physical, psychosocial and service delivery elements. The physical elements include all the school facilities that enhance education. Physical learning environments or the places, in which formal learning occurs, range from relatively modern and well-equipped buildings to open-air gathering places. Thus desirable designs include having 'friendly and agreeable' entrance areas, supervised private places for students, as well as public spaces that foster a sense of community, with particular attention to the colour used (Fisher, 2004). Although the interaction between school infrastructure and other quality dimensions may differ from one institution to another, quality of school building, presence of adequate instructional materials and textbooks, working conditions for students and teachers, and the ability of teachers to undertake certain instructional approaches plays out to determine the quality of an institution

(Williams, 2000). A manageable class size, peaceful, safe environments, especially for girls, teachers' behaviours that affect safety, effective school discipline policies, that is, students, teachers and administrators' ability to agree upon school and classroom rules and policies which are clear and understandable, service deliveries such as health care, police or security and fire service stations and banks are all notable in measuring quality in higher education. An inclusive and non-violence environment is also essential to attaining quality within higher education institutions (Fuller, 1999).

Maintaining and improving quality in higher education is somewhat directly proportional to the quality of facilities and space (Ayeni & Adelabu, 2012; Musa, & Ahmad, 2012). For higher education institutions to improve on the quality of teaching and learning, appropriate physical facilities are required to support their activities (Ayeni & Adelabu, 2012). Ansah, Swanzy and Nudzor as cited in Ayeni & Adelabu, 2012) argue that the quality of learning, teaching, research, and community service of a higher education institution is dependent on space and facilities of the institution. It is imperative therefore that physical facility in higher education institution is given the required attention when policies on quality assurance are being discussed. In order for teaching and learning to take place, physical facilities such as transport facilities, laboratories, lecture theatres, residential facilities must be in place and of high quality to ensure quality of teaching and learning. It is therefore argued that quality in higher education cannot be improved if physical facilities are neglected. It is therefore not enough for physical facilities to be put in place, but there should be deliberate attempts to maintain and improve

on the physical facilities to enhance quality of teaching and learning in higher education institutions.

Quality Content

Quality content refers to the intended and taught curriculum of schools. According to (UNICEF, 2000), National goals for education, and outcome statements that translate those goals into measurable objectives, should provide the starting point for the development and implementation of curriculum. Student-centered, non-discriminatory, standards-based curriculum structures are a yardstick for measuring quality within the educational context. In general, curriculum should emphasize deep rather than broad coverage of important areas of knowledge, authentic and contextualized problems of study, and problem-solving that stresses skills development as well as knowledge acquisition. When the curriculum shows uniqueness of local and national content it indirectly instils in the students' good moral values expected of them in the society (Glatthorn & Jailall, 2000). Literacy and Numeracy, the importance of the ability of higher education products to read and write and calculate cannot be over emphasized where the issue of quality in education is of concern. In quality of content the issue of life skills development also cannot be ignored. It is important that the psychosocial and interpersonal skills of the individual be developed so as to help the student in his or her everyday life (UNICEF, 2000).

Quality Processes

Until recently, much discussion of educational quality centred on system inputs, such as infrastructure, pupil-teacher ratios, and on curricular content. In recent years, however, more attention has been paid to educational

processes; it has been observed that providing professional learning for teachers enhances their skills (Carro & Chau, 1996). Therefore, the highest quality teachers, are those who are most capable of helping their students learn because they possess deep mastery of both their subject matter and pedagogy (Darling-Hammond, 1997). In effect, teacher competence and school efficiency, teacher feedback mechanisms, teacher beliefs that all students can learn, teachers' working conditions, supervision and support, student access to languages used at school, using technologies to decrease rather than increase disparities and diversity of processes and facilities within the institution are some of the processes that determine quality in higher education (Brown, Brown & Sumra, 1999).

Quality Outcomes

The environment, content and processes that learners encounter in school lead to diverse results, some intended and others unintended. Assessing some of the above mentioned determinants are also a way of measuring quality in higher education. The extent of achievement in literacy and numeracy, usage of formative assessment to improve achievement outcomes, sought by parents, outcomes related to community participation, learner confidence and life-long learning, health outcomes and life skills outcomes also determine the quality of an educational institution (LeVine, 2000).

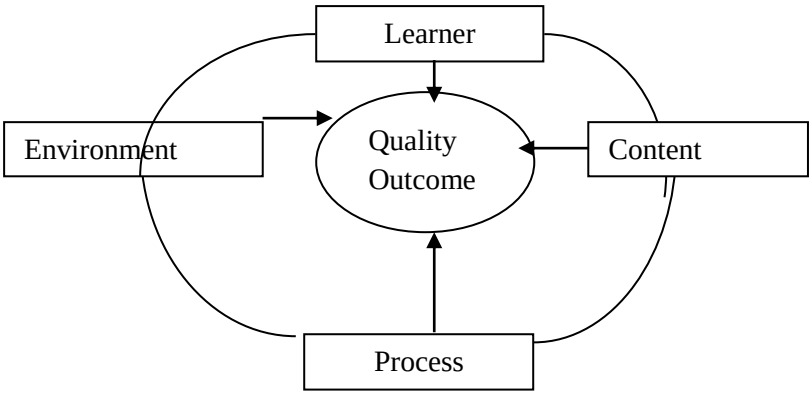

Figure 5: Some Factors that Determine Quality in Higher Education

Source: UNICEF, 2000

Classification of Quality Assurance in Higher Education

One distinction that needs to be considered is that between "internal" and "external" quality assurance. According to Brink (2003) studies on quality assurance in higher education have focused on two separate but related issues, namely internal and external evaluation. As noted by Jackson (1997), quality assurance systems may be classified as self-regulating (regulated by the institution or provider of the educational programme), externally regulated (regulated by an external agency), or a combination of the two.

Internal Quality Assurance

Internal quality assurance focuses on the provisions and processes designed by an institution to ensure the quality of the education it provides. Such systems may be a response to external pressures or legislation, but the processes are essentially designed and operated by the institution itself. Internal quality assurance aims at institutional development and assessment of internal accountability. It incorporates every institutional activity that focuses on quality assurance and development in all the fields of activity of the

institution. El-Khawas (1998) noted that internal quality assurance concentrates mainly on academic issues and lies in collecting evidence and information about mission fulfilment, efficiency of activity and ways of insuring quality within the institution. In talking about internal quality assurance, Hall (2006) describes quality assurance as a general term that "covers all aspects of an institution's provisions and activities that focus on assuring educational (or research) quality" (p. 5). Common's (2003) study revealed that self-assessment makes a major contribution to improving the quality of college provision for students and also promotes a range of management practices, especially evaluation.

External Quality Assurance (EQA)

EQA assurance refers to the systems that are designed and operated by an external agency, often mandated by legislation, to monitor the quality of the education provided by tertiary institutions. The major aim for these external requirements is to achieve accountability. EQA in higher education has witnessed major developments in the last two decades internationally (Billing, 2004; Woodhouse, 2004). Western and developed countries have practiced external monitoring for a longer time and thus tend to have considerable experience with EQA systems. With regards to developing nations, recent studies have reported varying degrees of success and experience in their attempts to implement external quality assurance practices that they have adopted from the advanced nations (Bordia, 2001; Gnanam, 2002; Lenn, 2004; Lim, 2001).

External quality assurance agencies vary in status, scope of operations and focus of attention. Although accountability is one of the main

characteristics associated with quality assurance the nature of external agencies that take responsibility for assuring the quality in higher education differ from country to country. Despite these differences, there are a number of common features. According to Green (1994) "whatever the focus of attention, the methodology appears to incorporate the same three ingredients, involving a judicious mix of subjective and objective data through self-assessment, statistical or performance indicators, and peer evaluation, normally in the shape of an institutional visit" (p. 169).

Review of Empirical Literature

Empiricism is the basic practice of science (Dudgeon, 2008). Science can be described as empirical because it relies on direct experience or observation in order to describe or give explanation to phenomena. Scientific or empirical approach is therefore inductive and relies on direct observations in a repeatable manner. With this in view it is important to review empirical studies that are related to the study.

Boakye-Agyemang and Amakie (2014) investigated the problems of facilities management in polytechnics in Ghana; a case study of Kumasi Polytechnic. The study revealed that there was some level of awareness of the importance of facilities management among top management of the Polytechnic. However, the study suggested that the level of commitment in implementing facilities management decisions was quite low. Again the study established that the standard of approaches to facilities management in the polytechnic was also below expectation. The major problems identified by the study were inadequate funds and facilities management staff, inadequate facilities users, misuse of facilities, lack of strategic direction in facilities

management and poor facilities information management system. The findings of the study also suggested that facilities management affected the output of polytechnic staff and students.

Khalid (2015) conducted a similar study concerning the views of students, teachers and Directors of Quality Enhancement cells (QECs) in relation to physical facilities and quality assurance in 28 universities (Public and Private) of Pakistan by using random and purposive sampling techniques. The data was analyzed by using descriptive, inferential statistics and thematic coding. The study revealed that students, teachers and Directors of QECs faced a lot problems and issues without physical facilities. Again the study also revealed that even though majority of students and teachers admitted that books, research journals, manuals for use of science laboratory, and equipment were available yet they maintained that Quality Assurance Practices (QPA) can be accelerated through the following steps: provision of sufficient resources, latest software for computers, laboratories and new edition of books.

Isa and Yusof (2015) also conducted a study on the state of physical facilities of Higher education in Nigeria based on the best global practices. The data was obtained through secondary sources and observation. Their review of related works showed that provision of physical facilities was below average. They further cited inadequate structures and facilities, inadequate housing, overcrowded classrooms and inadequate of reading materials as the bane of the universities, polytechnics, monotechnics and colleges of education in achieving their international goals and objectives. They reviewed the report of Nigerian University Commission in 2005 which stated among other things

that there was over-enrolment. Out of 25 Federal universities 18 representing 72% were overenrolled; while 13 out of the 19 state universities (representing 68.4%) were also overcrowded. Only 1 of the 7 private universities (14%) was reported to have overenrolled. Following their appraisal of the Nigerian institutions, they concluded that the availability, adequacy and quality of school facilities affect the morale of the students and teachers and must be provided to ensure that graduates who are churned out of these institutions can compete in the international market.

Anifowose and Lawal (2013) did a study on the state of physical facilities in Nigerian tertiary educational institutions; case study of the Federal University of Technology, Minna, Niger State. The data collected were analyzed using standard mean method and simple regression analysis. The result of the analysis revealed that availability of physical facilities in the institution had a mean value of 2.226, performance of the various facilities managers in the institution had a mean value of 2.760 and the simple regression analysis showed that cost expanded on facilities management in the institution, reflects the current state of physical structures with R^2 value of 87%. The findings showed that the physical facilities in the universities were inadequate, cost of maintenance expanded in the institution had great impact on the state of the structures and performance of various facilities managers in the institution was just above average. Based on the findings, it was recommended that the government should provide adequate funds to the universities in its annual budgetary allocation. Besides, adequate provision of facilities should be provided while students should be well-educated on how to maintain available facilities in Nigeria Universities.

Isaah, Abubakari and Wuptiga (2015) also did a study on the state of academic facilities and its influence on teachers' job stress in Tamale Polytechnics of Ghana. The accidental sampling technique was used to draw sample from the population. The sample size was 114. The data were analyzed using inferential statistics. Hypothesis was tested at a significant level of 0.01 and 0.05. The results revealed a significant relationship of variable for status of school facilities and teacher academic stress sources. Again the results of hypothesis tested showed that status of school facilities influenced teacher job stress significantly. It was concluded that inadequate or complete lack of academic facilities would not only impair academic productivity but rather exert undue stress on teachers and available facilities.

Babatope (2010) examined the problems of facilities in South West Nigerian Universities. The study population consisted of all academic staff in 10 public universities in South West Nigeria; while the sample was made up of 500 academic staff randomly selected from 10 universities. The data collected were analyzed using frequency counts and percentage scores. The findings showed that the financial support to the universities was not adequate, the universities were not provided with adequate facilities while students and staff maintenance culture contributed to high destruction of available facilities. Ansah, Swanzy and Nudzor (2017) studied the balancing the focus of quality assurance framework of higher education institutions in Africa using Ghana as a context. The findings revealed that for one of the higher education institutions under study, quality assurance policy document, a focus on facilities and locations was captured as "*the policy covers infrastructure and learning resources, social amenities and information dissemination*

structures" (Ansah, Swanzy &Nudzor, 2017) Similarly, another institution captured physical facilities in their quality assurance document as facilities and location this way: "*we shall continually monitor and regularly assess the appropriateness and adequacy of support services provided for students and staff, especially in respect of adequacy and quality of study materials, space and teaching/learning infrastructure; Social amenities, including health, catering, recreational and other services*"(p.3).

According to the findings of Ansah, Swanzy and Nudzor (2017), there is some sought of representation of physical facilities coverage in some higher education institutions in Ghana. A careful search in the websites of the two Technical Universities under study (the Cape Coast and Takoradi Technical Universities) revealed very little about facilities coverage in the institutions. For example, the website of the Takoradi Technical University, revealed some information on their quality assurance policy. However, the document was silent on how physical facilities are captured under quality assurance policy. On the other hand, a search on the website of the Cape Coast Technical University provided little or no information on the quality assurance practices.

In a study on balancing the focus of quality assurance framework of higher education institutions in Africa using Ghana as a context, Ansah, Swanzy and Nudzor (2017) studied areas under quality assurance frameworks which may not receive full attention. The study operationalized the framework under people, programmes and places. The mode of data collection was basically through interviews which were coded and placed under themes for easy analysis. The respondents were given the chance to compare their information from the higher education institutions on how much emphasis

their quality assurance policy places on people, places and programmes. The findings revealed that in one of the universities, about fifty percent of quality assurance activities were devoted to programmes of the university. Similarly, the same university also devoted about thirty percent its quality assurance activities to people involved in the university's operations while they devoted the remaining twenty percent of quality activities to physical facilities. In the second university, Ansah, Swanzy and Nudzor (2017) found that the greatest attention was given to people, followed by programme while place received the least attention as a key operational area for quality assurance.

Ansah, Swanzy and Nudzor (2017) reported that the institutions that give the greatest attention to programme as an operation area in their quality assurance practices argued that programmes are the back bone or life wire of the institution that needs much concentration because of the image it gives to the institution and without it, the University will not function. In addition, they argued that programme quality and activities related to it ensure competitiveness. Therefore, much attention should be devoted to its coverage using experts and experience. A further explanation given was that the emphasis of every tertiary education institution is the quality of its programmes without which the institution would fail to exist. This therefore suggests that it is imperative that much attention is given to that area.

In addition to the aforesaid, Ansah, Swanzy and Nudzor (2017), intimated that, place appears to receive the least attention when it comes to the 3Ps. They raised a number of arguments accounting for this finding: first they argue that physical facilities are found to be factors of quality measurement and therefore contribute to quality practices. Secondly, efforts are put in to

ensure convenient and comfortable physical facilities for the smooth running of the programmes, thus complementing quality assurance. Thirdly, teaching and learning facilities as well as residential facilities support student learning hence quality delivery cannot be effective without these physical facilities. Nonetheless, facilities form part of any quality assurance measure of every institution hence, their monitoring is a major concern though requires minimum concentration. The researchers however questioned the respondents' argument that places should be given less attention compared to the others especially on the issue of equity. I am in support of the claim that focusing much more on other areas and less physical facilities does not ensure that quality is achieved in spheres of the university life.

Conceptual Framework for the Study

From the foregoing discussion it can be imputed that physical facilities are very important in any structured institution. This is because institutions do not exist in a vacuum but operate in a well-structured system. Therefore, physical facilities must be well maintained in order to ensure the quality delivery of the institution or the system

A careful analysis of the review of literature suggests that the provision of educational facilities is informed by the vision, mission and objectives of the institution. Thus the expressed opinions and views of the various stakeholders are considered (i.e. Educational specifications) in the planning and provision of educational facility. However, this is not done haphazardly but is done to meet at least the minimum threshold or the standards in order to ensure quality. The study agrees with Khan and Igbal (as cited in Asfaw, 2014) that adequate school facilities are basic ingredients for quality education

and to achieve the intended goal of the school programmes. They again strengthen this same view by emphasizing that learning is a complex activity that requires students, teachers' motivation, adequate facilities such as standardized buildings and classrooms with their facilities, instructional materials and equipment for students' development.

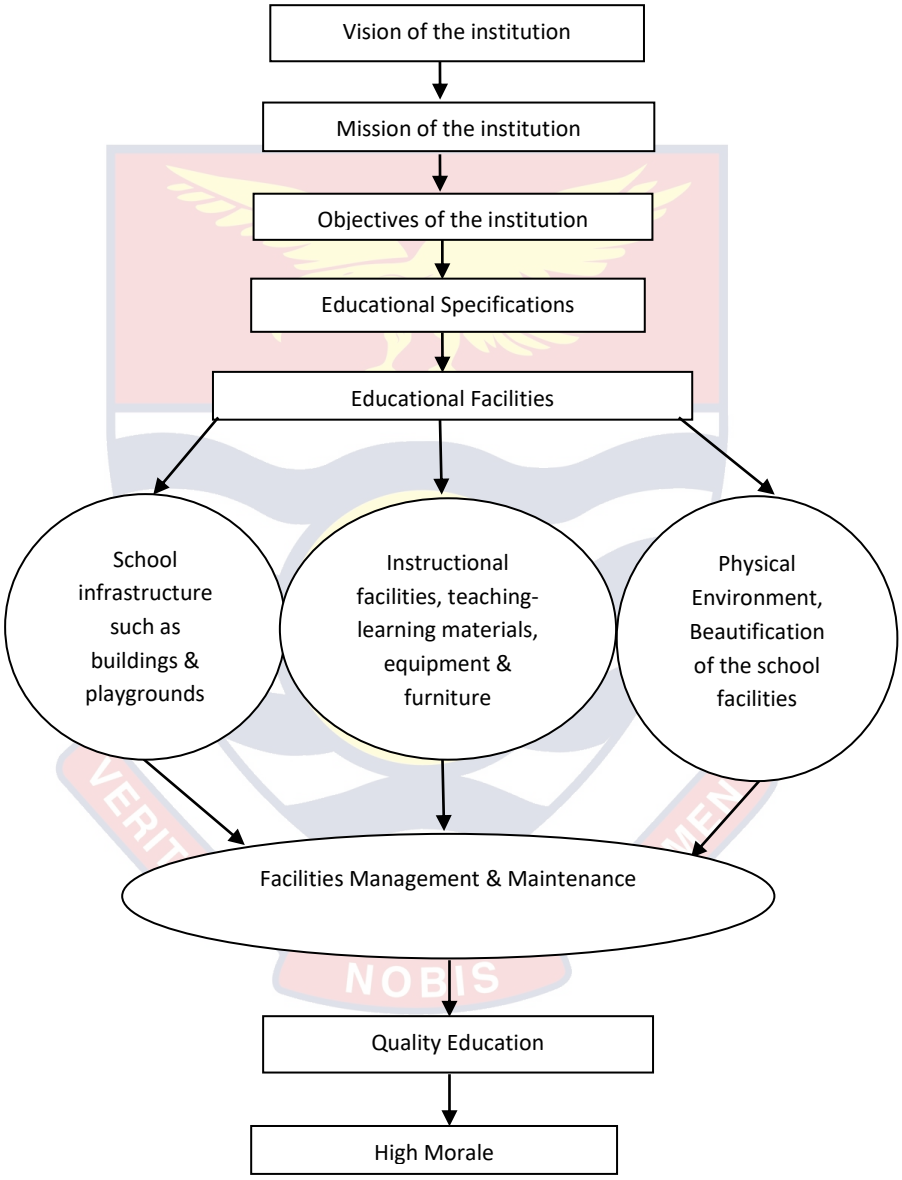

Figure 6: Conceptual Framework, Source: Based on various authors (2016)

From the above conceptual framework, we can deduce that every institution has a vision and the vision of the institution pertains to where the institution hopes to be in the future if it is able to fulfil the mission. The

mission on the other hand actually describes the overall purpose of the institution. It is from this mission of the institution that specific objectives are set. The objectives therefore outline strategies or implementation steps to attain the identified goals. Once this is done, it will help in the formulation of educational specifications. Educational specifications articulate a district's educational philosophy, approach, programmes and goals and translate them into facility design guidelines. Thus a poorly developed educational specification generally results in a mediocre facility or one that is marginally functional for education. Educational facilities of an institution are the product of facility design guidelines and they include, School infrastructure such as the buildings, playgrounds, Instructional facilities (i.e. Teaching and learning materials) and the physical environment (i.e. beautification of the compound). These facilities must be properly managed and maintained. This means that all the facilities in an educational institution should be captured under the quality assurance practices so as to boost the morale of users.

In particular, I argue strongly that physical facilities should be the backbone of quality assurance in Ghanaian higher education system due to massification of students and its related problems reported by Mohamedbhai (2008). Thus, classroom sizes, residential facilities for student and lecturers, office spaces, laboratories, sporting facilities among others, all help to ensure the total quality of an institution. Therefore, focusing more on the people (staff) and more on programmes (the academic programmes of a university) to the detriment of place (physical facilities) may not augur well for the quality assurance framework of that tertiary education institution.

CHAPTER THREE

METHDOLOGY

This chapter presents the methodology of the study. It includes the systematic procedures and techniques on how the study was designed, data was gathered and analysed. Specifically, in this chapter, the discussion was presented under the following sub-headings: research design, population, sample and sampling procedure, data collection instrument, data preparation analytical techniques.

Research Design

This study employed the multi-site quantitative case research design. This implies that the study is based on two purposively selected institutions as cases to examine the phenomenon but the data collection and analysis were exclusively quantitative. Korzilius (2012) argues that quantitative analysis is not the most common way to analyze in case study research; however, depending on the phenomena under study, the research questions formulated, the type of case study, and the sources of evidence used, the collection and analysis of quantitative data can be profound ways to describe and explain phenomena that would not have been possible had the focus been exclusively on qualitative analysis.

Bishop (2012) explains that a multi-site case study offers a means of understanding an individual, event, policy, programme, or group via multiple representations of that phenomenon. In other words, by illuminating the experiences, implications, or effects of a phenomenon in more than one setting, wider understandings about a phenomenon can emerge. Typically, the research design in a multi-site case study is the same across all sites (Bishop,

2012). Bishop further explains that the same or similar data collection, analysis, and reporting approaches are employed across the sites.

Bishop (2012) argues that the use of multi-site case study design ensures that there is a richer and deeper understanding of a phenomenon under investigation. This according to Bishop translates into providing dense descriptions with generalizable insights into a phenomenon. This in effect is expected to give a greater confidence to the research field than a single case study.

The design is appropriate because the study seeks to assess the physical facilities and quality assurance practice in Takoradi and Cape Coast Technical Universities as typical cases within the technical university environment in Ghana. Consequently, although data was collected from the two technical universities, the analysis and presentation of the results was for each university. This was to ensure that a clear picture was shown regarding the respondents perception of the physical facilities and quality assurance practices in each of the institutions under study.

Population

The population for the study comprise of two groups of respondents. The first comprise of lecturers from Takoradi and Cape Coast Technical Universities. Lectures use facilities in the school for teaching and research. They are stakeholders whose views must be sought regarding the physical facilities.

The second category of respondents is students. Students are major stakeholders and also consumers of higher education service. They are mostly direct users of physical facilities in educational institutions. The inclusion of

students in this study therefore enriches the study and also generates diverse views about the phenomenon under study.

The target population was 12,348. This was made up of a student population of 11,914 and 434 lecturers. The breakdown of the population is presented in Table 3 and 4 for Takoradi and Cape Coast Technical Universities respectively.

Table 3 – *Population of Lecturers and Students at Takoradi Technical University*

Faculty Name	Designation					
	Student Population			Lecturers Population		
	Male	Fem.	Total	Male	Fem.	Total
Faculty of Applied Arts and Technology	1092	438	1530	77	45	122
Faculty of Applied Sciences	689	649	1338	39	32	74
Faculty of Business Studies	1939	1788	3727	50	17	67
Faculty of Built and Natural Environment	345	19	364	20	2	22
Faculty of Engineering	2215	111	2326	34	3	37
Total	**6280**	**3005**	**9285**	**220**	**99**	**322**

Source: 3rd Congregation Brochure – Takoradi Technical University

It is evident from Table 3, that the Faculty of Business Studies had the highest student population with the least from the Faculty of Built and Natural Environment. Regarding the lecturers population however, the Faculty of Applied Arts and Technology had the highest lecturer population with the least being, Faculty of Built and Natural Environment.

Table 4 presents the population of lecturers and students at Cape Coast Technical University.

Table 4– *Population of Lecturers and Students at Cape Coast Technical University*

Faculty	Designation					
	Student Population			Lecturers Population		
	Male	Fem	Total	Male	Fem.	Total
School of Applied Science and Arts	317	103	420	25	11	36
School of Engineering	553	79	632	44	3	47
School of Business	897	680	1577	24	5	29
Total	**1498**	**1131**	**2629**	**93**	**19**	**112**

Source: 14th Congregation Brochure – Cape Coast Technical University

It is evident from Table 4 that the School of Business had the highest student population with the least from the least from the School of Applied Science and Arts. Regarding the lecturers population however, the School of Engineering had the highest number of lecturers with the least being the School of Business. Thus, whilst the School of Business had the highest number of students, its lecturers were the least compared to other schools. This may have implication on students-lecture ratio and possibly on the quality of teaching and learning.

Sample and Sampling Procedure

The selection of the research sites was due to the easy accessibility of the research site to the researcher. It was also due to the richness of the data that the researcher expected to collect. Cape Coast Technical University and Takoradi Technical University were part of the Polytechnics which were upgraded to a technical university status. That means that they have a certain

standard of physical facilities. They were suitable for a research of this nature to investigate the physical facilities and quality assurance.

Best and Kahn (1998) argued that the sample size of a study is subject to the nature of the population, the kind of data to be collected, the type of analysis to be carried out and the availability of funds for the study. Sarantakos (1998) also posits that a sample consists of a carefully selected unit of the population for a particular study to ensure that each subgroup is adequately represented in the study and also to ensure the attainment of satisfactory number of responses.

Due to the rationale of the study to collect two separate information at two different research sites (Cape Coast Technical University and Takoradi Technical University), two sample sizes were generated from the population. First, a total of 380 respondents were selected as respondent for students for both the Takoradi and Cape Coast Technical Universities. This was determined by the Table for Determining Sample Size by Krejcie and Morgan (1970). With a population of 11,914 (made up 9,285 for Takoardi and 2629 for Cape Coast Technical Universities), Krejcie and Morgan recommended that a minimum of 370 should be selected. However, the researcher increase the number to 380 to make up for the possibility of some questionnaires being missing.

Similarly, a sample of 210 respondents was sampled as lecturers for Cape Coast and Takoradi Technical Universities. This was determined by the Table for Determining Sample Size by Krejcie and Morgan (1970). Krejcie and Morgan recommend that for a population 434 (made up of 112 lecturers for Cape Coast and 322 for Takoradi Technical Universities), a minimum of

205 respondents should be sampled. This was increased to 210 to cater for the possibility of spoilt questionnaires.

After determining the sample size, the proportion for the students and lecturers were calculated. This was done to ensure that the sample size is proportional to the population of the students and the lecturers. In determining the sample for the students of Cape Coast Technical University for example, the total population for students (in both Cape Coast and Takoradi Technical Universities) (11,914) was divided by the total population for Cape Coast Technical University (2,629) and multiplied by the sample size for the students sample (380). The breakdown has been presented in Table 4.

Total student population for Takoradi and Cape Coast Technical Universities = 11,914
Expected sample size = 380
Takoradi Technical sample = 9,285/11914 x 380 = 296
Cape Coast Technical sample = 2,629/11,914x380 = 84
Total 380
Total lecturer population for Cape Coast Technical University = 2,866
Expected sample size = 210
Takoradi Technical Sample = 322/434 x 210 = 156
Cape Coast Technical sample = 112/434 x 210 = 54
Total 210

Two sampling techniques were employed. These are simple random sampling and stratified random sampling. First the population was grouped into two according the area of designation. Then, a sample was allocated to each group (lecturers and students) proportionally. This was done by determining the actual sample size for both the students and lecturers using the

stratified sampling technique. This was calculated proportionally by dividing the total population of each stratum and multiplying it by the sample size.

After getting the sample size for both students and lecturers from both Cape Coast Technical University and Takoradi Technical University, the simple random sampling was used to sample the respondents. Specifically, the table of random numbers was adopted to select the sample for the respective institutions. The Human Resource Section and the Students Records Units of each of the institutions assisted with the names of the lecturers and students respectively to ensure sampling of the respondents.

Research Instruments

The research employed questionnaire and observation checklist as the data collection instruments. The choice of the questionnaire was because it allows for unbiased information since data given by respondents is with limited interference on the part of the researcher (Sarantakos, 1998). The questionnaire was designed for both lecturers and students of the two technical universities. In other words, the data was collected by means of instrument that was tagged APFQ (Assessment of Physical Facilities Questionnaire) and QAPQ (Quality Assurance Practices Questionnaire) which was constructed by the researcher and in tandem with the one developed by experts such as that of Musa and Ahmad (2012). The data collection instrument was divided into sections with each section focusing on one objective. Section 'A' covered items on the demographic information of the respondents. Section 'B' covered items on physical facilities available in Technical Universities. Section 'C' covered items on how physical facilities are captured under the regular practice of quality assurance. Section 'D' covered items on physical facilities

in the Technical Universities that are covered by regular and routine quality assurance activities. Section E covered items on how quality assurance practices for physical facilities of Ghanaian Technical Universities can be improved.

The respondents were asked to rate the items on the questionnaire from 1 to 5 (for example, agree, strongly agree, no opinion, disagree and strongly disagree). The number indicated the degree to which the respondent considers how important the statements relate to the state of the physical facilities and quality assurance practice in the two technical universities. Likert scale measurement was used to represent the point of the related responses to each item, one for each point. According to Browling (1997) and Burns and Grove (1997), the Likert-type or frequency scales use fixed choice response formats and are designed to measure attitude or opinions by asking people to respond to series of statements about a topic in terms of the extent to which they agree or disagree with them.

In addition to the questionnaire, an observation checklist was used to gather information on how physical facilities meet the national norm with respect to national accreditation board's specifications. According to Sarantakos (2005), "observation is one of the oldest methods of data collection" and "it literally means a method of data collection that employs vision as its main means of data collection" (p. 208). The researcher employed a structured nonparticipant observation. The observation checklist was structured by the use of a Likert scale.

Pre-Testing of Instrument

The instrument was pilot-tested using a sample of 30 respondents comprising of 10 lecturers and 20 students who were not included in the sample that would be drawn finally. Koforidua Technical University was used for the pilot-testing. The selection of the pilot site was due to the similarities in the characteristics with the Takoradi and Cape Coast Technical Universities. According to Saunders, Lewis and Thornill (1997), pre-testing a minimum sample size of ten (10) respondents is justifiable. Therefore, twenty (20) students and ten (10) lecturers were randomly selected for the pre-testing. The study took into consideration the various categories that constitute the actual population.

The pre-testing of the data collection is essential. This is because according to Bell (2005), no matter how one is pressed for time, it is important that one gives the questionnaire a trial run as one has no way of knowing whether one's questionnaire would succeed or not. He further pointed out that the following information could be obtained if questionnaires are pre-tested: how long the respondents took to complete the questionnaire, the clarity of the structure, which questions were unclear or ambiguous, which questions the respondents felt uneasy about answering, whether certain major topics were omitted and whether the layout was clear and attractive.

After collecting the questionnaire from the respondents, the items was fed into the Statistical Product and Service Solution (SPSS) version 21.0 to calculate the overall Cronbach's Alpha reliability coefficient and that of the various sections. The rationale of the pilot was to internal consistency of the test items in the questionnaire. The overall coefficients for the instruments

were .874 for the lecturers' questionnaire and .817 for the students' questionnaire. Specifically, for the lecturer's questionnaire, the following Cronbach's Alpha reliability coefficienst were derived for the various sections under the lectures .775, .571, .828 and .848 respectively for research questions 1,2,3,4. Similarly, for the students' questionnaire, after the pilot study a reliability coefficient of .87, .847, .920 and .207 was derived for research questions 1, 2, 3, and 4 respectively. These were examined against the acceptable range of .60 or above (Cohen as cited in Indome, 2013). These results indicated that the instrument had an adequate internal consistency.

Similarly, the observation checklist was also piloted at the Koforidua Technical University. This was to ensure that the items in the checklist was properly formulated and was appropriate to aid the collection of the relevant information for the study.

Data Collection Procedure

The questionnaire was administered personally by the researcher to the respondents. To maximize response level, the researcher followed-up to emphasize the importance of the study. The administration of the questionnaire was preceded by a letter of introduction from the Director of the Institute for Educational Planning and Administration, (IEPA) to the Rectors of Cape Coast and Takoradi Technical Universities. The consent of the respondents was obtained so they voluntarily participated in the study.

The respondents were assured of confidentiality regarding the information given. As a result, the researcher explained the need for voluntary participation in the study. He explained that they had the right to withdrawal from the study and no part of the findings was to be attributed to them. After

collecting the data using the questionnaire, the researcher spent ample time observing the physical facilities and recording same using the observation checklist as a guide. The available facilities were recorded and those which were absent or dilapidated were also indicated appropriately.

Data Analysis

The data collected from the field was sorted, edited and coded to ensure accuracy and clarity before they were categorized. All items were entered into the SPSS (Statistical Package for Service Solutions) version 23.0. The software was used because it is the most used package for analysing data (Gravetter & Wallnau, 2004). In addition, the advantages of the software include (a) it is user friendly, (b) it can easily be used to analyse multi-response questions, cross section and time series analysis and cross tabulation; (i.e. relate two sets of variables) and (c) it can also be used alongside Microsoft Excel and Word. For the purpose of this study, frequencies and percentages as well as mean and standard deviation were employed to analyse the data.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter presents the analysis and discussion of the data. The study gathered data on how quality assurance practices of two technical universities in Ghana capture physical facilities as component of quality assurance. This chapter concentrated on the presentation and discussion of the main findings of the study.

The chapter focuses on the discussion of the data from the field to address the research questions that were formulated to guide the study. The five-point Likert scale questionnaire that was administered was analysed using mean of means and standard deviations. From the analysis, a mean value of 4.5 - 5.0 showed that the respondent strongly agreed to the statement, a mean value of 4.4 - 3.5 showed that the respondents agreed with the statement, a mean value of 3.4 - 3.0 showed that the respondents were not sure/uncertain with the statement, a mean value of 2.9 -2.5 showed that respondents disagreed with the statement and a mean value of 2.4 – 2.0 and below showed that the respondents strongly disagreed with the statement. A standard deviation below 1.0 showed that the responses from the respondents were homogeneous and heterogeneous when it was above 1.0.

Research Question One: What physical facilities are available in Cape Coast and Takoradi Technical Universities?

Research question one sought to find out the physical facilities that are available in the two technical universities. The results are presented in Table 5-6.

Table 5 – *Responses of Lecturers and Students in Cape Coast Technical University on Physical Facilities Available in the Technical University*

Availability of Physical Facilities	Lecturers		Students	
	Mean	**SD**	**Mean**	**SD**
Classrooms/Lecture Theatres	3.71	1.01	4.43	0.48
Water	3.57	0.92	4.37	0.98
Electricity	3.72	1.04	3.74	0.91
Furniture (seats and decks)	3.66	0.92	4.30	0.59
Shops for toiletries	3.76	0.93	3.38	0.60
Cafeteria	4.11	1.00	4.01	1.66
Easy accessibility to building by the disabled	2.63	0.96	2.55	0.49
Hostel for students	2.93	1.05	2.65	0.47
ICT multimedia	3.19	1.10	3.28	1.12
Laboratory resources	3.21	1.16	3.48	0.78
Sport facilities	3.35	0.99	3.42	0.84
Practical rooms	3.01	1.15	3.37	0.76
Mean of Means/Average Standard Deviation	**4.56**	**0.67**	**4.30**	**0.97**

Table 5 shows the responses of lecturers and students in Cape Coast Technical University on physical facilities available in the technical university. The results showed that majority of the lecturers and students responded that classrooms and lecture theatres were adequate and their responses differed much from each other concerning the statement (M=3.71; SD=1.01) and (M=4.43; SD=0.48) for lecturers and students respectively. This finding suggests that both lecturers and students acknowledged that physical facilities were put up by the University and the government for the purposes of improving academic work on the campus.

On their responses to the availability of water, the results showed that majority of the lecturers and students agreed with the statement that water was adequate and there were not differences in their responses (M=3.57; SD=0.92) and (M=4.37; SD=0.98) for lecturers and students respectively. Following the responses of the lecturers on electricity, it was also indicated by the lecturers that it was adequate with variations in their responses (M=3.72; SD=1.04). The students also agreed with the statement that there was adequate electricity supply. This is also evident with the responses of students on this (M=3.74; SD=0.91). In relation to the availability of furniture, seats and desks, it was found out from the results that such facilities were adequate with no variations in the responses of the students (M=3.66; SD=0.92).

Interestingly, the results indicated that both lecturers (M=2.63; SD=0.96) and students (M=2.55; SD=0.90) disagreed with the statement that physical facilities that were available in the Cape Coast University did provide access to the disabled and their responses were homogeneous. The findings suggest that although there may be physical facilities in the Cape Coast Technical University easy path was not created for persons with physical disabilities to access such facilities.

Furthermore, in an attempt to discover the availability of the physical facilities in the Cape Coast Technical University, the responses of the lecturers (M=2.93; SD=1.05) and students (M=2.65; SD=0.47) proved to the fact that hostels for students were not available and their responses differed much from each other. The findings may be as a result of the difficulty students find in getting hostels and accommodation on campus as they embark on their academic activities. Possibly, the little available hostels on campus may be

exorbitant in terms of prices which may crowd out more students from accessing the hostels.

The overall mean and standard deviation values of the responses of lecturers in Cape Coast Technical University on physical facilities available were M=4.09; SD=0.67. This implies that majority of the lecturers in Cape Coast Technical University indicated that there were physical facilities for effective teaching and learning and their responses clustered around the same mean.

The responses of lecturers and students in Takoradi Technical University on physical facilities available in the university was presented in Table 6.

Table 6 – *Responses of Lecturers and students in Takoradi Technical University on Physical Facilities Available in the Technical University*

Availability of Physical Facilities	**Lecturers**		**Students**	
	Mean	SD	Mean	SD
Classrooms/Lecture Theatres	3.82	1.06	3.69	1.01
Water	3.77	0.94	3.54	0.91
Electricity	3.99	0.96	3.72	1.09
Furniture (seats and decks)	3.51	0.89	3.63	1.01
Shops for toiletries	3.66	0.80	3.06	0.94
Cafeteria	4.32	1.00	3.08	1.00
Easy accessibility to building by the disabled	2.45	0.90	2.63	1.00
Hostel for students	2.89	0.92	2.93	1.05
ICT multimedia	3.15	1.08	3.19	1.08
Laboratory resources	3.24	0.93	3.21	1.16
Sport facilities	3.32	0.86	2.75	0.95
Practical rooms	3.07	0.74	3.01	1.12
Mean of Means/Average Standard Deviation	**4.12**	**1.16**	**3.20**	**0.69**

Table 6 shows the responses of lecturers in Takoradi Technical University on physical facilities available in that university. The results showed that majority of the lecturers (M=3.82; SD=1.06) and students ((M=3.69; SD=1.01) responded that classrooms and lecture theatres were adequately available and their responses differed much from each other concerning the statement. On their responses to the availability of water, the results showed that majority of the lecturers (M=3.77; SD=0.94) and students (M=3.54; SD=0.98) agreed that water was adequate and there were no differences in their responses.

Interestingly, the results also revealed that respondents disagreed with the statement that physical facilities that were available in the Technical University and did provide access to the disabled and their responses were homogeneous with a mean and standard deviation of M=2.45; SD=0.90 and M=2.63; SD=1.00 for lectures and students respectively. With regard to this, it was not surprising when the results revealed that respondents – lecturers (M=2.45; SD=0.90) and students (M=2.93; SD=1.05) disagreed with the statement that there is easy accessibility to building by the disabled. The overall mean and standard deviation values of the responses of lecturers in the university on physical facilities available were rated M=4.12; SD=1.16. This implies that majority of the lecturers in Takoradi Technical University indicated that physical facilities for effective teaching and learning were adequate and their responses did not cluster around the same mean.

From the views of the lecturers and students on the physical facilities that were available in the two technical universities, the findings suggest that the respondents perceived shops for toiletries, cafeteria, computers and ICT

multimedia, laboratories and Libraries and practical rooms and workshops inadequate to meet the growing number of the students' population in the two technical universities. These notwithstanding, it was revealed that most of the physical facilities were not accessible to the disabled, hostels for students and sports facilities were not available.

The responses provided by the lecturers and students on the availability of physical facilities in the technical universities resonate with that of researchers who have made comprehensive study on the subject under discussion. Notable among them is Anifowase and Lawal (2013) who studied the state of physical facilities in Nigerian tertiary institutions in comparison with cost of facilities management in the institutions. Their study revealed that that, the physical facilities in the universities were inadequate, cost of maintenance expended in the institution had great impact on the state of the structures and performance of various facilities the institution was just above average. The study by Anifowase and Lawal further revealed that that the school facilities consisted of all types of buildings for academic and non-academic activities, areas for sports and games, landscape, farms and gardens including trees, roads and paths. Others include furniture and toilet facilities, lighting, acoustics, storage facilities, packing lot, security, and transportation, ICT, clearing materials, food services and special facilities for the physically challenged persons. Musa and Ahmad (2012) posited that physical facilities for education comprise land, buildings and furniture. They include facilities for teaching spaces and for ancillary rooms. On the same score, Asfaw (2014) maintains that school facilities consist of all types of buildings that are used for academic and non-academic purpose, equipment, classroom facilities,

furniture, instructional materials, audio-visual aids, toilet, ICT, library and laboratory materials and others play a pivotal role for the smoothly run, teaching and learning process. Agbevanu, Dare and Bosu (2016) also argue that school facilities include school buildings, libraries, furniture, laboratories etc. They were quick to add that availability, relevance and adequacy of these resources contribute to educational improvements. The finding in this study is consistent with most studies in the literature.

In comparing the two technical universities it was deduced from the responses that students and lecturers from both universities agreed that although there may be physical facilities, available easy path was not created for persons with physical disabilities to access such facilities. However, on the availability of hostel facilities Cape Coast technical university does not have them. Takoradi technical university does have them, even though not adequate for the students. This could partially explain why the Takoradi Technical University was part of the first batch of the polytechnics to be given a technical university status.

Research Question Two: How are the physical facilities captured under the regular practice of quality assurance?

Research question two sought to determine how the physical facilities were captured under regular practice of quality assurance. The results are presented in Table 7-10.

Table 7 – *Responses of Lecturers of Cape Coast Technical University on How the Physical Facilities were captured under the Regular Practice of Quality Assurance*

Statement	Mean	SD
Regular renovation of building facilities	4.14	1.01
Regular repairs of furniture	4.26	0.93
Periodic replacement of loose doors	4.33	1.34
Rehabilitation of broken tiles	3.44	1.49
Constant supply of utilities	3.54	1.41
Provision of spacious demonstration room	4.38	1.21
Provision of excellent sports centres	4.32	1.14
Provision of effective sanitation system	3.63	1.01
The hostels are regularly maintained	3.86	1.05
Provision of reliable public address system in lecture theatres	3.89	1.06
Provision of effective municipal services	3.72	1.12
Mean of Means/Average Standard Deviation	**4.21**	**1.28**

Results from Table 8 display responses of lecturers of Cape Coast Technical University on how the physical facilities were captured under the regular practice of quality assurance. The results show that majority of the lecturers agreed that regular renovation of building facilities is one way physical facilities were captured under regular quality assurance and their responses were heterogeneous (M= 1.01; SD=1.06). On their responses to repair of furniture as one of the ways of physical facilities captured under regular practice of quality assurance, the results portrayed that majority of the lecturers agreed to the statement and there existed no differences in their responses (M=4.26; SD=0.93).

Following their responses on the constant supply of utilities, the results revealed that a greater percentage of the lecturers strongly disagreed to the statement that constant supply of utilities is captured under regular routine quality assurance and there were differences in their responses (M=3.54;

SD=1.41). In relation to provision of spacious demonstration and workshop rooms, the results suggest that majority of the lecturers agreed that, that was captured under regular quality assurance practices and there was no differences in their responses (M=4.38; SD=1.21).

It is also evident that majority of the respondents agreed that provision of municipal services was captured under regular routine quality assurance (M=3.72; SD=1.12). The overall mean and standard deviation values for responses of lecturers of Cape Coast Technical University on how the physical facilities were captured under the regular practice of quality assurance rated (M=4.21; SD=1.28). This implies that majority of the lecturers of Cape Coast Technical University agreed that physical facilities were captured under the regular practice of quality assurance. The responses of the lecturers of Takoradi Technical University on how the physical facilities were captured under the regular practice of quality assurance are presented in Table 8.

Table 8 – *Responses of Lecturers of Takoradi Technical University on How the Physical Facilities were captured under the Regular Practice of Quality Assurance*

Statement	Mean	SD
Regular renovation of building facilities	4.42	1.29
Regular repairs of furniture	4.05	0.89
Periodic replacement of loose doors	4.46	1.13
Rehabilitation of broken tiles	4.38	1.10
Constant supply of utilities	4.01	1.15
Provision of spacious demonstration room	4.62	0.95
Provision of excellent sports centres	3.77	1.23
Provision of effective sanitation system	4.72	1.24
The hostels are regularly maintained	3.54	1.05
Provision of reliable public address system in lecture theatres	3.89	1.23
Provision of effective municipal services	4.09	1.26
Mean of Means/Average Standard Deviation	**4.49**	**1.25**

Table 8 presents the results of the responses of lecturers of Takoradi Technical University on how the physical facilities were captured under the regular practice of quality assurance. The results show that majority of the lecturers agreed with the statement that regular maintenance of building was captured under regular practice of quality assurance and their responses were heterogeneous. This is evident from the computed means and standard deviation of 4.42 and 1.292 respectively. On their responses to regular repairs of furniture, the results portrayed that majority of the lecturers attested to the fact that they were captured under regular quality assurance practices and there existed no differences in their responses (M= 4.05; SD= 0.89).

A closer look at the results indicate that most of the lecturers strongly agreed with the statement that, provision of excellent sports centre was captured under routine quality assurance practices with differences in their responses (M= 3.77; SD= 1.23). Another indicator to determine how the physical facilities in the two technical universities were captured under the regular practice of quality assurance was the provision of effective sanitation system. The results portrayed that majority of the lecturers strongly agreed and their responses were heterogeneous (M= 4.72; SD= 1.24).

The responses of the lecturers on the provision of reliable public address system, the results painted a picture that the public address system in the lecture theatres are functional and their responses were far apart from the mean (M= 3.89; SD= 1.23). A critical analysis of the results brings to light that a greater percentage of the lecturers agreed to the statement that the provision of effective public address system was captured under regular routine maintenance of quality assurance(M=4.09; SD=1.26). The overall

mean and standard deviation values for responses of lecturers of Takoradi Technical University on how the physical facilities were captured under the regular practice of quality assurance rated (M=4.49; SD=1.25). This gives the implication that majority of the lecturers of Takoradi Technical University agreed on statements that solicited their responses on how the physical facilities were captured under the regular practice of quality assurance.

From the above it was evidentially clear that, the greater percentage of the lecturers from the two technical universities agreed that facilities were captured under regular routine quality assurance.

The responses of the students are presented in Table 9.

Table 9 – *Responses of Students of Cape Coast Technical University on How the Physical Facilities were captured under the Regular Practice of Quality Assurance*

State of Physical Facilities at the Technical University	Mean	SD
Regular renovation of building facilities	4.31	1.14
Regular repairs of furniture	3.69	0.89
Periodic replacement of loose doors	3.71	1.03
Rehabilitation of broken tiles	3.66	1.24
Constant supply of utilities	3.41	1.27
Provision of spacious demonstration room	3.88	1.24
Provision of excellent sports centres	3.57	1.28
Provision of effective sanitation system	4.86	1.30
The hostels are regularly maintained	2.04	0.58
Provision of reliable public address system in lecture theatres	3.64	1.26
Provision of effective municipal services	3.82	0.78
Mean of Means/Average Standard Deviation	**4.04**	**1.26**

Table 9 displays responses of students of Cape Coast Technical University on whether regular renovation of building facilities was captured

under the regular practice of quality assurance. The results show that majority of the students agreed with the statement that some of the buildings were dilapidated and needed renovation and their responses were heterogeneous (M=4.31; SD=1.14).

Concerning their responses on broken furniture, the results revealed that majority of the students agreed with the statement that regular repair of furniture was captured under regular quality assurance and there was no differences in their responses (M=3.69; SD=0.89).

The participants also agreed with the statement that constant supply of utilities was captured under regular practice of quality assurance. This is evident from the computed means and standard deviation and they were some differences in their responses (M=3.41; SD=1.27). On the participants' responses, on the provision of excellent sports centres as one means through which physical facilities are captured under regular quality assurance practices, the results indicated that the respondents agreed with the statement that it was captured under routine quality assurance practices. Their responses differed from each other (M=3.57; SD=1.28).

A closer look at the results indicate that most of the students disagreed with the statement that that the hostels were regularly maintained and there were differences in their responses (M=2.04; SD=0.58). Another indicator to determine how the physical facilities in the two technical universities were captured under the regular practice of quality assurance was the provision of reliable public address system in the lecture theatres. On the basis of that, the results portrayed that majority of the students agreed and their responses were heterogeneous (M=3.64; SD=1.26).

It was also revealed that the respondents agreed with the statement that, the provision of municipal services was captured under regular quality assurance practices no differences in the responses (M=3.82; SD=0.78). The overall mean and standard deviation values for responses of students of Cape Coast Technical University on how the physical were facilities captured under the regular practice of quality assurance rated (M=4.04; SD=1.26). This implies that majority of the students in the two technical universities agreed on the items seeking their responses on how the physical facilities captured under the regular practice of quality assurance and their responses varied from each other concerning the statements.

Responses of students of Takoradi Technical University on how the physical facilities were captured under the regular practice of quality assurance are presented in Table 10.

Table 10 – *Responses of Students of Takoradi Technical University on How the Physical Facilities were captured under the Regular Practice of Quality Assurance*

Statement	Mean	SD
Regular renovation of building facilities	4.08	1.06
Regular repairs of furniture	4.33	0.90
Periodic replacement of loose doors	4.38	0.81
Rehabilitation of broken tiles	3.46	1.39
Constant supply of utilities	3.12	1.41
Provision of spacious demonstration room	3.40	1.18
Provision of excellent sports centres	3.30	1.34
Provision of effective sanitation system	3.64	1.05
The hostels are regularly maintained	3.71	1.15
Provision of reliable public address system in lecture theatres	3.85	1.08
Provision of effective municipal services	3.58	0.97
Mean of Means/Average Standard Deviation	**4.09**	**1.23**

Data from Table 10 display the responses of students of Takoradi Technical University on how the physical facilities were captured under the

regular practice of quality assurance. It is evident from Table 10 that majority of the students agreed with the statement that regular renovation of building facilities was one way in which physical facilities are captured under regular practice of quality assurance. This is evident from the computed means and standard deviation (M=4.08; SD 1.06). This finding suggests that the respondents considered renovation of physical facilities such as lecture theatres, halls of residence among others as part of policy directives to improve the physical facilities of the institution. Possibly, this may have also been captured in the institution's quality assurance policy to guide them.

On the contrary, the responses of the students showed that they were uncertain on the statement that there is constant supply of utilities and water. There were variations in their responses (M= 3.12; SD= 1.41). This suggests availability of utilities might be a challenge and the respondents possibly were uncertain whether a policy directive had been developed to deal with the challenge.

A greater percentage of the students were uncertain with regard to the statement that provision of spacious demonstration room was captured under the regular practice of quality assurance. This is evident from the computed mean and standard deviation (M= 3.40; SD= 1.18). This portrays that the spaces in the demonstration rooms were not large enough to contain the number of students who were to be taught in such rooms. The implication here is that maybe, some of the students would have to stand outside during lectures. However, an uncertain result suggests that the students are not sure if quality assurance measures had been put in place to ensure that the absence of this facility did not affect the quality of teaching and learning in the school.

Following their responses on whether or not provision of excellent sports centres in the two technical universities was captured under the regular practice of quality assurance, the results revealed that a greater percentage of the students were uncertain with the statement that sporting provision of excellent sports centres is captured under regular practice of quality assurance. This is evident from the computed means and standard deviation (M=3.30; SD=1.34) respectively.

Another indicator to determine how the physical facilities in the Technical Universities are captured under the regular practice of quality assurance was the regular maintenance of hostels. On the basis of that, the results portrayed that majority of the students agreed and their responses were heterogeneous (M=3.71; SD=1.15). Furthermore, the students highlighted that provision of reliable public address system in lecture theatres was captured under regular practice of quality assurance with much differences in their responses (M=3.85; SD=1.08).

The direction of the results resonates with the position of Musa and Ahmed (2012) when they maintained that the development of physical facilities in higher education is complex and cost intensive and to ensure their quality and maintain world standards is very challenging. Adeboyeje (2000) posits that facilities tend to depreciate as soon as they are provided and put in use. Ansah, Swanzy and Nudzor (2017) studied the balancing the focus of quality assurance framework of higher education institutions in Africa using Ghana as a context. The findings revealed that for one of the higher education institutions under study, quality assurance policy document, a focus on facilities and locations is captured as "*the policy covers infrastructure and*

learning resources, social amenities and information dissemination structures P.35" (Ansah, Swanzy & Nudzor, 2017). Similarly, another institution captured physical facilities in their quality assurance document as facilities and location this way: "*we shall continually monitor and regularly assess the appropriateness and adequacy of support services provided for students and staff, especially in respect of adequacy and quality of Study materials, space and teaching/learning infrastructure; Social amenities, including health, catering, recreational and other services*". (Ansah, Swanzy & Nudzor, 2017).

According to the findings in Ansah, Swanzy and Nudzor (2017), there is some sought of representation of physical facilities coverage in some higher education institutions in Ghana. A careful search in the websites of the two Technical Universities under study (the Cape Coast and Takoradi Technical Universities) revealed very little about facilities coverage in the institutions. For example, the website of the Takoradi Technical University, revealed some information on their quality assurance policy, however, the document was silent on the how physical facilities are captured under quality assurance policy. On the other hand, a search on the website of the Cape Coast Technical University provided little or no information on the quality assurance practices.

In a study on balancing the focus of quality assurance framework of higher education institutions in Africa using Ghana as a context, Ansah, Swanzy and Nudzor (2017) studied areas under quality assurance frameworks which may not receive full attention. The study operationalized the framework under people, programmes and places. The respondents were given the chance to compare their information from the higher education institutions on how much emphasis their quality assurance policy places on people, places and

programmes. The findings revealed that, the institutions under study, quality assurance activities were devoted to programmes and people (staff) of the university with less attention to place (physical facilities).

Ansah, Swanzy and Nudzor (2017) reported that the institutions that give the greatest attention to programme as an operation area in their quality assurance practices argued that programmes are the back bone or life wire of the institution that needs much concentration because of the image it gives to the institution and without it, the University will not function. In addition, they argued that programme quality and activities related to it ensure competitiveness. Therefore, much attention should be devoted to its coverage using experts and experience. A further explanation given was that the emphasis of every tertiary education institution should be on the quality of its programmes without which the institution would fail to exist. This therefore suggests that it is imperative for much attention to be given to that area. According to the researchers, physical facilities appear to receive the least attention. They raised a number of arguments accounting for this finding: first they argued that physical facilities are found to be factors of quality measurement and therefore contribute to quality practices. Secondly, efforts are put in place to ensure convenient and comfortable physical facilities for the smooth running of the programmes, thus complementing quality assurance. Thirdly, teaching and learning facilities as well as residential facilities support student learning hence quality delivery cannot be effective without these physical facilities. Nonetheless, facilities form part of any quality assurance measure of every institution hence, their monitoring is a major concern.

Research Question Three: What physical facilities in the two technical universities were covered by regular and routine quality assurance?

This research sought to find out the physical facilities in the two technical universities that were covered by regular and routine quality assurance. The results are presented in Table 11-12.

Table 11 – *Responses of Lecturers and Students in Cape Coast Technical University on Facilities covered by Regular and Routine Quality Assurance*

Statement	Lecturers		Students	
Physical Facilities	Mean	SD	Mean	SD
Classrooms/Lecture Theatres	3.63	1.15	4.38	1.21
Water	3.60	0.99	3.55	1.14
Electricity	4.08	1.02	3.61	1.48
Furniture, seats and decks	3.74	1.17	3.98	1.94
Shops for toiletries	3.52	1.06	4.09	0.92
Cafeteria	3.49	0.96	3.86	1.17
Access to disabled	2.55	0.87	2.04	1.60
Hostel for students	2.44	0.92	2.93	1.05
Computers and ICT multimedia	3.97	1.18	4.00	1.97
Laboratory and library	3.66	1.17	3.91	1.16
Sport facilities	3.95	1.18	3.81	1.27
Practical rooms and workshops	3.56	0.97	3.79	1.49
Mean of Means/Average Standard Deviation	**3.52**	**0.85**	**3.66**	**1.36**

Table 11 shows the responses of lecturers and students in Cape Coast Technical University on facilities that were covered by regular and routine quality assurance. It can be portrayed from the results that most of the lecturers and students in Cape Coast Technical University agreed to the statements that solicited their responses on the facilities that covered by regular and routine quality assurance and their responses were homogeneous

for lecturers and heterogeneous for students (M=3.52; SD=0.85) and (M=3.66; SD=1.36). This is evident as majority of the lecturers and students agreed that classrooms/lecture theatres were covered by regular and routine quality assurance although there were differences in the responses (M= 3.63; SD=1.15) and (M=4.38; SD=1.2) for lecturers and students respectively. On their responses, relating to water, the results showed that majority of the lecturers and students specified that water was covered by regular and routine quality assurance (M= 3.60; SD= 0.99) and (M=3.5; SD=1.14) for lecturers and students respectively. There were no differences in the responses of lecturers but there were differences in the responses of students as evident in the standard deviations for both students and lecturers. Following the responses of the lecturers and students on electricity, it was also indicated that it was covered by regular and routine quality assurance. However, there were variations in their responses (M= 4.08; SD= 1.02) for lectures and (M=3.61; SD=1.48) for students.

Nonetheless, the lecturers and students of Cape Coast Technical University disagreed with the statement that the accessibility of physical facilities to the disabled were covered by regular and routine quality assurance (M= 2.55; SD= 0.87) and (M=2.04; SD1.60) for lecturers and students respectively and the responses were homogeneous for lecturers and heterogeneous for students.

Responses of the lecturers and students in Takoradi Technical University on whether facilities in the University were covered by regular and routine quality assurance are displayed in Table 13.

Table 12 – *Responses of Lecturers and students in Takoradi Technical University on Facilities covered by Regular and Routine Quality Assurance*

Statement	Lecturers		Students	
Physical Facilities	Mean	SD	Mean	SD
Classrooms/Lecture Theatres	4.62	1.13	3.47	1.12
Water	4.64	1.19	3.41	1.04
Electricity	4.51	1.06	3.46	1.11
Furniture, seats and decks	3.79	1.10	3.37	1.06
Shops for toiletries	3.28	0.93	2.88	1.24
Cafeteria	3.64	1.08	3.28	1.28
Access to disabled	2.35	1.16	2.93	1.26
Hostel for students	2.80	1.02	2.51	1.08
Computers and ICT multimedia	3.93	1.04	3.43	1.16
Laboratory and library	3.85	0.93	2.90	1.24
Sport facilities	3.88	1.04	3.38	1.23
Practical rooms and workshops	3.82	1.09	3.55	1.17
Mean of Means/Average Standard Deviation	**3.76**	**0.90**	**3.29**	**0.86**

Table 12 shows the responses of lecturers and students in Takoradi Technical University on facilities in Ghanaian Technical Universities that are covered by regular and routine quality assurance. It can be portrayed from the results that most of the lecturers in Takoradi Technical University agreed to the statements that solicited their responses on the facilities that were covered by regular and routine quality assurance and the responses homogeneous (M= 3.76; SD=0.90) for lecturers and (M=3.29; SD=0.86) for students. This is evident as majority of the lecturers and students agreed that classrooms/lecture theatres were covered by regular and routine quality assurance though there were differences in the responses (M= 4.62; SD= 1.13) and (M=3.47; SD=1.12) respectively for lecturers and students. On their responses with

regard to water, the results show that majority of the lecturers specified that water was covered by regular and routine quality assurance (M= 4.64; SD= 1.19) and (M=3.41; SD=1.04) respectively for lectures and students. However, there were differences in their responses. On electricity, it was also found that both the lecturers and students agreed with the statement that electricity was covered by regular and routine quality assurance though there were variations in the responses (M= 4.51; SD= 1.06) for lecturers and (M=3.46; 1.11) for students.

In relation to furniture, seats and desks, it was found out the respondents agreed with the statement that such facilities were covered by regular and routine quality assurance, but with variations in the responses of the lecturers (M= 3.79; SD= 1.10) and students (M=3.37; SD=1.06).

Interestingly, the lecturers and students of Takoradi Technical University indicated that the accessibility of physical facilities in the university to the disabled were not covered by regular and routine quality assurance and their responses were heterogeneous (M= 2.35; SD= 1.16) for lecturers and (M=2.93; SD=1.26) for students. In the same direction, the lecturers and students agreed with the statement that hostel for students were not covered by regular and routine quality assurance and the responses were heterogeneous (M= 2.80; SD= 1.02) and (M=2.51; SD=1.08) for lecturers and students respectively.

Boakye-Agyemang and Amakie (2014) investigated the problems of facilities management in polytechnics in Ghana; a case study of Kumasi Polytechnics. The study revealed that although there was some level of awareness of the importance of facilities management among top management

of Polytechnics, the level of commitment in implementing facilities management decisions was quite low. Again the study established that the standard of approaches to facilities management in the polytechnics was also below expectation. The study further revealed that this might have been the result of inadequate funds and facilities management staff, inadequate facilities users, misuse of facilities, lack of strategic direction in facilities management and poor facilities information management system.

Khalid (2015) also conducted a study regarding the views of students, teachers and Directors of Quality Enhancement cells (QECs) in relation to physical facilities and quality assurance in 28 universities (Public and Private) in Pakistan. The study revealed that students, teachers and Directors of QECs faced a lot problems and issues without physical facilities. This suggests that the facilities were not covered by regular and routing quality assurance. Again the study also revealed that even though majority of students and teachers admitted that books, research journals, and equipment were available, they maintained that Quality Assurance Practices (QPA) could be accelerated through the following steps: provision of sufficient resources, latest software for computers, laboratories and new edition of books.

Research Question Four: How quality assurance practices for physical facilities of the two technical universities could be improved?

Research question four sought to find out how quality assurance practices for physical facilities of the two technical universities could be improved. The results are presented in Table 13-16.

Table 13 – *Responses of Lecturers in Cape Coast Technical University on Improving Quality Assurance Practices for Physical Facilities*

Improving Quality Assurance Practices for Physical Facilities	Mean	SD
Renovation on some buildings and facilities	3.48	1.04
regularly monitoring of facilities	3.98	1.15
Prompt replacement of broken facilities	3.44	1.10
Regular supervision of the physical facilities	3.57	1.07
Establishment of maintenance department for physical facilities	4.48	1.35
Promulgation of policy for the maintenance of physical facilities	3.55	1.15
Mean of Means/Average Standard Deviation	**3.73**	**1.81**

Table 13 shows the results on responses of lecturers in Cape Coast Technical University on improving quality assurance practices for physical facilities the university. It is evident from the results that the respondents agreed that measures have to be put in place to improve quality assurance practices for physical facilities (M=3.73; SD=1.81). Secondly, most of the lecturers agreed that the Technical Universities should embark on renovation on some buildings and facilities and their responses were not clustered around the same mean (M=3.48; SD=1.04). Also, it was also discovered that most of the lecturers agreed with the statement that facilities at the technical university

should be regularly monitored. However, there were variations in the responses concerning the statement (M=3.98; SD= 1.15).

In the same direction, the results indicate that most of the lecturers agreed that replacement of broken facilities was done promptly but their responses differed concerning the statement (M= 3.44; SD= 1.10). Regarding their responses on regular supervision and inspection of the physical facilities at the technical University, it was revealed that majority of the lecturers agreed and their responses were heterogeneous (M= 3.57; SD= 1.07). Similarly, the lecturers also agreed that the technical university should establish maintenance department/unit in addressing physical facilities issues, but there existed differences in the responses (M= 4.48; SD= 1.35).

In addition, it was found out that the lecturers agreed that there should be the establishment of policy for the provision and maintenance of physical facilities even though there existed differences in the responses (M=3.55; SD= 1.15). Moreover, it was obvious from the results that most of the lecturers agreed that the physical facilities in the technical university were user friendly. However, there existed variations in the responses (M= 3.62; SD= 1.25).

Responses of lecturers in Takoradi Technical University on improving quality assurance practices for physical facilities of Ghanaian Technical Universities are displayed in Table 14.

Table 14 – *Responses of Lecturers in Takoradi Technical University on Improving Quality Assurance Practices for Physical Facilities*

Improving Quality Assurance Practices for Physical Facilities	Mean	SD
Renovation on some buildings and facilities	4.73	0.89
regularly monitoring of facilities	4.63	0.06
Prompt replacement of broken facilities	3.55	0.12
Regular supervision of the physical facilities	3.79	1.03
Establishment of maintenance department for physical facilities	4.98	0.84
Promulgation of policy for the maintenance of physical facilities	4.41	0.92
Mean of Means/Average Standard Deviation	**4.39**	**0.69**

Table 14 shows the results on responses of lecturers in Takoradi Technical University on improving quality assurance practices for physical facilities. It is evident from the results that the respondents agreed that measures should be put in place to improve quality assurance practices in physical facilities (M=4.39; SD=0.69). For instance, most of the lecturers agreed with the statement that the technical university should embark on renovation on some buildings and facilities and their responses were clustered around the same mean (M=4.73; SD=0.89). Secondly, the results indicate that most of the lecturers agreed with the statement that facilities at the technical university should be regularly monitored (M=4.63; SD= 0.06).

Thirdly, the results indicate that most of the lecturers agreed with the statement that there should be prompt replacement of broken facilities but their responses did not differ much concerning the statement (M= 3.55; SD= 0.12). Regarding their responses on conducting regular supervision of the physical facilities at the technical university, it was revealed that majority of the lecturers agreed and their responses were heterogeneous (M= 3.79; SD= 1.03). Similarly, the lecturers also agreed that the technical university should

establish maintenance department/unit in addressing physical facilities issues, but there existed no much differences in their responses (M= 4.98; SD= 0.84).

In addition, it was then found out that the lecturers agreed there should be the promulgation of policy for the provision and maintenance of physical facilities and there existed no differences in their responses (M=4.41; SD= 0.92).

Responses of students in Cape Coast Technical University on improving quality assurance practices for physical facilities of Ghanaian Technical Universities are displayed in Table 15.

Table 15– *Responses of Students in Cape Coast Technical University on Improving Quality Assurance Practices for Physical Facilities*

Improving Quality Assurance Practices for Physical Facilities	Mean	SD
Renovation on some buildings and facilities	3.63	1.20
regularly monitoring of facilities	3.78	1.08
Prompt replacement of broken facilities	3.95	1.15
Regular supervision of the physical facilities	3.82	1.47
Establishment of maintenance department for physical facilities	3.87	1.85
Promulgation of policy for the maintenance of physical facilities	3.86	1.88
Mean of Means/Average Standard Deviation	**3.82**	**1.41**

Table 15 shows the results on responses of students in Cape Coast Technical University on improving quality assurance practices for physical facilities of the technical university. Most of the students agreed that the technical university should embark on renovation on some buildings and facilities and their responses were not clustered around the same mean (M= 3.63; SD= 1.20). Furthermore, it was also found out that most of the students

agreed with the statement that facilities at the technical university should be regularly monitored (M= 3.78; SD= 1.08).

Also, the results indicate that most of the students agreed that there should be prompt replacement of broken facilities. Responses, however differed concerning the statement (M= 3.95; SD= 1.15). Similarly, the students also agreed that the technical university should establish maintenance department/unit to address physical facilities (M= 3.87; SD= 1.85).

The overall mean and standard deviation values rated (M= 3.82; SD= 1.41). This follows logically that majority of the students the Cape Coast Technical University agreed that measures should be put in place to improve quality assurance practices for physical facilities.

Responses of students in Takoradi Technical University on improving quality assurance practices for physical facilities of the university are displayed in Table 16.

Table 16 – *Responses of Students in Takoradi Technical University on Improving Quality Assurance Practices for Physical Facilities*

Improving Quality Assurance Practices for Physical Facilities	Mean	SD
Renovation on some buildings and facilities	3.25	1.39
regularly monitoring of facilities	3.17	1.20
Prompt replacement of broken facilities	3.57	1.24
Regular supervision of the physical facilities	3.85	1.16
Establishment of maintenance department for physical facilities	3.59	1.16
Promulgation of policy for the maintenance of physical facilities	3.55	1.14
Mean of Means/Average Standard Deviation	**3.49**	**0.81**

Table 16 shows the results on responses of students in Takoradi Technical University on improving quality assurance practices for physical facilities. Most of the students agreed with the statement that the Technical Universities should embark on renovation on some buildings and facilities and their responses were not clustered around the same mean (M= 3.25; SD= 1.20). Secondly, the results indicate that most of the students agreed with the statement that facilities at the technical university should be regularly monitored. However, there were variations in the responses concerning the statement (M= 3.87; SD= 1.20).

In the same direction, the results indicate that most of the students agreed with the statement that there should be prompt replacement of broken facilities (M=3.57; SD=1.24). Regarding their responses on regular supervision of the physical facilities at the technical University, it was revealed that majority of the students agreed with the statement and their responses were heterogeneous (M= 3.85; SD=1.16). Similarly, the students also agreed with the statement that the Technical University should establish a maintenance department to address physical facilities (M=3.59; SD=1.16).

The overall mean and standard deviation values rated (M= 3.49; SD= 1.81). This follows logically that majority of the students at the Takoradi Technical University agreed that measures have to be put in place to improve quality assurance practices for physical facilities.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Overview of the Study

This chapter seeks to present a summary of the research process as well as the key findings that emerged from the research. The chapter also contains the conclusions and recommendations that were made based on the findings of the study. Areas suggested for further research are also presented in this final chapter of the study.

Summary of the Study

The focus of the study was to establish how quality assurance practices of Takoradi and Cape Coast Technical Universities captured physical facilities as a driver of an enhanced quality, and make a comparative evaluation between the two technical universities. It sought to find out what physical facilities were available in the Cape Coast and Takoradi Technical Universities, how the physical facilities captured under the regular practice of quality assurance, what physical facilities in the two technical universities were covered by regular and routine quality assurance activities and how quality assurance practices for physical facilities of the two technical universities could be improved.

The research design was a multi-site quantitative case study. The research design was employed because it affords researchers the opportunity for the collection and analysis of responses of large sample of people and questionnaires designed to elicit their opinions, attitudes and sentiments about a particular issue. The study employed the quantitative approach of data collection to establish how quality assurance practices of Takoradi and Cape

Coast Technical Universities captured physical facilities as a driver of an enhanced quality, and make a comparative evaluation between the two technical universities. The researcher employed simple random sampling and stratified sampling technique in selecting a total sample size of 210 lecturers and 380 in the institutions for the study.

Questionnaire was the main instrument employed for the study. The questionnaire was divided into sections with each section focusing on one objective. Section 'A' covered items on the demographic information of the respondents. Section 'B' covered items on physical facilities available in Technical Universities. Section 'C' covered items on how physical facilities were captured under the regular practice of quality assurance. Section 'D' covered items on physical facilities in the two technical universities that are covered by regular and routine quality assurance activities. Section E covered items on how quality assurance practices for physical facilities of the two technical universities could be improved. The study adopted a five-point likert-type scale. The response choice was; "Strongly agree" (SA) and "Very Adequate" (VA) =5, "Agree" and "Adequate" (A) =4, "Uncertain" (U) and "Inadequate" (I) =3, "Disagree" (D) and Not Available (NA) =2 and "Strongly Disagree" (SD) and Available" =1.

The responses to the questions and the observation checklist were coded and entered into the SPSS computer software for analysis and interpretation. Descriptive statistics were used to analyse the data to show the direction of the responses. The descriptive statistics including frequencies and percentages and mean of means and standard deviations were used to analyse the research questions. Analysis of the responses was done in the order of the

research questions. Responses from the various categories of respondents were discussed systematically in line with the research questions. Tables were created for the items to help in the discussions of findings.

Key Findings

1. It was found out that there were physical facilities available in the two technical universities: shops for toiletries, cafeteria, computers and ICT multimedia, laboratories and libraries and practical rooms and workshops to meet the growing number of the students' population.
2. It was revealed that most of the physical facilities were not accessible to the disabled; hostels for students and sports facilities were not disability-friendly.
3. Concerning how the physical facilities are captured under the regular practice of quality assurance, it was realized that constant supply of utilities was not captured under regular routine quality assurance and there were differences in their responses. Nonetheless, it was found out that provision of municipal services, regular renovation of buildings facilities and regular repairs of furniture were captured under regular routine quality assurance.
4. Finally, the study found out that some of the measures that have been put in place to ensure that quality assurance practices for physical facilities of the two technical universities were improved included; the prompt replacement of broken facilities, regular supervision and inspection of the physical facilities, establishment of maintenance department/unit for addressing physical facilities and the policy for the provision and maintenance of physical facilities.

Conclusions

The following conclusions could be drawn from the findings of the study. In relation to the availability of physical facilities in Ghanaian Technical Universities, it can be concluded that there were variety of physical facilities in both Takoradi and Cape Coast Technical Universities.

Firstly, it is concluded that the availability of the physical facilities would contribute significantly towards the success of teaching and learning at the two technical universities.

Secondly, some of the physical facilities were captured under the regular practice of quality assurance. However, some of the physical facilities were not captured under regular routine quality assurance. This therefore could seriously impact on the quality of teaching and learning in the two technical universities.

Thirdly, some of the physical facilities also hampered quality teaching and learning especially among the physically challenged. The absence of easy accessibility to physical facilities hampered the ability of the physically challenged to have access to academic resources. This could have negative effects on academic work of the physically challenged. It is therefore concluded that somehow, the physically challenged were discriminated against.

It is also concluded that since a lot of physical facilities were not captured under the regular practices of quality assurance, quality assurance practices in the two technical universities felt short of expectation.

Moreover, it can be concluded that the physical facilities in the two technical universities did not meet the national norms. This creates a state of affairs where the physical facilities in the Technical Universities are not in agreement with the state-of-the-art facilities for teaching and learning.

Finally, it is be concluded that, if measures that have been out in place to ensure that quality assurance practices for physical facilities of the two technical universities are strictly adhered to, they will go a long way to promote effective quality assurance and for that matter improve the quality of teaching and learning in the two technical universities.

Recommendations

The following recommendations have been made regarding the result of the study.

1. Government of Ghana, Ministry of Education and other stakeholders must as a matter of urgency address the inadequate physical facilities issues that overwhelm the Technical Universities in order to meet the standard that they have been raised to.
2. The Management of the Takoradi and Cape Coast Technical Universities should ensure that the culture of maintenance is adhered to by the two technical universities to make sure that facilities are well maintained and managed to ensure that teaching and learning in the two technical universities are of the highest quality.
3. Management of both Takoradi and Cape Coast Technical Universities must ensure that Physical facilities which are not disability friendly are redesigned to include facilities that could ensure that physically

challenged students and lecturers can access education in the Technical Universities.

Suggestion for Further Studies

1. It is suggested that other empirical researches should be conducted using other Technical University students in other regions.
2. It is also suggested that investigation need to be conducted on the effects of physical facilities on the academic achievements of tertiary education students.

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APPENDICES

APPENDIX A

UNIVERSITY OF CAPE COAST

COLLEGE OF EDUCATIONAL STUDIES

INSTITUTE FOR EDUCATIONAL PLANNING AND ADMINISTRATION

QUESTIONNAIRE FOR STUDENTS ON ASSESSMENT OF PHYSICAL FACILITIES AND QUALITY ASSURANCE PRACTICE: A COMPARATIVE STUDY OF TAKORADI AND CAPE COAST TECHNICAL UNIVERSITIES IN GHANA

Dear Sir/Madam,

This questionnaire is to gather data on assessment of physical facilities and quality assurance practice in the polytechnics of Ghana, in partial fulfilment of the requirement of the Master of Philosophy (Education Planning) degree programme. You are assured that your responses will be treated as confidential. This data collection is for academic purposes only. Please be confident to provide candid responses. Thank you for your co-operation.

Section A: Socio- Demographic Profile of Respondents (Please respond by ticking (√) the appropriate response)

1. Sex Male ☐ Female ☐
2. Age of respondent ……..
3. Level First Year ☐ Second Year ☐ Third Year ☐
4. Department ……
5. Programme CERTIFICATE ☐ DBS ☐
   HND ☐ DEGREE ☐
   Other programme (please specify) ……

SECTION B: PHYSICAL FACILITIES AVAILABLE IN THE TECHNICAL UNIVERSITIES

Physical facilities *for education comprise land, buildings and furniture. It includes facilities for teaching spaces and for ancillary rooms. Thus, physical facilities give educational institutions their complete shape and teaching and learning environment.*

Please kindly respond by ticking **(√)** "Very Adequate" (VA) or "Adequate" (A) or "Inadequate" (IA) or "Not-Available" (NA) or "Available" (AV) against the response that best reflects the extent to which the following physical facilities for education are in existence.

Availability Physical Facilities	VA	A	IA	NA	AV
1. Classrooms /lecture theatres					
2. Water					
3. Electricity					
4. Furniture, seats & decks					
5. Shops for toiletries					
6. Cafeteria					
7. Access for disabled					
8. Hostel for students					
7. Computers & ICT multimedia					
8. Laboratory & Library					
9. Sport facilities					
10. Practical rooms & Workshops					

SECTION C: HOW PHYSICAL FACILITIES ARE CAPTURED UNDER THE REGULAR PRACTICE OF QUALITY ASSURANCE

For questions 11 and 20, please kindly respond by ticking **(√) "Strongly Agree" (SA)** or **"Agree" (A)** or **"Not Sure" (NS)** or **"Disagree" (DA)** or **"Strongly disagree" (SD)** against the response that best reflects the extent to which you agree or disagree with each of the statement.

State of the Physical facilities at the Technical University	SA	A	NS	D	SD
11. Some of the buildings are dilapidated and need renovation					
12. There are broken furniture, doors and louvers					
13. There are broken tiles and wall					
14. There is constant supply of electricity and water					
15. Practical/demonstration and workshop rooms are spacious					
16. The sporting facilities are functional					
17. The environment is kept clean regularly to create a conducive learning environment					
18. The hostels are regularly					
19. The public address systems in the lecture theatres are functional					
20. The public conveniences are regularly maintained and kept clean.					

SECTION D: PHYSICAL FACILITIES IN THE TECHNICAL UNIVERSITY THAT ARE COVERED BY REGULAR AND ROUTINE QUALITY ASSURANCE ACTIVITIES

For questions 21 and 32, please kindly respond by ticking **(√) "Strongly Agree" (SA)** or **"Agree" (A)** or **"Not Sure" (NS)** or **"Disagree" (DA)** or **"Strongly disagree" (SD)** against the response that best reflects the extent to which you agree or disagree with each of the statement.

Physical facilities at the Technical University that are covered by regular and routine quality assurance activities	SA	A	NS	D	SD
21. Classrooms/Lecture theatre					
22. Water					
23. Electricity					
24. Furniture, seats & desks					
25. Shops for toiletries					
26. Cafeteria					
27. Access for disabled					
28. Hostels for student					
29. Computers & ICT Multimedia					
30. Sports facilities					
31. Practical Rooms & Workshop					
32. Laboratory & Library					

SECTION E: HOW QUALITY ASSURANCE PRACTICES FOR PHYSICAL FACILITIES OF GHANAIAN TECHNICAL UNIVERSITIES CAN BE IMPROVED

For questions 37 and 42 **(NS)** or **"Disagree" (DA)** or **"Strongly disagree" (SD)** against the response that best reflects the extent to which you agree or disagree with each of the statement.

Statement	SA	A	NS	D	SD
37. The Technical University is doing renovation on some buildings and facilities					
38. Facilities at the Technical University are regularly monitored for maintenance					
39. Replacement of broken facilities is done promptly					
40. There is regular supervision and inspection of the physical facilities at the Technical University					
41. The Technical University has established a Maintenance Department/Unit to be addressing physical facilities issues					
42. The Technical University has a clear policy for the provision and maintenance of physical facilities					
43. The physical facilities at the Technical University are user-friendly					

44. What are some of the challenges involve in assessing the physical facilities at the Technical University?

……

……

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……

……

……

How do the existing facilities at the Technical University fit into the mission and vision of the Technical University as a tertiary institution?

……

……

……

What recommendations or suggestions would you give for the provision and maintenance of physical facilities at the Technical University?

……

……

……

……

……

APPENDIX B

UNIVERSITY OF CAPE COAST

COLLEGE OF EDUCATIONAL STUDIES

INSTITUTE FOR EDUCATIONAL PLANNING AND ADMINISTRATION

QUESTIONNAIRE FOR LECTURERS ON ASSESSMENT OF PHYSICAL FACILITIES AND QUALITY ASSURANCE PRACTICE: A COMPARATIVE STUDY OF TAKORADI AND CAPE COAST TECHNICAL UNIVERSITIES IN GHANA

Dear Sir/Madam,

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Section A: Socio- Demographic Profile of Respondents (Please respond by ticking (√) the appropriate response)

1. Sex Male ☐ Female ☐
2. Age: 30-35 years ☐ 35-40 years ☐ 40-45 years ☐
   45-50 years ☐ 50-55 years ☐ 55-60 years ☐
   60 years and Above ☐
3. Number of Years of Teaching: 5-10 years ☐ 11-15 years ☐
   16-20 years ☐ 21 and above ☐
4. Department ……
5. Qualifications MASTERS/MSC. ☐ MPhil ☐
   Phd ☐ Post Phd ☐
   Other qualifications (please specify) ……

SECTION B: PHYSICAL FACILITIES AVAILABLE IN THE TECHNICAL UNIVERSITIES

Physical facilities *for education comprise land, buildings and furniture. It includes facilities for teaching spaces and for ancillary rooms. Thus, physical facilities give educational institutions their complete shape and teaching and learning environment.*

Please kindly respond by ticking **(√)** "Very Adequate" (VA) or "Adequate" (A) or "Inadequate" (IA) or "Not-Available" (NA) or "Available" (AV) against the response that best reflects the extent to which the following physical facilities for education are in existence.

Availability Physical Facilities	VA	A	IA	NA	AV
1. Classrooms /lecture theatres					
2. Water					
3. Electricity					
4. Furniture, seats & decks					
5. Shops for toiletries					
6. Cafeteria					
7. Access for disabled					
8. Hostel for students					
7. Computers & ICT multimedia					
8. Laboratory & Library					
9. Sport facilities					
10. Practical rooms & Workshops					

SECTION C: HOW PHYSICAL FACILITIES ARE CAPTURED UNDER THE REGULAR PRACTICE OF QUALITY ASSURANCE

For questions 11 and 20, please kindly respond by ticking **(√) "Strongly Agree" (SA)** or **"Agree" (A)** or **"Not Sure" (NS)** or **"Disagree" (DA)** or **"Strongly disagree" (SD)** against the response that best reflects the extent to which you agree or disagree with each of the statement.

State of the Physical facilities at the Technical University	SA	A	NS	D	SD
11. Some of the buildings are dilapidated and need renovation					
12. There are broken furniture, doors and louvers					
13. There are broken tiles and wall					
14. There is constant supply of electricity and water					
15. Practical/demonstration and workshop rooms are spacious					
16. The sporting facilities are functional					
17. The environment is kept clean regularly to create a conducive learning environment					
18. The hostels are regularly					
19. The public address systems in the lecture theatres are functional					
20. The public conveniences are regularly maintained and kept clean.					

SECTION D: PHYSICAL FACILITIES IN THE TECHNICAL UNIVERSITY THAT ARE COVERED BY REGULAR AND ROUTINE QUALITY ASSURANCE ACTIVITIES

For questions 21 and 32, please kindly respond by ticking **(√) "Strongly Agree" (SA)** or **"Agree" (A)** or **"Not Sure" (NS)** or **"Disagree" (DA)** or **"Strongly disagree" (SD)** against the response that best reflects the extent to which you agree or disagree with each of the statement.

Physical facilities at the Technical University that are covered by regular and routine quality assurance activities	SA	A	NS	D	SD
21. Classrooms/Lecture theatre					
22. Water					
23. Electricity					
24. Furniture, seats & desks					
25. Shops for toiletries					
26. Cafeteria					
27. Access for disabled					
28. Hostels for student					
29. Computers & ICT Multimedia					
30. Sports facilities					
31. Practical Rooms & Workshop					
32. Laboratory & Library					

SECTION E: HOW QUALITY ASSURANCE PRACTICES FOR PHYSICAL FACILITIES OF GHANAIAN TECHNICAL UNIVERSITIES CAN BE IMPROVED

For questions 37 and 42 **(NS)** or **"Disagree" (DA)** or **"Strongly disagree" (SD)** against the response that best reflects the extent to which you agree or disagree with each of the statement.

Statement	SA	A	NS	D	SD
37. The Technical University is doing renovation on some buildings and facilities					
38. Facilities at the Technical University are regularly monitored for maintenance					
39. Replacement of broken facilities is done promptly					
40. There is regular supervision and inspection of the physical facilities at the Technical University					
41. The Technical University has established a Maintenance Department/Unit to be addressing physical facilities issues					
42. The Technical University has a clear policy for the provision and maintenance of physical facilities					
43. The physical facilities at the Technical University are user-friendly					

45. What are some of the challenges involve in assessing the physical facilities at the Technical University?

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How do the existing facilities at the Technical University fit into the mission and vision of the Technical University as a tertiary institution?

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What recommendations or suggestions would you give for the provision and maintenance of physical facilities at the Technical University?

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