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**AN ASSESSMENT OF CLIMATE AND CLIMATE CHANGE
CONTENT OF COURSES AND RESEARCH AT THE
UNIVERSITY OF GHANA**

**Kwadwo Owusu, Alex B. Asiedu, Paul W. K. Yankson
and Yaa Ntiamoah-Baidu**

University of Ghana

Abstract

While the challenges of climate change mount, climate expertise and adaptation research capacity remain very limited in Ghana and other African countries. Without the necessary expertise, the nation is limited in terms of its ability to generate relevant knowledge to tackle climate change or to diffuse knowledge and technology developed elsewhere for the benefit of communities for climate change adaptation. Recognising this lack of capacity, the University of Ghana (UG) sought assistance from the Open Society Foundation to build capacity for climate change adaptation research. The goal is to develop the UG as a centre of excellence in global environmental change, with capabilities to contribute effectively to climate change adaptation in Ghana for sustainable development. In 2011, we assessed the climate change and climate change adaptation content of existing UG courses. The gap analysis identified very limited climate change courses and research at the University. Recommendations for the successful enhancement of climate change and adaptation research capacity are provided, including the development of new climate change courses and programmes; inter-unit team teaching and climate research collaboration among units within the university and with outside institutions and agencies.

Keywords: *Climate Change; Adaptation; University of Ghana; Capacity building; Assessment.*

Introduction

Like many other African countries, Ghana faces enormous social, economic and environmental challenges that are likely to be exacerbated by the impacts of climate change. At both the household and the national levels, climate change is of serious concern to Ghana because of the nation's overdependence on climate-sensitive sectors, such as hydro-power generation, agriculture, fisheries and wildlife resources. For instance, Agriculture provides employment for over 60% of the labour force and contributes about 30% of GDP (ISSER, 2011; Diao, 2010) while hydroelectricity provides about 68% of grid power supply (ISSER, 2011). Projections indicate that temperatures will continue to rise (Minia, 2004) while reduction in rainfall is already impacting on rain-fed agriculture

and affecting hydropower generation, resulting in power outages with significant adverse impacts on industrial production (Owusu *et al.*, 2008). The rural poor, especially in the northern regions of Ghana, affected by frequent droughts and annual flooding, are forced to adopt non-sustainable measures, such as migration and farming and building in flood plains. These in turn, increase their vulnerability, making the fight against poverty increasingly difficult.

While the challenges of climate change mount, climate expertise and adaptation research capacity remain very limited in Ghana and other African countries (UNFCCC, 2006; Washington *et al.*, 2006). Without the necessary expertise, Ghana is limited in terms of its ability to generate relevant knowledge to tackle climate change or to diffuse knowledge and technology developed elsewhere for the benefit of communities

for climate change adaptation. It is in recognition of this lack of capacity that the University of Ghana (UG) sought and secured funding from the Open Society Foundation (OSF) for a three-year (2011–2013) project to build capacity for climate change adaptation. This initiative “Building Capacity to meet the Climate Change Challenge (B4C) — Ghana” has the ultimate goal to develop UG as a centre of excellence in global environmental change, with capabilities to contribute effectively to climate change adaptation in Ghana for sustainable development (B4C project document 2010). This paper, reports the findings from an assessment of the current capacity of UG in the areas of climate change and climate change adaptation teaching and research. The objectives were:

- (i) to assess the climate content of UG programmes at the undergraduate and graduate levels as well as ongoing climate research and projects
- (ii) to undertake a gap analysis to identify areas where new courses needed to be developed and existing ones augmented at both the undergraduate and the graduate levels, and
- (iii) to recommend strategic actions towards the achievement of the UG’s goal of becoming a centre of excellence in climate change adaptation.

Climate Science Capacity in African Universities

Africa is the continent that is in the greatest need of expertise in climate science in the era of climate change. This need is borne out of the fact that even though Africa contributes to only between 2 to 4% of the climate change problem (Ahlenius, 2006), it stands to suffer the most from the impacts of climate change (IPCC, 2007). The economies of African countries and livelihoods rely overly on climate sensitive sectors, such as agriculture and hydroelectricity. Predictions of increased temperatures and enhanced evapotranspiration which will not offset precipitation increases are likely to negatively impact agriculture (Verdin *et al.*, 2005). There is a great need to adapt agriculture and other climate sensitive sectors to future climatic conditions. The major difficulty of being able to do this is the lack of effective hydro-meteorological networks and scientific expertise in climate science. Africa has the problem of low number of climate scientists, especially those with the capacity to make long term projections (UNFCCC, 2006) in addition to the lack of data and technology (Kadi *et al.*, 2011a; Kadi *et al.*, 2011b). For example, modelling capacity, be it a General Circulation Model (GCM) or a downscaled model, is highly lacking, such that many modellers tend to rely on only one model output for their analysis (Ziervogel *et al.*, 2008).

In many parts of the continent, meteorological networks are hugely under-funded and are in a state of

deterioration. According to Washington *et al.* (2004), networks are sparse and often report with significant delays. The network coverage over Africa is reported by Washington *et al.* (2006) as having a density of just one per 26,000 km², which is eight times lower than the World Meteorological Organization (WMO) minimum recommended level (WMO, 2003). Similarly, the number of climate experts residing and working in Africa is very low, especially those with the capacity to carry out predictions on a longer scale (UNFCCC, 2006).

There are very few universities involved in climate research in Africa, and their capacities are very limited (UNECA, 2011). In tracking the work of climate scientists through lead authorship with affiliates in African institutions in the two leading climate journals (Journal of Climate and International Journal of Climatology) Washington *et al.* (2006) revealed a low contribution from the continent. Figure 1, using data from Washington *et al.* (2006), shows that in the period between 2002 and 2004, only 0.3% and 2% of the lead authors that published in Journal of Climate and International Journal of Climatology respectively had an affiliation with institutions in Africa. Reasons that have been advanced to explain the general lack of climate scientists and infrastructure in Africa include under-development, that

has led to low investment in climate data gathering (Jones, 2010). In addition to the low salaries of climate experts, the general lack of understanding of the circulation pattern over many regions of Africa have also been blamed for the low number of climate scientists in Africa (Washington *et al.*, 2006). The lack of capacity makes impact studies and adaptation difficult.

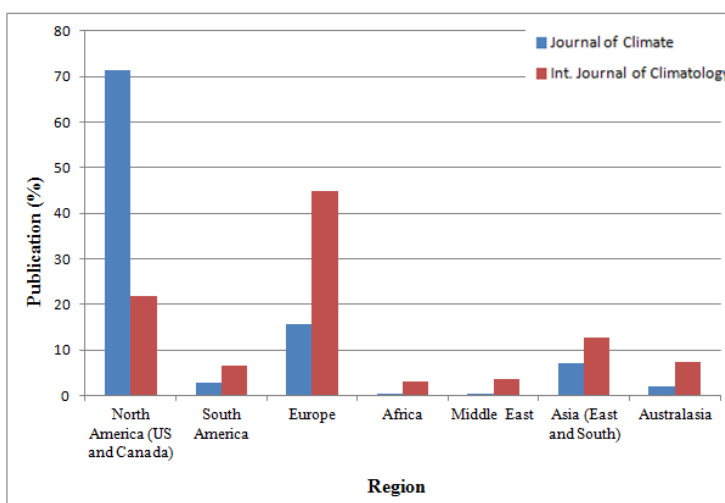


Figure 1: Lead Author Affiliation of Papers in Journal of Climate and the International Journal of Climatology, during 2002–2004; data from Washington *et al.* (2006)

Due to the limited data and little understanding of the climate system and lack of expertise in handling climate issues, calls have been made (see for example, DFID, 2004; Verdin *et al.*, 2005) for a programme of investment in capacity building for climate science applications to ensure that national policy makers have the basic climate information needed for decision making in Africa. It is in recognition of this lack of climate expertise and the need to build capacity

that many institutions across the continent are taking steps to train and retain climate scientists.

Climate research in Africa is receiving more and more attention (UNECA, 2011). At the regional level, ClimDev-Africa programme (UNECA, 2008) has been established to support Africa's response to climate variability and change by building regional, sub-regional and national policy capacity. Conway (2011) identified programmes such as the Adapting to Impacts of Climate Change Programme (AIACC), the African Monsoon Multidisciplinary Analysis (AMMA), the Africa Climate Policy Centre (ACPC), the African Climate Change Fellowship Programme (ACCFP), the Climate Change Adaptation in Africa (CCAA) as a few of the regional initiatives. Other regional initiatives, which Ghana is part of, include the African Adaptation Programme (AAP) and the West African Service Centre on Climate Change and Adapted Land Use

(WASCAL). The UG aims to contribute to the building of climate change research capacity through the B4C project by developing a graduate programme in climate change adaptation.

Methodology

The Structure of Teaching and Research at University of Ghana

The UG is structured around Colleges, Faculties, Institutes/Schools, Departments and Centres of Research/Learning that offer various undergraduate and graduate programmes in the humanities and sciences. The Humanities Programmes are offered within three Faculties (Arts, Social Science and Law) and the University of Ghana Business School (UGBS). The Science programmes are offered in Colleges, Faculties and Schools. Units within the Humanities and Sciences contain departments, centres and institutes (see Table 1).

TABLE 1

Organisation of Academic Units at the University of Ghana, Legon

<i>Faculties/Schools</i>	<i>No. of Schools, Institutes, Department Centres</i>
College of Agriculture and Consumer Sciences	1 School, 1 Institute, 5 Departments, 4 Centres
Faculty of Arts	School with 3 Departments and 5 Departments
Faculty of Engineering Sciences	5 Departments
Faculty of Law	Non-Departmentalised
Faculty of Science	13 Departments
Faculty of Social Sciences	1 School, 9 Institutes, 9 Departments, 3 Centres
University of Ghana Business School (UGBS)	6 Departments

Source: Data from University of Ghana Undergraduate and Graduate Handbooks, 2010.

Data Collection and Analysis

A two-step approach was adopted for gathering the data. The first step involved:

- (a) a review of University of Ghana's undergraduate and graduate courses to:
 - (i) identify the current content of climate change adaptation and any climate related courses
 - (ii) identify current courses that can incorporate climate change adaptation
 - (iii) identify academic units with the potential to offer new courses in climate change adaptation.
- (b) A review of the Vice-Chancellor's (VC's) Annual Report over a five year period (2006–2010) to identify climate change adaptation and climate related research at the University.

The second step included an interview guide designed for Heads of selected academic units and specific lecturers teaching climate related courses based on the findings from Step 1 to probe further into the details of climate change adaptation component of their courses. The data obtained were then used for a gap analysis to identify the strengths and weaknesses of UG academic units in the areas of climate change adaptation and climate related courses and research.

Results and Discussion***Climate and Climate Change Adaptation Courses at University of Ghana***

An analysis of climate change and climate change adaptation content of both undergraduate and graduate levels at UG revealed that there was generally very little on offer (Table 2). At the

TABLE 2

Number of Courses with Environment and Climate-Related Contents Offered at the University of Ghana

<i>Colleges/Faculties/Schools/Departments</i>	<i>No. of Undergraduate Courses</i>	<i>No. of Graduate Courses</i>
UGBS	0	1
Law	0	0
Arts	0	0
Social Sciences	10	14
Agriculture and Consumer Sciences Health and Allied Sciences	0	3
Sciences	13	13
Engineerinh Sciences	1	2

Source: Data from Unifers of Ghana Undergraduate and Graduate Handbooks, 2010.

undergraduate level, there were some climate related courses on offer but nothing specific on climate change adaptation even though adaptation is taught as part of a few courses.

Within the Humanities, there was very little on offer in terms of climate change courses in general, and climate change adaptation in particular. Only the Department of Public Administration and Health Services Management had one climate related course titled: Advanced Environmental Management. The Faculties of Arts and Law did not have any climate specific courses including adaptation on offer. At the Faculty of Social Sciences, a number of units offered climate related courses but there was nothing specifically on adaptation. The main departments that offered climate related course within the Faculty were: Geography and Resource Development (5 courses), and Archaeology and Heritage Studies (2 courses). The other Units with at least one climate related course were the Institute of Continuing and Distance Education, the Department of Sociology and the Department of Political Science. The Faculty of Science offered more climate related courses than any other Faculty; the top on the list were the Department of Animal Biology and Conservation Science (4 courses) and the Department of Marine and Fisheries Sciences (3 courses). The Department of Earth Sciences had 2 courses while the Departments of Botany, Chemistry and Physics had one course each. However, none of the courses was specifically devoted to climate change adaptation.

The analysis of climate change and adaptation content of graduate courses at UG revealed a pattern similar to the undergraduate level and showed limited number of courses with climate change and climate adaptation content. To a large extent, this is the result of limited capacity in the area of climate science and limited exposure of academic faculty and confirms the findings of Washington *et al.* (2006) that African universities have very few climate scientists. The lack of research capacity at UG again reflects the general trend of low levels of climate research in African universities as identified by the Africa Climate Policy Centre (UNECA, 2011). This situation is evident in the Department of Geography and Resource Development, where there were courses listed at the graduate level but have not been on offer since the last six years because of the lack of faculty with the requisite expertise to handle them. A similar situation had occurred at the Institute of Statistical, Social and Economic Research (ISSER) where the retirement of a Lecturer had meant that a climate related course had to be withdrawn until a replacement for the Lecturer could be found. Even within the Faculties of Science and Social Sciences, that had the highest number of climate related courses on offer (Table 2), there was no specific course on climate change adaptation.

The teaching of the existing climate related courses is done at the individual unit level with no inter-faculty collaboration. Team teaching across UG Units is very limited at the moment. With

the current UG course credit system, however, students can benefit from climate related courses in other departments if they are designated as electives.

Climate related Research at University of Ghana

Since 2006, a number of Academic Units at UG have been involved in climate related research both by Faculty and Graduate Students. However, very few of such research activities had resulted in scientific publications. There were equally few research projects and collaborative initiatives in climate change research. Apart from the B4C project, the Regional Institute of Population Studies (RIPS) and ISSER were two units implementing university-wide climate change adaptation projects.

There were, however, a number of UG faculty and units that were collaborating with outside agencies on climate change adaptation projects. The major UG units involved in such collaborative efforts included ISSER, the Departments of Geography and Resource Development, Soil Science, Marine and Fisheries Sciences and Animal Biology and Conservation Sciences.

Linkages within the UG for climate change research were found to be weak, as there were very few on-going climate change and adaptation research, due mainly to inadequate capacity, appropriate orientation and logistics. Units that had stronger collaborative links were RIPS and ISSER, Department of Soil Science,

RIPS and Department of Geography and Resource Development. The major weakness in research linkages was the lack of collaboration between UG units and other external institutions, such as other public universities, research institutes and government Ministries and departments.

Summary and Recommendations

Summary of Key Findings

Analysis of the current organization of courses at the undergraduate levels throughout the UG academic units indicated that there was very little on offer in terms of courses in the area of climate change. The limited existing climate change and climate change adaptation courses were mainly in the Faculties of Science and Social Sciences. The Faculties of Law and Arts had virtually nothing in the areas of climate and related courses. The UGBS had only one course on the environment that incorporated climate related issues. The College of Agriculture had courses that incorporated climate and climate change adaptation issues as components but generally had no stand-alone courses on climate change or climate change adaptation. The limited climate and climate change adaptation courses at UG are attributed mainly to the inadequacy of faculty with the requisite expertise.

At the graduate level, the situation was worse; there were fewer courses which were climate related or had climate change adaptation components. The poor

situation is clearly a case of inadequate numbers of faculty with expertise in climate science in general and climate change adaptation in particular. In instances where climate related courses were listed, they had not been taught for long periods due to lack of replacement for retired Lecturers who have been teaching them.

The offering of climate and climate related courses both at the undergraduate and graduate levels can be considered to be currently inadequate, considering how important the thematic area has become and the likely future importance for the socio-economic development of Ghana. This situation may be attributed to four main factors: (i) the general lack of expertise in climate related and climate change adaptation fields (ii) inadequate laboratory facilities and appropriate equipment, (iii) lack of logistics to support the teaching and research in the field, and (iv) the general lack of awareness of climate change adaptation issues. In instances where climate and climate related courses were offered, we found a general lack of inter departmental collaboration in teaching and research.

Recommendation

On the basis of the key findings, it is important that steps are taken to enhance the climate and climate change adaptation content of courses in UG programmes at all levels. This could be achieved through the opportunities presented by the B4C initiative. The immediate action would be to increase the climate related content of

relevant existing courses. This could be done by enhancing the capacity of the Lecturers involved in the teaching of such courses through refresher courses and re-training offered as short courses and training workshops on climate and climate change adaptation.

There is also the need for the development of new courses on climate change adaptation at the undergraduate level. Looking at the teaching focus, we are of the view that, even though there may be no compelling need for climate related courses at the Faculties of Arts and Law, we strongly recommend that there should be more climate change related courses developed and offered at the UGBS. Courses such as the Management of Adaptation, Green Business and Marketing, Weather Risk Insurance and Climate Information Management would complement the current course programmes offered by UGBS. In the Faculty of Social Studies, there is the need to develop new courses in the Departments of Archaeology and Heritage Studies, Geography and Resource Development, Political Science and Sociology. This would also provide additional options for Continuing and Distance Education students. In the College of Agriculture, new courses on climate related issues should be considered in the Departments of Crop Science, Animal Science, Agricultural Extension and Agribusiness and Consumer Science. Within the Faculty of Science, new courses could be jointly organised between the Departments of Animal Biology and Conservation Science and

Botany as well as between the Departments of Earth Science and Marine and Fisheries Sciences based on the similarity in the programmes they offer currently and the interest expressed.

At the undergraduate level, we strongly recommend that new courses on climate science and climate change in general should be developed to create a sound scientific basis for further work in adaptation and other climate impact issues.

At the graduate level, there is an immediate need to tackle the capacity issues that have resulted in many of the listed climate related courses not being offered. As a first step, we recommend that the various departments that have such listed courses bring in experts from institutions outside the university to augment the existing staff strength. In the medium to long term, the University should identify and sponsor brilliant and interested graduate students, in addition to current faculty members, to undertake doctoral and possibly post-doctoral research in climate related fields.

One of the key objectives on the B4C-Ghana Project is to develop Masters level programmes on climate change adaptation. This can be achieved through the development of a new set of courses together with the revision of a selection of existing courses to meet the requirements for a Masters programme. The programme in climate change would be coordinated by a relevant existing department, but would be delivered as a multi-disciplinary and trans-disciplinary programme, thereby promoting collabora-

tion among all relevant/interested units of the University.

Climate related research should also be consciously promoted at both the graduate level and among faculty members at UG. A number of small grants are available internationally through various avenues such Partnership for Enhanced Engagement in Research (PEER) National Science foundation (NSF)/USAID and also the Start secretariat and START (global change System Analysis, Research and Training). UG faculty and post-graduate students should be encouraged and supported to source such funds. UG should also set aside part of its research funds specifically for graduate and faculty research in climate related issues.

Research collaboration is absolutely critical and should be encouraged, first among departments and units of the university and between the university and other public universities and research institutions. Funding for climate research projects should also be sought through collaborative initiatives and UG should also encourage the development of joint proposals by its units by providing incentives, such as seed money in the form of allowances and logistics, for such endeavours.

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**STUDENT SATISFACTION WITH FACILITIES AND SERVICES
AS A QUALITY-ASSURANCE-MANAGEMENT-TECHNIQUE
IN HIGHER EDUCATION: TAMALE POLYTECHNIC
IN PERSPECTIVE**

Felix Mustapha Nantogma and Solomon A. Dansieh

Wa Polytechnic

Abstract

The importance of students' feedback within higher education in Ghana is gradually increasing, against the dynamic background of the demand and offer of quality education. This paper discusses the results obtained from a students' satisfaction survey on the implementation of a quality management technique in Tamale Polytechnic. The study investigated and analysed the degree of satisfaction among students with facilities and services in the Polytechnic. The data-collection instrument was put into three dimensions: teaching/learning activities, facilities and services. A total of 371 questionnaires were administered to continuing students from March to April, 2012. Out of that number, 310 were completed and returned, giving a response rate of 83%. Student responses showed that the most satisfying variables are the teaching and learning activities, followed by services and facilities. For all the variables evaluated, students rated their satisfaction with these two areas higher than with the others. Although the scientific literature often points to weaknesses in student opinion surveys, such mechanisms prove to be extremely useful for higher educational institutions especially when it comes to gathering feedback from its customers.

Keywords: Higher Education, Facilities, Perception, Quality Assurance, Satisfaction, Services.

Introduction

Education, especially at the higher level, plays an important role in the development of skills and intellectual capacity of individuals as well as in the development of economies in every country. Tertiary institutions can be described as an assemblage of individuals with different ideologies, agenda and academic traditions held together by a common institutional logo and name (Michael, 1997).

Over the past years, higher education institutions in Ghana have witnessed enormous changes in their student population. There is increasing competitive pressure to provide quality education and to increase Internally Generated Funds (IGF). Higher education institutions like the Kwame Nkrumah University of Science and Technology,

and the University of Cape Coast, among others, are directing their efforts and resources towards meeting the expectations and needs of students and increasing their IGF through Distance Learning Programmes.

Silke *et al.* (2006) reveal that higher education institutions are becoming more aware of the importance of student satisfaction. Student satisfaction also has a positive impact on student motivation, student retention, recruiting efforts and fund-raising.

In fact, additional resources are needed to meet the long term challenge to maintain and improve standards, widen students' access, strengthen links with business and compete globally (Silk *et al.*, 2006). Changing demographics will lead to increased competition from rival institutions. As a result of this pressure, administrations will face mounting

difficulties of securing adequate resources and competing for government subvention (Schmidt, 1991; Söderqvist, 2001).

Student Satisfaction

Hill (1995) regards students as the primary customers and key stakeholders of higher education and, for this reason, these institutions are beginning to recognise the fact that they are a service industry and must place greater emphasis on meeting the expectations and needs of students (Tonks and Farr, 1995; Elliot and Shin, 2002).

Satisfaction is relative and appears to mean different things to different people (Giese and Cote, 2002; Silke *et al.*, 2006). Parker and Mathews (2001) view satisfaction as an outcome of a consumption activity or experience.

Piercy (1995) observes that very few institutions measure satisfaction; and the few measurements obtained are rarely used for marketing, planning, evaluation and controlling (Silke *et al.*, 2006). Focusing on student satisfaction allows institutions to re-engineer their organisations to adapt to student needs and also enables them to develop continuous monitoring systems to effectively meet or exceed student needs (Elliot and Shin, 2002). The approach, therefore, creates a culture of continuous quality improvement (Aldridge and Rowley, 1998).

Research Objectives

This research is conducted to:

- ascertain the level of satisfaction of students with the services and facilities provided by Tamale Polytechnic; and
- propose appropriate policy recommendations.

Study Area

The study was conducted at the Tamale Polytechnic located in the Tamale Metropolis, the administrative capital of the Northern Region. The Tamale Polytechnic began as a Trades Training Center in 1951 and then became the Government Training School in 1954. It was converted into a Junior Technical Institute in 1960. The Institute was elevated to the status of a polytechnic on August 23, 1992. As a result of the enactment of the PNDC Law 321 in 1992, the status of the polytechnic was raised to the level of a tertiary institution together with Accra, Kumasi, Ho, Cape Coast and Takoradi Polytechnics.

Tamale Polytechnic is the only polytechnic in Ghana that runs both tertiary and secondary division concurrently. It plays a complementary role of providing tertiary education in particular to people in the three northern regions alongside Wa and Bolgatanga Polytechnics and the University for Development Studies (UDS).

Research Methodology

Research Design

This study used both primary and

secondary data. Secondary data were used to understand the concepts and ideas that have been presented by previous researchers in the field of customer satisfaction and also to develop the conceptual framework of the study. Primary data, on the other hand, were used to analyse the students' satisfaction with services and facilities in Tamale Polytechnic.

A structured questionnaire was designed to investigate student satisfaction with the various services and facilities in Tamale Polytechnic, which served as variables. In all, satisfaction assessment was done in respect of thirteen (13) variables. The variables include the following: Overall Impression of Courses, Overall Quality of Instruction, Faculty, Accessibility of Instructors/Lecturers, Academic Advising/Guidance, Overall Lecture-Hall Conditions, ICT Facility, Administrative Services, Library, Registration Procedures, Fee-Payment Procedures, Halls of Residence and Examination. The questionnaire was distributed among a sample consisting of 371 students. Students from various disciplines in all the three schools, namely: Engineering, Business and Management Studies and Applied Sciences. These were selected for a reasonable representation of the study population. The questionnaire was designed in such a way that perception about student service from the users' point of view could specifically be measured. To assess the quality of service provided by Tamale Polytechnic, 13 variables, as indicated earlier, were used. The items

were applied to measure on a six-point *Likert scale*. In the measurement, scale 1 indicated indifference and scale 6 indicated very satisfied. The respondents selected the appropriate point that best indicated how they would describe the attributes being rated. The questionnaire was pre-tested. In-depth interviews were conducted in all the three schools in the polytechnic. Continuing students who had good knowledge of the school environment were interviewed.

Sampling

As it was impossible to conduct the study with the entire population due to limited time and other resources, a sample considered to be representative enough was adopted. A total of 371 respondents was randomly selected from the three schools of the Polytechnic. Since the study was to investigate the perception of service quality provided by Tamale Polytechnic from students' perspective, only students who had stayed on campus for at least one semester were included in the study.

Scope of Study

Geographically, the study covered Tamale Polytechnic and data were collected from among the tertiary (Higher National Diploma) students. This study does not cover the non-tertiary programmes.

Sample Frame

The sample frame was made up of all

tertiary students in all the three schools of the Polytechnic (School of Applied Sciences and Liberal Studies, School of Engineering and School of Business and Management Studies).

Sample Size Determination

Using the mathematical method of sample size determination, it was necessary to take a part of the population from which information would be drawn to form conclusions about the entire population. The following formula was used to select the sample size for the study:

$$n = \frac{N}{1 + N(\alpha)^2}$$

Where α = the level of significance or margin of error

n = the sample size and

N = the sample frame.

In order to have a fair representative sample, the sample size was determined at a 95% confidence level and a significance level of 0.05

$$n = \frac{5064}{1 + 5064(0.05)^2}$$

$$n = 370.717$$

The sample size is approximately 371 HND students.

Results and Discussions on the Students' Satisfaction With Facilities and Services in Tamale Polytechnic

The study postulates that students' perception of their course of study led to an increase in the level of their satisfaction with their overall impression of courses they were pursuing as shown in Table 1. It was found that a total of 110 representing 35.9% of the 310 students interviewed on their impression on courses indicated they were very satisfied. Only 14 respondents, representing 4.6% were not satisfied. About 2.9% of the students were indifferent in their responses to the issue while 28.4% of respondents said they were satisfied with their courses (in the major). Also 6.5% and 21.6% said they were somewhat satisfied and moderately satisfied, respectively.

TABLE 1

Overall Impression of Courses		
	<i>Frequency</i>	<i>Percent</i>
Indifferent	9	2.9
Not Satisfied	14	4.6
Somewhat Satisfied	20	6.5
Moderately Satisfied	66	21.6
Satisfied	87	28.4
Very Satisfied	110	35.9
Total	306	100.0

Source: Field Survey, 2011.

As shown in Figure 1, the exercise revealed that the students regarded the teaching they receive as an important ingredient in their professional training.

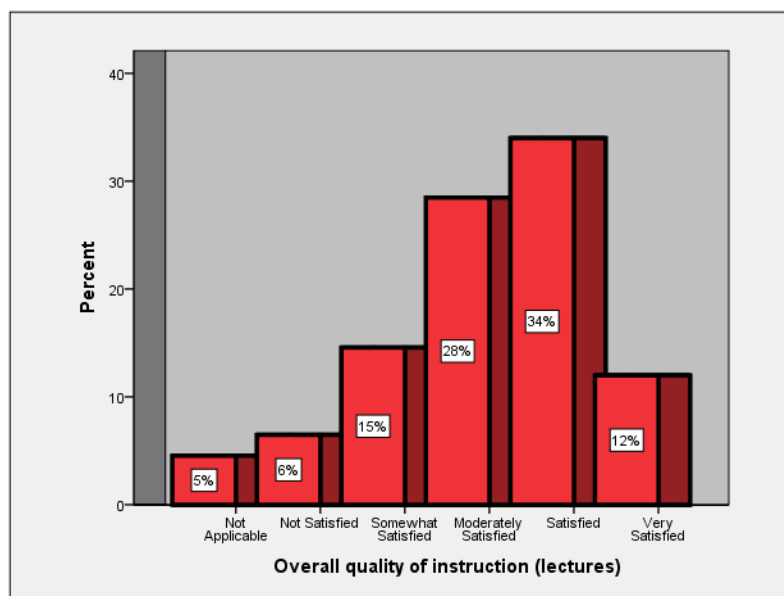


Figure 1: Overall Quality of Instruction (Lectures)

Source: Field Survey, 2011.

In general, the respondents placed great importance on their lectures; hence the resulting number expressing that they were satisfied. Out of the number that responded on this service 34% expressed that they were satisfied with the overall quality of instruction. Those who were very satisfied with the quality of instruction were made up of 12% of the total respondents. Only 7% of the respondents said they were not satisfied with the overall quality of instruction.

Respondents who were indifferent (Not Applicable) in their opinion regarding the quality of lecture delivery were made up of 5% while 15% of the respondents said they were somewhat satisfied. However, those who were moderately satisfied with the quality of instruction represented 29% as illustrated in Figure 1. Students' satisfaction level with the overall quality of instruction

being 34% is worth noting. It can be inferred from this that the students rate their lecturers/instructors as competent.

With regard to the Faculty, although majority of the respondents were satisfied with the overall quality of instruction as service rendered by the Tamale Polytechnic, the satisfaction level dropped as 61

respondents, representing 20% of the total of 303, indicated that they were satisfied.

TABLE 2

Faculty

	<i>Frequency</i>	<i>Percent</i>
Indifferent	33	10.9
Not Satisfied	40	13.2
Somewhat Satisfied	48	15.8
Moderately Satisfied	74	24.3
Satisfied	61	20.1
Very Satisfied	47	15.5
Total	303	100.0

Source: Field Survey, 2011.

From Table 2, one would have expected that because the majority of respondents were satisfied with the overall quality of instruction the same satisfaction level would be accorded to

the Faculty. A lot of factors, however, would have to be considered in assessing the satisfaction level with the Faculty. Quality is one of these factors. It was realised upon further verifications that the majority of Faculty members were still HND and Bachelor degree holders; hence their status as instructors. These instructors really need to be upgraded through retraining.

As shown in Table 3, students' satisfaction with their accessibility to Instructors/Lecturers is high. Out of a total of 302 students who indicated their satisfaction level with this service, 31.5% and 13.9% expressed the opinion that they were moderately satisfied and somewhat satisfied, respectively. This is impressive as it indicates that instructors/lecturers avail themselves for students' consultation outside the regular hours.

TABLE 3

Accessibility of Instructors/Lecturers		
	<i>Frequency</i>	<i>Valid Percent</i>
Indifferent	21	7.0
Not Satisfied	30	9.9
Somewhat Satisfied	42	13.9
Moderately Satisfied	95	31.5
Satisfied	77	25.5
Very Satisfied	37	12.3
Total	302	100.0

Source: Field Survey, 2011.

A rate of 9.9% represented respondents who were not satisfied,

implying that instructors and lecturers were not sufficiently accessible; while 25.5% represented those who believed they were satisfied. The percentage of students who were very satisfied with the accessibility level was 12.3%.

From Table 4, the satisfaction level of academic advising is relatively poor; 8.1% were very satisfied while 14.3% of the students who responded were not satisfied with the quality of the service.

TABLE 4

Academic Advising/Guidance		
	<i>Frequency</i>	<i>Percent</i>
Indifferent	33	10.7
Not Satisfied	44	14.3
Somewhat Satisfied	69	22.4
Moderately Satisfied	81	26.3
Satisfied	56	18.2
Very Satisfied	25	8.1
Total	308	100.0

Source: Field Survey, 2011.

With regard to the quality of academic advice and guidance 26.3% of the respondents were moderately satisfied. This represents the highest responses while the lowest percentage of 8.1 said they were very satisfied with the level of quality of academic advising/guidance.

The students' level of satisfaction with the overall lecture hall conditions showed that the state of these lecture halls were appalling. Out of a total of 309 students who responded to this, about 113

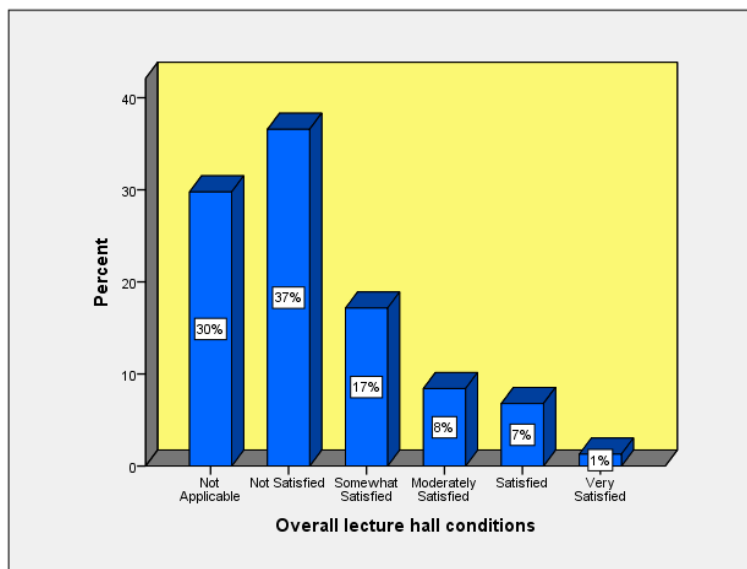


Figure 2: Overall Lecture Hall Conditions

Source: Field Survey, 2011.

of them representing 37% indicated that they were not satisfied (Figure 2). Those who were very satisfied were only 4 respondents, representing 1% of the total response. Those who were moderately satisfied were 8%.

From the survey, it was found that 28.9% were not satisfied with the services rendered at the ICT Facility. About 70% had varying feelings about the facility. Out of that percentage only 4% were very satisfied (Table 5). What this means is that the services at the ICT facility need to be improved significantly.

The administrative staff constitutes one of the important units of the Polytechnic, as they form the main supporting unit and the first point of call at the Polytechnic. Any dissatisfaction in the services they render therefore can have dire consequences for the image of the institution. From Table 6, the survey

revealed that 18.8% of the respondents were not satisfied with the administrative services of Tamale Polytechnic. Out of the total responses 13% were satisfied while only 3.2% said they were very satisfied. Those who were moderately satisfied were about 25.6%.

TABLE 5

ICT Facility

	<i>Frequency</i>	<i>Valid Percent</i>
Indifferent	45	14.8
Not Satisfied	88	28.9
Somewhat Satisfied	74	24.3
Moderately Satisfied	52	17.1
Satisfied	34	11.2
Very Satisfied	11	3.6
Total	304	100.0

Source: Field Survey, 2011.

TABLE 6
Administrative Services

	<i>Frequency</i>	<i>Percent</i>
Indifferent	30	9.7
Not Satisfied	58	18.8
Somewhat Satisfied	91	29.5
Moderately Satisfied	79	25.6
Satisfied	40	13.0
Very Satisfied	10	3.2
Total	308	100.0

Source: Field Survey, 2011.

In terms of library services, majority (74 respondents) constituting 23.9% said they were not satisfied with the state of the Library (Table 7). Only 6.5% of the students were very satisfied. Those who were moderately satisfied with the Library services constituted only 19.1% while 24.3% were somewhat satisfied. To raise the levels of satisfaction, the Polytechnic Library needs to be restocked with up to date books, journals and other materials for academic work.

TABLE 7
Library

	<i>Frequency</i>	<i>Percent</i>
Indifferent	32	10.4
Not Satisfied	74	23.9
Somewhat Satisfied	75	24.3
Moderately Satisfied	59	19.1
Satisfied	49	15.9
Very Satisfied	20	6.5
Total	309	100.0

Source: Field Survey, 2011.

The success of an academic year depends on the quality of registration exercises. Therefore, the opinion of students on this service matter a lot. With regard to the registration procedures, a significant number of the respondents were not satisfied. Out of the total respondents who expressed their feelings about these procedures, 116 out of 309 respondents representing 37.5% said they were not satisfied (Table 8). This figure is significant and, therefore, steps need to be taken to improve the processes involved during registration so as to make it less cumbersome. From the study, only 5.8% strongly support the idea that the registration procedures are very satisfactory.

TABLE 8

Registration Procedures

	<i>Frequency</i>	<i>Percent</i>
Indifferent	38	12.3
Not Satisfied	116	37.5
Somewhat Satisfied	59	19.1
Moderately Satisfied	52	16.8
Satisfied	26	8.4
Very Satisfied	18	5.8
Total	309	100.0

Source: Field Survey, 2011.

Table 9 shows a significant number of respondents (80) representing 25.8%, expressed their total dissatisfaction with the fee payment procedures. They considered the process to be too cumbersome. Those who didn't see anything wrong with the fee payment

procedure, and hence, very satisfied with it were only made up of 15 respondents representing 4.8%. There was yet another category of respondents 57 representing 18.4% who had mixed feelings about the procedure and were somewhat satisfied.

TABLE 9

Fee Payment Procedures

	<i>Frequency</i>	<i>Percent</i>
Not Applicable	50	16.1
Not Satisfied	80	25.8
Somewhat Satisfied	57	18.4
Moderately Satisfied	61	19.7
Satisfied	46	14.8
Very Satisfied	15	4.8
Total	309	100.0

Source: Field Survey, 2011.

Accommodation is essential to students and, therefore could not have been left out as an item in the survey. Figure 3 shows that out of a total of 310 respondents, 34% stated that the halls of residence were not satisfactory and needed attention; while 2% represented those who said the halls were very satisfactory. A relatively high percentage of 26, which is the second highest percentage of the responses, were indifferent in their opinions.

The figures in Table 10 reflect the views of the 310 respondents who completed the questionnaire regarding the conduct of examinations in Tamale Polytechnic. The responses of students on the conduct of examinations indicate that 22.9% were very satisfied, while 9.7% they were not satisfied. A total of 79 respondents, representing 26%, were moderately satisfied.

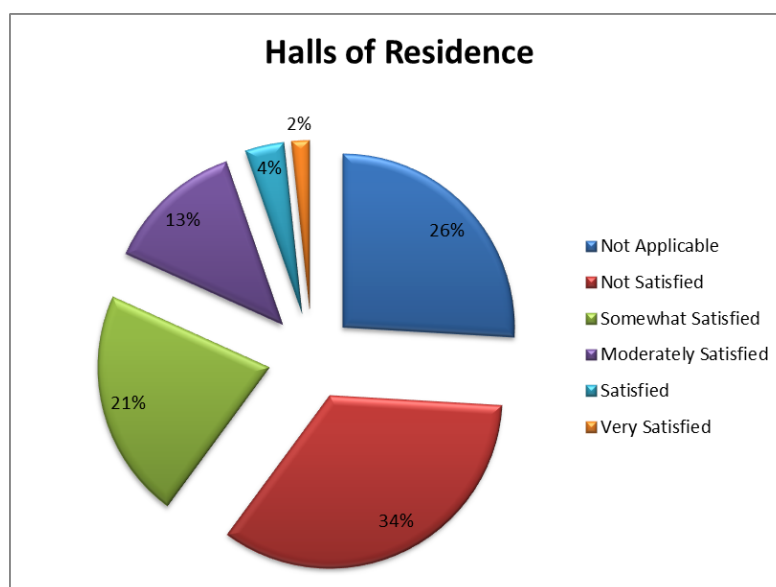


Figure 3: Halls of Residence

Source: Field Survey, 2011.

TABLE 10
Examinations

	<i>Frequency</i>	<i>Percent</i>
Indifferent	14	4.5
Not Satisfied	30	9.7
Somewhat Satisfied	34	11.0
Moderately Satisfied	79	25.5
Satisfied	82	26.5
Very Satisfied	71	22.9
Total	310	100.0

Source: Field Survey, 2011.

Conclusion and Recommendations

This paper outlined some of the quality issues that students, as key stakeholders of tertiary education, consider relevant in helping them derive maximum satisfaction in their academic pursuits in one of the ten regional polytechnics of Ghana — the Tamale Polytechnic. Availability of lecturers for consultation by students outside normal class hours, a congenial classroom atmosphere, hurdle-free registration at the beginning of the semester, and an effective management system were some of the quality issues

that respondents from the survey identified as needing attention. Thus, to ensure that this vital stakeholder group gets value for their money, authorities of the Polytechnic will need to consider these views seriously and put in place the necessary quality enhancement mechanisms. As a panacea to the concerns raised, we propose the following mechanisms:

- Institutionalisation of periodic student satisfaction surveys;
- A more aggressive approach to generating income internally to supplement government subventions;
- Removal of bottlenecks from the registration process;
- Provision of offices for lecturers so they can be available to provide tutorials after regular classes;
- Recruitment and/or appointment of student/academic counsellors;
- Motivation off teachers to give of their best in class;
- Retraining for teachers in new trends in tertiary pedagogy.

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