PERSPECTIVES ON COURSE MANAGEMENT, TEACHING AND ASSESSMENT OF UNDERGRADUATE PROGRAMMES AT THE MEDICAL SCHOOL OF THE UNIVERSITY OF ZAMBIA

BY

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A thesis submitted to the University of Zambia in fulfilment of the requirements for the award of Doctor of Philosophy in Medical Education

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LUSAKA

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DECLARATION

I, Harrison Daka, declare that this Thesis

(a) represents my own work;
(b) has not previously been submitted for a degree of this or another University; and
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APPROVAL

This Thesis of **Harrison Daka** has been approved as fulfilling the requirements for the award of a Degree of Doctor of Philosophy in Medical Education by the University of Zambia.

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DEDICATION

This thesis is dedicated to my late father and mother Sainani and Helen Mwanza respectively who, despite not having formal education, supported me throughout my education. To my only love, my wife Leastina Makowa Daka, for the support and taking up family roles as I was busy working on this study. To my lovely and cheerful children: Mercy, Blessings, Gabriel and Bright who always gave me space as I worked on this thesis. To you all, I am thankful.

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ACRONYMS AND ABBREVIATIONS

AAMC	Association of American Medical Colleges
AIDS	Acquired Immune Deficiency Syndrome
BSc	Bachelor of Science
BSc Biomed	Bachelor of Sciences in Biomedical Sciences
BSc Env	Bachelor of Sciences in Environmental Health
B. Pharm	Bachelor of Pharmacy
BSc Physio	Bachelor of Sciences in Physiotherapy
CME	Council of Medical Education
CPD	Continuing Profession Development
DFID	Department for International Development
DMED	Department of Medical Education and Development
GPA	Grade Point Average
GRZ	Government of the Republic of Zambia
HCW	Health Care Workers
HIV	Human Immunodeficiency Virus
HPCZ	Health Professions Council of Zambia
ICT	Information Communication Technology
MB ChB	Bachelor of Medicine and Bachelor of Surgery
MoE	Ministry of Education
MoH	Ministry of Health
MEPI	Medical Education Partnership Initiative
MOODLE	Modular Object-Oriented Dynamic Learning Environment
NESF	Nursing Education Simulation Framework
OSCE	Objective Structured Practical Examination
PGDEHP	Postgraduate Diploma in Education for Health Professionals
SADC	Southern Africa Development Community
SoM	School of Medicine
UNICEF	United Nations International Children's Emergency Fund
UNESCO	United Nations Educational, Scientific and Cultural Organisations
UNZA	University of Zambia

UNZABREC	University of Zambia Biomedical Research Ethics Committee
USA	United States of America
WFME	World Federation for Medical Education

ABSTRACT

Over the years since its inception, the University of Zambia, School of Medicine remained a premier academic institution that prided itself with exceptionally high outcomes and graduates of high caliber. Such high quality remained the order of the day, even during the course of this study in the year 2018. However, despite such accolades, and during the course of the focus of this study from 2008 to 2016 high examination attrition rates and low students Grade Point Average (GPA) among undergraduate programmes have been observed in the School of Medicine of the University of Zambia (Field data, 2018). In order to delve into this issue, this study investigated staff and students' views regarding the relationship among course management, teaching approaches and assessment processes among undergraduate students trained at the University of Zambia, School of Medicine.

A mixed methods approach involving qualitative and quantitative methods was employed to investigate the above mentioned issue. An exploratory sequential research design was used for data collection. Data were captured using two related sets of instruments. The first was an evaluation survey instrument on the Teaching and Learning of undergraduate programmes in the School of Medicine and document analysis. The second was a students' Focus Group Discussion schedule and an in - depth interview schedule for key informants regarding the GPA and examination attritions. Results of the two sets were compared. Quantitative data from the first set were analysed using descriptive and inferential statistics while qualitative data from the second set were analysed using constant comparative method. The study revealed that the following contributed to low GPA and high examination attrition rates in the School of Medicine at the University of Zambia during the period under study:

(a) there were inadequate teaching and learning spaces as well as inadequate information technology support, (b) there was a statistical significant difference in the workload of all courses among the various programmes, $F(4, 596) = 8.53$, $\rho = .000$ at $\rho = .050$ which were heavy, with little time allocated to them. The majority (92%) of MB ChB respondents and BSc Env respondents (75%) stated that the workload was heavy, (c) concepts were not explained in depth, which led to students' perceptions that courses were difficult, (d) despite having well qualified lecturers (54.7%) students were not availed with handbooks (62.6%) and course curriculum (53%). There was no statistical significant difference among the programmes, $F(4, 596) = .600$, $\rho = .663$ at $\rho = .050$, (e) there was little timely feedback (47.8%) and, where it was done, it lacked guiding comments (48%), (f) in some cases (28.8%) assessment tasks were misaligned with learning objectives.

In conclusion, the study showed that the low students' GPA and high examination attrition rates at the Medical School of the University of Zambia were due to poor course management, inappropriate teaching approaches and improper assessment processes. In view of these findings, the study recommends that:

(a) enrolment of students should be dependent on availability of infrastructure and facility capacities, (b) course contents (i. e. curricular) should be reviewed so that they are in accordance with the time allocated to them, (c) assessment tasks should be aligned with learning objectives, (d) feedback should be given to students on time and should be detailed, (e) the Department of Medical Education and Development (DMED) should consider organizing specific pedagogical training programmes for existing and newly employed academic staff.

CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter presents the introduction to the study. Herein, the background to the study is provided. Other subsections of the chapter include; a brief description of the variables predicting educational quality as stated by the United Nations International Children's Emergency Fund (UNICEF) and other scholars, Statement of the Problem, Aim of the Study, Research Questions and Research Objectives. Furthermore, the chapter explains the Significance of the Study, Operational Definitions, Summary of the Structure of the Thesis and Conclusion.

1.2 Background to the Study

Within Zambia, as well as within the Southern African Development Community (SADC) and internationally, the University of Zambia, School of Medicine has maintained exceptionally high standards across a range of factors. The factors include; maintaining quality instructional design, instilling in students intrinsic motivation and producing competent graduates who have excelled locally and abroad. In this regard, it has been a premier institution of choice. In 2017, the University of Zambia transformed the Medical School into four new schools, namely, School of Public Health, School of Health Sciences, School of Nursing Sciences and School of Medicine. This study's findings refer to a period between 2008 and 2016 before the institution split up. The findings can be implemented in the newly established schools to determine if findings of this study hold sway.

1.2.1 Contextualizing the Study

The University of Zambia, School of Medicine has continued to be a prime institution of the Government of the Republic of Zambia in health education. It has sent out not only Doctors but also Pharmacists, Biomedical Scientists, Physiotherapists, Environmental Health Officers and Nurses who have made a real difference in the Zambian society. It has been real to its motto of "Service and Excellence".

It has also performed quality research which has influenced policy and practice and has greatly contributed to quality clinical service. The Bachelor of Medicine and Bachelor of Surgery (MB ChB) curriculum was reviewed in 2010 and during this study it was in its 4th year of implementation. The main change in the curriculum was the insistence on it being competence based and innovative in its mode of delivery. This was aimed at producing better quality graduates and providing room for increasing the number of enrolments.

The Medical School's mission statement is, "To provide excellent tertiary education and training in health sciences in order to address current and emerging health needs" and its vision is to be, "A leader in Tertiary Health, Education, Care and Research in the Region by 2030". The goal of the Medical School is, "To train Doctors and nurses, Biomedical scientists, Physiotherapists, Environmental Health Scientists, Pharmacists and other health care professionals at the undergraduate level, provide quality patient care and carry out quality research to address the health priorities of our country Zambia".

In order to monitor and evaluate the quality of teaching and learning, the Department of Medical Education and Development has been mandated to train all staff in pedagogy and to conduct evaluation. The purpose of this evaluation exercise is to help the School of Medicine serve its clients better. Therefore, there are three standards of the Monitoring and Evaluation exercise which have been targeted in this study. These three (3) are:

a) Institutional Accreditation on the World Federation for Medical Education (WFME) Basic Standards. This standard looks at the institutions' accreditation worthiness when assessed using the WFME Standards
b) Evaluation of Educational Standards (Teaching Contribution and Course Management). This standard assesses the quality of teaching contribution and course management by measuring student perceptions on various educational indicators.
c) Standard C Assessment Standards. This standard assesses the assessment methods used including reliability and validity, quality of, and administration of assessments.

The School of Medicine admits its students from the School of Natural Sciences where they complete Basic Sciences. They admit the best performing students with high Grade Point Average (GPA). During this study, the Medical School of the University of Zambia had the following number of students as shown in Table 1.1:

Table 1.1: Number of Students per Programme

Programme	Number of students
Nursing Sciences	295
MB ChB	281
BSc Human Biology	310
B. Pharmacy	299
Biomed	144
BSc Physiotherapy	122
BSc Environmental Health	128
TOTAL	**1579**

(Source: Field Data, 2018)

Grades in any course are dependent on students' performance and the Grade Point Equivalent is used to determine a student's Grade Point Average. From the 2015/2016 academic year, the University of Zambia adopted the grading system shown in Table 1.2 below.

Table 1.2 Scoring and Grade Point Value System

LETTER GRADE	DESCRIPTION	MARK RANGE	GRADE POINT VALUE
A+	DISTINCTION	90 -100	5
A	DISTINCTION	80 – 89	4
B+	MERITORIOUS	70 – 79	3.5
B	CREDIT	60 – 69	3
C+	CREDIT	50 – 59	2.37
C	PASS	45 – 49	1.5
D+	FAIL	40 – 44	0
D	FAIL	< 40	0

(Source: Field Data, 2018)

Increases in examination attrition rates and low Grade Point Average (GPA) are growing concerns in most higher learning institutions (Tyre-Smith, 2010). Student attrition in higher education has remained a much studied but little understood phenomenon. From the School of Medicine, the GPA and examination attrition rates for the years 2008 and 2014 were analysed and the following were discovered.

The 2008-2014 students' GPA from the School of Medicine at the University of Zambia shown in Table 1.3 below indicated that in all programmes the GPA was less than 3.50 with the lowest GPA values coming from BSc Physiotherapy with 1.65 in 2008 followed by the MB ChB Programme in 2009 with 1.67. The year 2008 had the lowest average GPA of 2.16. Overall, the MB ChB Programme showed the lowest GPAs.

Table 1.3 Grade Point Averages from 2008 to 2014

PROGRAMME	**2008**	**2009**	**2010**	**2011**	**2013**	**2014**
BSc ENV. HEALTH	2.15	3.27	2.85	2.53	1.97	3.22
BSc PHYSIOTHERAPY	1.65	2.42	2.61	2.12	2.24	3.10
BSc BIO SCIENCES	2.63	2.63	1.73	3.07	2.10	2.73
BSc PHARMARCY	1.92	2.30	2.05	2.10	2.47	2.62
BSc Nursing Sciences	2.71	3.11	2.73	2.90	2.20	3.30
MB ChB	1.95	1.67	1.73	1.86	2.09	2.15
AVERAGE	**2.16**	**2.57**	**2.28**	**2.43**	**2.18**	**2.85**

(Source: Field Data, 2018)

The examination attrition rate from Table 1.4 varied from 3.03% 2008 to 24.94% in 2014. The highest examination attrition rates were from BSc Biomedical Sciences which had 41.0% in 2014 followed by MB ChB Programme which had 30% in 2009 and 2014 and thirdly BSc Pharmacy which had 29.0% in 2014. This meant that more courses from these programmes were to be evaluated though courses from other programmes were also analysed. The highest examination attrition rate on average during the years under review was in 2014 with 24.94%.

In all the other years apart from 2008, the average examination attrition rates were above 10%. Tyre-Smith (2010) posits that if the examination attrition rates are more than 10%, there is need for investigation in order to come up with strategies of improving quality of education thus the reason this study was conducted.

Table 1.4 Examination Attrition Rates (%) from 2008 to 2014

PROGRAMME	**2008**	**2009**	**2010**	**2011**	**2013**	**2014**
BSc ENV. HEALTH	6.67	0.00	6.25	8.75	4.00	14.7
BSc PHYSIOTHERAPY	7.50	20.00	21.50	6.50	25.0	10.0
BSc BIO SCIENCES	0.00	4.33	12.30	6.00	19.0	41.0
BSc PHARMARCY	0.00	15.50	12.00	15.00	18.0	29.0
BSc Nursing Sciences	0.00	11.50	10.00	12.00	20.0	7.50
MB ChB	1.00	30.00	14.00	17.00	12.0	30.0
AVERAGE	**2.53**	**13.55**	**12.68**	**10.88**	**16.33**	**22.03**

(Source: Field Data, 2018)

Another intention of this study was to measure educational quality at the University of Zambia, School of Medicine from 2008 to 2016 by establishing the relationship between course management, teaching practices and assessment processes on one hand, and examination attrition rates and Grade Point Average (GPA) on the other. This was done through the evaluation of course management, rating of teaching contributions and assessment practices. The idea for the study stemmed from the phenomena observed by the researcher that, despite the School of Medicine selecting and admitting the highest performers from the School of Natural Sciences and having projects like the Department for International Development (DFID) from 1995 to 2000 and Medical Education Partnership Initiative (MEPI) from 2011 to 2015 which aimed at improving the quality of teaching, the School of Medicine still recorded low students' GPA and very high examination attrition rates, as shown in Table 1.3 and Table 1.4 respectively, for the period 2008 to 2014. In view of this situation, the School of Medicine would benefit from objective data to determine if course management, teaching practices and assessment processes affect the student GPA and examination attrition rates.

UNICEF (2000) proposes that where there is educational quality, students' outcomes may include; high Grade Point Average, high student retention and low examination attrition rates. Thus UNICEF (2000) defines educational quality as a situation where there:

i. **Are quality learning environments** that are healthy, safe, protective and gender-sensitive, and provide adequate resources and facilities;

ii. **Is quality content** that is reflected in relevant curricula and materials for the acquisition of basic skills;

iii. **Are quality processes** through which trained teachers use learner-centred teaching approaches in well-managed lecture rooms and schools and skillful assessment to facilitate learning and reduce disparities;

iv. **Are student outcomes** that encompass knowledge, skills and attitudes, and are linked to national goals for education and positive participation in society.

Therefore, it is important to discuss these variables in detail to understand how they contribute to educational quality.

A. Quality of Learning Environment

For positive learning outcomes to be achieved there is need for quality learning environments. Learning environments are made up of physical, psychosocial and service delivery elements. Such factors as classroom maintenance, space and furniture availability all have an impact on the critical learning factor of time on task. Lazzio (2010) highlighted in his study for the National Center for Teacher Effectiveness (NCTE) in a three (3) year data collection process in the United States of America (USA) that students' perceptions of their current learning environment were a stronger predictor of learning outcomes at university than prior achievement at school. From Lazzio's study, it can be inferred that the learning environment has a bearing on students' academic performance.

Osborne (2013) added that many of the modern learning environments being built today promote and support a range of pedagogies including delivering, applying, creating, communicating and decision-making. Such learning environments support strengths-based teaching and can offer students and teachers flexibility, openness and access to resources.

Lecturers in such environments are provided with an open, flexible learning environment where inquiries are shared, interventions devised collaboratively, and reflections are based on both self and peer observations. All these factors can lead to the development of a robust and continuously improving quality of learning.

A welcoming and non-discriminatory climate is critical and needs to be maintained as it creates an environment for quality-learning. Further, comments from lecturers on the achievement of learners are very vital. Some negative perceptions of lecturers towards learners and comments are barriers to quality learning. Reducing other forms of discrimination is also critical to quality improvement in learning environments. Ulug *et al* (2011) from their studies showed that that teachers' positive perceptions of lecturers towards learners positively influence students' personality as well as their life performances. Based on these findings the teacher's role in lifespan education is seen as stretching beyond simple knowledge transformation. This is from the understanding by Karsli (2007) that education is the activity that aids new generations to obtain the necessary information, ability, attitude and understanding and develop their character while preparing them for communal life; and all these are transmitted from the teacher. Karsli (2007) also adds that the most important factor in education and teaching activities is the teacher's attitude towards teaching.

The medical school service environment can also contribute to learning in important ways. Guidance and counselling services and the provision of extra-curricular activities are other examples of service provision that contribute to quality school environments. It should also be noted that this learning begins with quality content (Osborne, 2013). This is in agreement with what Fredricks *et al* (2006) found out from their study among African American and European American youths in the USA that active participation can be linked to positive academic outcomes, including improved grades, test scores, more school engagement, and increased educational aspirations. Wilson (2009) also adds that students who participate in extracurricular activities generally benefit from the many opportunities afforded them. Benefits of participating in extracurricular activities include having better grades, having higher standardized test scores and higher educational attainment, attending school more regularly, and having higher a higher self-concept.

B. Quality Content

In general, curriculum should emphasize covering concepts in depth so as to ensure that learners understand the subject matter rather than covering a broad range of concepts without much explanation as the latter does not stress skills development as well as knowledge acquisition (Smith, 2009). In all content areas, Oziga (2007) states that curriculum should be based on clearly defined learning outcomes and these outcomes should be grade-level appropriate and properly sequenced. There is also need to involve the lecturers who teach the particular courses in curriculum design as they would be comfortable to teach what they designed. To be most effective, quality content must be imbedded in a context of quality processes (Feller, 2006).

C. Quality Processes

Massy (2014) states that quality-process reviews are founded on the principle that good people working with sufficient resources and according to good processes will produce good results. He further adds that on the contrary faulty processes will prevent even good people and plentiful resources from producing optimal outcomes. This demonstrates the importance of quality process in educational quality. Quality-process reviews generally take place at the institutional level, though there is nothing to prevent subject-level audits. Most Medical schools that have quality lecturers and sufficient resources use quality processes in order to produce students with high GPA and such institutions have low examination attrition rates (Kuhn, 2006). In our study, the quality process had to include both performance assessment and assessment of factual knowledge which were determined through student outcomes (Dockter, 2001; Weddle, *et al*. 2003; Smith, 2009; Mashaba, *et al*, 2003).

D. Student Outcomes

Quality learner outcomes are intentional expected effects of the educational system (Kane, 2006). They include what students know and can do, as well as the attitudes and expectations they have for themselves and their societies. Student achievement results are important indicators of educational quality. However, achievement results can be interpreted meaningfully only in the context of the system that produced them. Where there is educational quality, the students outcomes include: High Grade Point Average, high student retention and low examination attrition rates (Shelton, 2003; Orlando, 2002 and Azlan, 2004).

Figure 1.1 on the next page summarizes the process of educational quality as discussed above.

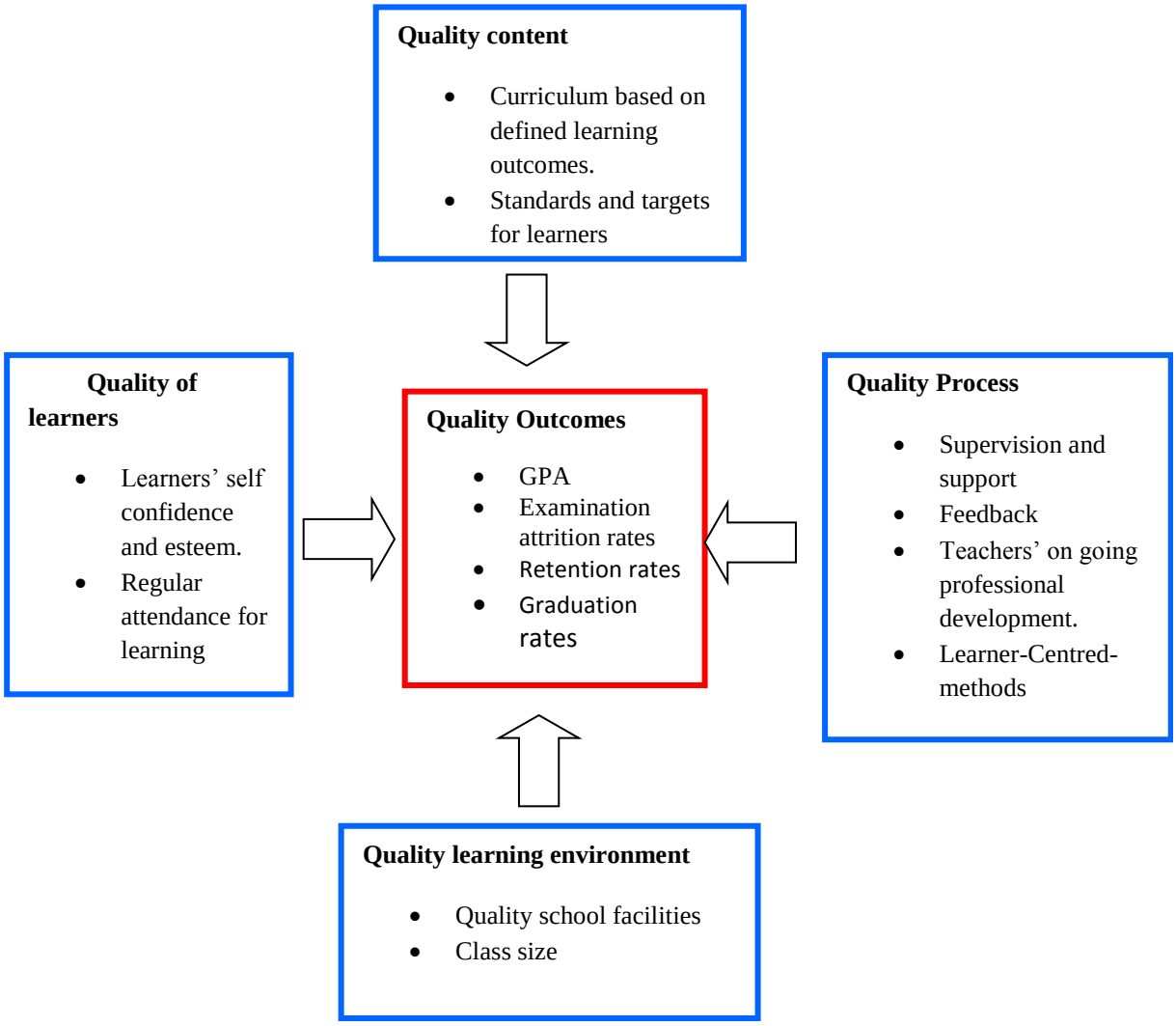


Figure 1.1: Process of Educational Quality

(Adapted from UNICEF, 2000)

The evidence from literature also showed that quality of teaching contributes to high GPA and low examination attrition rates (Hamshire, 2017). According to De Remer (2002) attrition is defined as a student's departure from the school or possible departure from the entire educational system while Grade Point Average (GPA) numerically represents a student's quality of performance (Hamshire, 2017 and Douglas and Fredendall, 2004). GPAs are often used to determine if a student qualifies for a certain academic action, for instance, to

enter into scholarship or major graduation. In the case of the University of Zambia, students with high GPAs are selected from the School of Natural Science to enter the Medical School.

It should be stated at this point that many investigators in medical schools have identified undergraduate institutional education quality as an important predictor of educational success (Choy, 2001; Sulaiman, *et al,* 2006; Susan, *et al,* 2011). (Sulaiman, *et al,* 2006; Susan, *et al,* 2011) have also related quality of education to students' GPA. The GPA is a world recognised grading system that determines the overall competence across all subjects (Susan, *et al,* 2011). Grade Point Average (GPA) is defined by Choy (2001) as the average of total amount of grades by a candidate in a semester or academic year or programme. Evans *et al* (1975) examined the records of 66 minority students enrolled in the Case Western Reserve University School of Medicine in the early 1970's. Thirty years later, some researches done by other scholars found similar results that GPA determine the quality of a learning institution (Pascarella, *et al* 2005). These investigators quantified each student's undergraduate institution quality based on GPA. Students' GPAs in the other studies were also suggestive of their educational quality (Perna *et al,* 2006; Susan, *et al,* 2011 and Dockter 2001).

Examination attrition is in addition one of the quality outcomes which can determine the educational quality of a learning institution (James *et al,* 2001). Though academic reasons for attrition have not been exhausted and can be different from one setting to another, Moore and Shurock (2006) state that examination attrition rates is the major quality outcome. The examination attrition rates also affect the students' retention in a learning institution. The more students progress to the next year, the higher the retention rate in most cases (James *et al,* 2001).

There is a relationship between grades and student retention. Pascarella *et al* (2005) showed that grades can predict student retention, degree completion and graduate school enrolment. Good grades in the first year reduce chances of students' attrition and increase the probability of timely degree completion. For example, Adelman (2005) in the study done on behalf of the National Center for Education Statistics and United States (US) Department for Education showed that both first year grades and trends in subsequent grades predicted degree completion beyond the effects of other variables.

Further, numerous investigators have looked at the influence of undergraduate GPA on retention in medical schools (James *et al* , 2001; Choy, 2001; Sulaiman, *et al* , 2006; Perna *et al* , 2006 Susan, *et al* , 2011; Watson *et al* , 2000 and Dockter 2001). Most of these investigators found that undergraduate GPA was a significant predictor of success in medical school (Choy, 2001; Sulaiman, *et al*, 2006; Perna *et al*, 2006 Susan, *et al*, 2011 and Dockter 2001).

Research on the causes of low GPA and high examination attrition rates is contradictory and inconclusive (Bean, 2006). There is disagreement over which model of quality has the major theoretical works. Pascarrella *et al* (2005) states that the major causes to low GPA and examination attrition are variables from course management and institutional characteristics while Wild *et al* (2002) emphasizes on teaching characteristics and institutional characteristics as major contributors to students' GPA and examination attrition rates. Moore *et al* (2006) on the other hand argue that assessment processes and teaching characteristics are major contributors. Thus one of the few things scholars agree on is the importance of studying and improving retention (Wild and Ebbers, 2002).

Despite decades of attention, attrition remains one of the most complex and least understood problems facing institutions (Bean, 2006). Defining attrition, the factors behind it, and developing potential solutions are concurrent priorities in education theory and application (Schaeffer *et al*, 2010). Thomson (1999) highlights that high attrition rate indicates that an institution has an educational quality problem. As a result, universities are becoming more observant and accountable for graduation rates (Titus, 2004). Titus (2004) also adds that policy makers in most states are using retention and graduation rates as indicators of performance for higher education institutions.

In higher learning institutions high GPA is a primary goal though Steele (2007) states that improvements in attaining it seem to be ineffective. In most universities in the United States of America (USA), research shows that slightly over 50% of the students complete their degrees within the years though their GPA is slightly high (Berkner and Luthar, 2002). The higher GPA for students indicates to the outside community the quality of education offered in the medical school (Schaeffer *et al*, 2010).

The School of Medicine is not the only learning School at the University of Zambia that might use the findings in this study. There might be a wider implication for other schools in

the University of Zambia to use such findings. However, while there may be applications by other schools, this study focused on the School of Medicine. So far, no such research has been conducted at the University of Zambia to ascertain the connections between course management, teaching approaches and assessment processes with students' GPA and examination attrition.

1.3 Problem Statement

High examination attrition rates and low GPA in Table 1.3 and Table 1.2 respectively raised concerns for the researcher. Stakeholders in the Zambian education system and the Ministry of Health hope that all students who enter into medical school would finish within the expected period of years and be able to apply what they learn (Braxton, 2007). This hope is in agreement with one of the main objectives of medical education which stipulates that students need to graduate within a stipulated time (Council of Medical Education, 2010). However, this was not the case at the medical school of the University of Zambia as many students failed to graduate within the stipulated period as seen from the high examination attrition rates. Unfortunately, no systematic investigation was ever carried out on this matter with the aim of generating knowledge on why the situation was like that.

Educational quality and higher retention rate can generate more benefits for a training institution like UNZA's School of Medicine, students and the Ministry of Health. Steele (2007) states that retention and high GPA is a primary goal for higher education institutions. Reason (2009) equates high retention rate to high quality of teaching in an institution. He further states that institutional quality is also measured by average high GPA.

Selection of students at the University of Zambia is based on merit. Those with best results are selected from the School of Natural Sciences which also selects the best among the best applicants from secondary schools. Then the medical school of the University of Zambia selects and admits the highest performers from the School of Natural Sciences.

In addition to these admission criteria, the Medical school of the University of Zambia has since 1995 initiated projects which aim at improving the number and quality of graduates by improving their learning environment and access to educational resources. In 1995, there was the United Kingdom Department for International Development (DFID) Project which was

implemented for 5 years whose aim was to improve the quality of learning in the School of Medicine. From 2010 to 2015 the school again embarked on a 5-year Medical Education Partnership Initiative (MEPI) project which also focused at improving the quality of education provided by the School.

Despite all these mitigations, the students' GPA remained low and examination attrition rates in the school were high. Little effort was made to understand this phenomenon thus such a situation constituted a problem. It was in view of such a situation that this researcher deemed it important that the quality of teaching/learning, course management and student performance in assessment needed to be investigated in order to obtain a better understanding of the phenomenon, hence, the present study.

There is, therefore, need to clarify and interpret the interaction of the characteristics of the structure and culture of the undergraduate programmes that perpetuate high loss rates and low GPA which lies at <2.0 (Banda, 2004). The 2003 self-evaluation against the WFME (World Federation for Medical Education) standards also showed that the School of Medicine did not meet the required score in all the areas of the WFME International Standards for Basic Medical Education. Hence finding ways to decrease attrition rates and produce students with high GPA is critical both from an economical and quality point of view.

1.3.1 Dimensions of the Problem

Increase in attrition rates and low student GPA among undergraduate medical students at the University of Zambia, School of Medicine may produce various deleterious effects for the Zambian society, the School of Medicine itself and the Ministry of Health. De Remer (2002) states that high examination attrition is costly both to education providers and students. The effects of attrition are problematic at many levels. The dropout rate also affects institutions, students and communities. Such problems include the following:

- When students fail, then their tuition fees are also lost. An institution like the University of Zambia is impacted through the loss of tuition fees. Therefore, when a student drops out the institution loses tuition revenue. Moody (2004; 205) states that, 'the costs for development, delivery and assessment, as well as lost tuition revenue, result in wasted expenditures for the institution and years for students.'

- In addition, the affected students experience occupational and monetary consequences for their attrition. From students perspectives, dropping out impacts short and long term financial matters. In the short term, the student loses money on the tuition spent to attend classes. In the long term, the student limits the lifetime coming potential and job opportunities which ultimately affect the quality of life. The personal shame and social stigma of dropping out are also part of the consequences.

- On the part of societal consequences, especially in health care professions where the workforce shortage mostly exist; Wold *et al* (1990), Bolan *et al* (2003) and Dowel (1996) state that a student in a health care professional programme who fails will result in one less employee practicing in the clinical setting in a few years to come. Schuetz (2005) also adds that attrition takes its toll on community and society as students who drop out reduce the pool of employees available to function in an increasingly complicated work place.

- Another significant societal implication of attrition is the epidemic of Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS) and many other health challenges. There are a lot of opportunistic infections (OIs) associated with this epidemic which require a lot of manpower in the health sector (Azlan, 2004). Therefore, the retention of students in the health care professional programmes will help to provide an adequate supply of professionals to provide for the future health care needs in Zambia.

1.4 Purpose of the Study

The purpose of this study was to investigate staff and students' perspectives on the relationship between course management, teaching approaches and assessment processes, on one hand, and the GPA and examination attrition rates among undergraduate health professions students of the University of Zambia, on the other hand.

1.5 Specific Objectives

From the purpose of the study, the following specific objectives were framed to answer the above purpose, namely:-

i to establish how courses of undergraduate students were managed at the Medical School of the University of Zambia.

ii to explore staff and students' views regarding the teaching approaches used for undergraduate students at the institution.

iii to examine staff and students' views concerning assessment processes, and

iv to devise a conceptual framework to improve students' academic performance in the Medical School of the University of Zambia as a result of data from items (1.4.1) to (1.4.3).

1.6 Main Research Question

In order to achieve the above mentioned objectives, the main research question was posed as, 'How do staff and students perceive the relationship between course management, teaching approaches and assessment processes on one hand, and examination attrition and Grade Point Average of undergraduate medical students at the University of Zambia medical school, on the other?'

1.6.1 Specific Research Questions

The following were the specific research questions that guided data collection:-

i. How are undergraduate courses managed at the Medical School of the University of Zambia?

ii. In the view of staff and students, how has the teaching of undergraduate medical students at the institution been conducted?

iii. How is assessment of students at the UNZA Medical School conducted as understood by staff and students?

iv. Arising from items i - iii above, what measures should the Medical School of the University of Zambia put in place to improve students' academic performance?

1.7 Study Variables

A concept which can take on different quantitative values is called a variable. In this study, the variables included Grade Point Average and Examination Attrition Rates. If one variable depends on the other variable, it is termed as a *dependent variable* and the variable that is antecedent to the dependent variables is termed as an *independent variable*. An independent variable is a variable that is manipulated to determine the value of a dependent variable. In this study, dependent and independent variables were isolated and investigated on to achieve the research objectives.

1.7.1 Dependent variables

- Grade Point Average
- Examination Attrition Rates.

1.7.2 Independent variables

- Institutional characteristics
- Course management
- Teaching characteristics
- Assessment standards

1.8 Significance of the Study

Attrition and GPA in healthcare education institutions are mostly investigated in most medical schools in Western countries (James *et al*, 2001 and Shelton, 2003). This is despite their impact on healthcare personnel and subsequent influence on societal well-being. The attrition rates and the factors that predict attrition in the MB ChB and Nursing programmes at the University of Zambia may differ from the results by other investigators. Thus it may not be appropriate to generalize the results or these other studies to the University of Zambia and other similar institutions given philosophical and programmatic differences between institutions of higher learning.

However, the findings could contribute to lower the attrition rates, raise the GPAs for the students and consequently lead to more students graduating and thereby filling up gaps in the healthcare system. Thus the challenge of inadequate medical doctors and other health care professionals could eventually be addressed. The higher GPA for students would, in turn,

indicate to the outside community the quality of education offered in the medical school (Allen, 2016). Therefore, analysis of attrition and predictors of academic success might yield multiple long-term benefits. Studies of attrition and identification of students who may struggle both academically and personally are important to enable evidence-based selection and support services at medical schools.

As earlier stated, the School of Medicine partnered with MEPI and one of the aims of MEPI was to contribute toward bringing about quality in the training of healthcare workers. The School had commissioned some activities which included, among others, enhancement of classroom infrastructure, training of academic staff in pedagogy, integration and utilization of e-Granary resources, establishment of clinical skills laboratory, and assessment of skills laboratory utilization by faculty and students. However, as at the time of this study, not much had been done to assess if the project had brought about quality teaching and learning.

This study therefore aimed at determining whether or not the characteristics of courses and teaching had a bearing on high examination attrition rates and low GPA for the undergraduate medical students trained at the University of Zambia. Thus the findings of the study could inform UNZA, School of Medicine administration and other new Schools which have been formed, the new Departments in the Schools formed and Project implementers, the contributing factors of low GPA and high examination attrition among undergraduate medical students of the University of Zambia. This in turn could:

- Help the University of Zambia come up with a policy to carry out, annually, the evaluation of teaching and learning in order to investigate the contributing factors of high failure rates in different courses and in turn improve the University' service levels and the quality of education it provides both at undergraduate and postgraduate levels.

- Help the School of Medicine administration come up with a practice of training all recruited new lecturers in specific pedagogical training in effective teaching thereby come up with workable strategies which would improve the teaching and learning thereby increasing students' academic performance.

- Help departments in the School of Medicine to review their programmes so that the content covered is relevant and related to each other within the programme.

- Help Project implementers to use the findings as a reference point for focusing their projects in improving the quality of teaching and learning in the School of Medicine.
- Add to the body of knowledge on the causes of students' low GPAs and high examination attrition rates at the Medical School of the University of Zambia.

- Improve the quality of learning at the Medical School and other Schools, thereby improving students' GPA and examination attrition rates.

- Help fill gaps identified and generate academic debate on the notion of quality teaching in the Medical schools of Zambia.

1.9 Motivation

The work described in this thesis was conducted at the University of Zambia, School of Medicine. The reasons for conducting the research were: 1) The researcher had served as a lecturer in the faculty of Education of the University of Zambia for more than seven years and thus, he had a good understanding of the course management and teaching characteristics in the University; 2) The researcher was an external examiner ~~from~~ for two years (2008 to 2009) in the Postgraduate Diploma in Education for Health Professionals (PGDEHP) Course in the School of Medicine which was housed in the Department of Medical Education and Development (DMED) where this PhD study was pursued from. 3) Over the past two decades UNZA, School of Medicine embarked on two capacity building projects by DFID (1995 to 1999) and the Medical Education Partnership Initiative (2010 to 2015) whose activities aimed at improving quality of education in the school. 4) DMED had a unit responsible for Monitoring and Evaluation of teaching and learning in the School of Medicine and this researcher was appointed as a Monitoring and Evaluation Officer under the MEPI project. 5) The examination attrition rates had been the highest at the University of Zambia in the School of Medicine thus there was need to come up with strategies of improving quality of learning. 6) Every year, different faculty members applied for promotion and the basis for promotion could be attributed to the evaluation of the teaching and learning characteristics.

Furthermore, the experience of curriculum development, characteristics of teaching and learning, and the implementing of assessment practice advancements rendered the research findings potentially useful to other African medical schools facing similar challenges.

Finally, the potential for UNZA to use the findings in self-evaluation assessment for accreditation was possible. The same approach of evaluation could be decentralized at departmental level in different schools to improve the quality of teaching. This could also be used as a framework for assessing faculty when applying for promotion.

1.10 Scope of the Study

The focus of this study was to investigate staff and students' views on the relationship between course management, teaching and assessment processes with the low GPAs and high examination attrition rates among Medical School students of the University of Zambia. In the first place, the School of Medicine educational standards were compared with the WFME basic standards with the focus on School mission and objectives, educational programmes, assessment of students, educational resources and governance of the school. This laid a foundation for the consideration of course management, the teaching practices, and the assessment processes as major contributors to educational quality. In addition to investigating teaching and learning, the lecturers also had to do a self-evaluation on how they perceived the school environment as a motivating factor to productivity and these were compared to establish the associations.

1.11 Operational Definitions

- **Correlation:**
  This term refers to statistical association or relationship between two or more variables. The correlation is positive if increase in one results in increase in another variable and is negative if increase in one results in decrease in another variable. In this study, correlation was sought between the independent variables (course management, teaching practices and assessment processes) and the dependent variables (GPA and examination attrition rates).

- **Variable:**

  This term refers to a characteristic of the participants that have different values. In this study, the active independent variables were course management, teaching practices and assessment processes while the dependent variables were students' GPA and examination attrition rates.

- **Educational Quality:**

  This refers to the effective management of courses, improved teaching approaches and good assessment processes in order to bring about high student academic performance, raise students' GPAs, and to lower examination attrition rates.

- **Basic Educational Standards:**

  The standard of something as measured against a set benchmark or the degree of excellence of something. In this case the expected basic educational standards are as set by the World Federation for Medical Education.

- **Quality Outcomes:**

  This refers to Grade Point Average and examination attrition rates.

- **Grade:**

  This is the process of applying standardized measurements of varying levels of achievement in a course. In the School of Medicine, Grades were assigned as letters (generally A through F) and were made to be equivalent to numbers as a range (for example 1 to 5).

- **Grade Point Average (GPA):**

  This is when grades from all courses of students are averaged. Therefore, The GPA is calculated by taking the number of grade points students earned in a given period of time in a particular course and averaged in a year or programme.

- **Average Mean Value:**

  This refers to average of the mean from the 5- Likert scale. In this study, high mean values (between 2.5 and 5) meant that the indicator was within an

acceptable range and less than mean value 3 meant negative perception of the indicator. However, in the case of course workload, values less than 2.5 indicated negative perception.

- **Quality Learner:**

  This refers to selected and qualified students who have been admitted by the School of Medicine and oriented in the institutional missions and objectives; and educational curriculum designs and guidelines.

- **Quality Teacher**:

  This term refers to an educator who has a positive effect on student learning and development through a combination of content mastery, command of a broad set of pedagogic skills, and communications/interpersonal skills. The following are considered as characteristics of a quality teacher:

  i) Teachers who are life-long learners in their subject areas, teach with commitment, and are reflective upon their teaching practice.
  ii) Those who are able to transfer knowledge of their subject matter and the learning process through good communication, diagnostic skills, understanding of different learning styles and cultural influences, knowledge about student development, and the ability to marshal a broad array of techniques to meet student needs.
  iii) Teachers who can establish an environment conducive to learning and leverage available resources outside as well as inside the class.
  iv) Those who use prescribed standards of assessing students in order to bring about learning.

- **Retention of students:**

  In this study, retention refers to progression of students in a subsequent year. If a student proceeds to the next year of study, then that student has been retained in the school.

- **Attrition:**

  This term refers to a student who fails in one course or more and is consequently required to repeat the course the following year.

- **Attrition Rate:**

  This term refers to the percentage of the number of students who fail in one course or more in a particular programme or year.

- **Institutional Characteristics:**

  This term refers to the existing School of Medicine Educational Standards which were compared to the Educational Standards of the accreditation bodies.

- **Course Management:**

  Course management refers to how students perceive course workload, pace of the course, the level of difficulty of the courses, and the time allocated to the courses in the School of Medicine.

- **Teaching Practices of Academic Staff:**

  These refer to the way lecturers perform in terms to teaching. This involves consideration of whether lecturers guide students in the courses, punctuality, and how the lecture delivery is done.

- **Assessment Practices:**

  These were the expected assessment standards implemented by lecturers in the School of Medicine. The practices referred to how lecturers prepared, graded and administered the assessments.

1.12 Outline of the Thesis

This thesis is divided into six main chapters. The first chapter is the Introduction while the second chapter is Literature Review. Chapter Three is Methodology, Chapter Four Presentation of Results of the Study, Chapter Five is the Discussion of the Findings and Chapter Six is Conclusion and Implications. Each chapter is divided into a number of sub-sections.

Chapter One outlines the causes of student attrition and low Grade Point Average in Universities and Colleges of Medical Education. The chapter also provides the effects of attrition at different levels and its implication to the learning institution and the society at large with references from different parts of the world. The chapter further presents the Problem Statement which points out the inputs of different projects which aimed at improving quality of graduates while admitting the highest performers from the School of Natural Sciences but ending up with high examination attrition rates and low GPA.

The second chapter presents the literature that was reviewed upon which the research questions were constructed and methodology built. The chapter begins with an understanding of educational quality as expanded by UNICEF (2000). The factors which determine quality teaching and learning are also discussed. The chapter further evaluates quality education for different medical schools in relation to GPA and student attrition. The chapter does an analysis of how Tinto's Conceptual Framework and Chickening and Gamson's Seven Principles contribute to educational quality. The chapter ends with the conceptual frameworks of Tinto and Chickening and Gamson's (1987) Seven Principles frameworks which were combined to focus on gaps and what could be used by the School of Medicine, University of Zambia in order to bring about low examination attrition rates and high students' GPAs.

Chapter Three presents the methodology that was used to answer the research questions. The chapter begins by providing the research paradigm where historical approach using data was used. This is followed by diagnostics research design. Then, the study site, population sample size sampling techniques and sampling procedures are outlined. Afterwards, the data collection tools are presented. The data collection procedure started with document analysis of the past examination results of 2008 to 2014, administering of The UNZA, SOM undergraduate booklet questionnaire followed by semi-structured in-depth interviews and ending with focus group discussions. The summary of data analysis is later presented. The chapter ends with how the threats to validity and reliability were dealt with.

The fourth chapter starts by providing the demographic variables of participants. The chapter then provides an analysis of the accreditation standards evaluation as outlined by the WFME to determine whether the School of Medicine can be accredited by an external body such as the Health Professions Council of Zambia (HPCZ). It is then followed by an outline of

research questions which were investigated and the hypotheses tested. The chapter is followed by key-research findings on how courses of undergraduate students were managed, how teaching of undergraduate students was done and how assessment evaluation was done. Findings on quantitative components were presented in form of graphics and tables while findings on qualitative components were presented according to themes.

Chapter Five (discussion chapter) has six major sections with other subsections in each section. The first section is an introduction of the chapter followed by the demographic characteristics of the study sample. The second section provides the discussion of how the School of Medicine had fared in the standards set by WFME on accreditation. In the sections, findings on the research questions are discussed.

Chapter Six covers the conclusions for the study and the study's implications. The chapter begins with the introduction and later outlines the empirical findings of course characteristics, management of teaching and learning activities and assessment standards evaluation in the School of Medicine. The implications of the study synthesises how the conceptual framework was used in relation to the results. The chapter is then followed by the policy measures to be put in place by the School. The proposed measures came from the findings of the study. Furthermore, the chapter outlines the limitations and recommendations for further research.

1.13 Conclusion

In this chapter, a number of issues have been discussed as a way of contextualizing this study. The chapter presented the background to the study where evaluation of the course management, teaching contributions and assessment practices was stated as an attempt to measure educational quality at the Medical School. It was also stated that the correlations between the quality of education with GPA and examination attrition rates were investigated in the study. In the chapter, the theoretical and conceptual approaches that were adopted in the study were mentioned. However, these issues are discussed more in the Literature Review (Chapter Two). This chapter also explained the Statement of The Problem, Research Questions, and Objectives of the Study and the Structure of the Study. Having presented the background that generated the need for this study, the next chapter presents a detailed

theoretical perspective and review of literature in order to provide a further understanding of the issues on study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents an in-depth evaluation of research already undertaken on the study area as well as theoretical literature. As stated by Christopher (2000), literature review is an assessment of the research and theoretical framework and not a list of all previous research. Quitman (2016) also added that literature review refers to any collection of materials on a specific topic and not necessarily the great literary texts of the world. This chapter is mainly comprised of literature from medical education journals, books, computerised-accessible materials such as doctoral theses and documents from associations as well as unpublished data-base.

The review begins with a description of the meanings of education quality and assessment of education quality outcomes where the issues of examination attrition, retention, graduation rates and Grade Point Average (GPA) are discussed. The relationship between quality of education with GPA and examination attrition rates is later explained. Factors which explain GPA and examination attrition rates are also analysed. The evaluation of effective measure of quality of education is also reviewed. The section that follows gives an explanation of Tinto's Conceptual Framework and Chickering and Gamson's Seven Principles and how they contribute to educational quality outcomes. The latter section includes the conceptual

framework which was used in this study and which, in turn, informed the methodology of the study and influenced the study.

The general aim of this review is to demonstrate that it is not just quality outcomes that should be focused upon but also the causal factors. The review also aims at evaluating different learning processes used in medical education learning institutions and relate to workable strategies which can result into educational quality.

2.2 Educational Quality

Joshi (2012) states that educational quality is an essential component in enhancing and maintaining the quality of teaching and learning in an institution. It is a major contributor to the high performance of students. Defining "quality" is difficult as it is subjective and dynamic. It has different meanings from different scholars. Sallis (2014) defined quality in medical education in relative terms as a state of reaching required standards as prescribed by the external agencies. The external agencies include the World Federation for Medical Education (WFME) and Health Professions Council of Zambia (HPCZ).

Other ways of defining quality by Osborne (2013) in education include:

i) Quality as deemed fit for research and teaching in educational institutions, and
ii) Quality as a transforming force for fulfilling the vision and mission of an institution.

It should be stated that in an environment of intense competition and globalization of the medical profession, it is imperative that our graduates and postgraduates are ready to take up professional positions anywhere in the world. They need to be knowledgeable, clinically competent and professional. Thus medical educational institutions like the University of Zambia have to establish quality standards and constantly strive to enhance them through innovations and regular monitoring. The motivation to maintain quality may come from external agencies such as regulatory bodies, which prescribe minimum requirements or from internal impetus. Internationally, the World Health Organization and World Federation for Medical Education (WFME) have decided to establish a joint policy on improvement of

health system performance through improvement of the education of health professionals. The overall mission of WFME is to improve health for all through promotion of high-quality medical education. Educational quality is also an important component in accreditation (WFME, 2003).

Quality can be assured by transparent selection procedures, well-established entrance examinations, centrally regulated curricula, self-evaluation and academic audits conducted by the institutions themselves and appointing external examiners (Biggs and Tang (2007). The selection procedures involve choosing students with high GPA from their previous grades and learning institutions. When high performing students are selected, they are all exposed to a well formulated curriculum with well-prepared content and taught within a stipulated time. Therefore, in order to maintain the quality of education in learning institutions, it is important to evaluate learning activities.

In the bid to explain educational quality well, Grant (2012) related education to a service industry where quality is considered both at production level (creation of appropriate medical graduates) and perceptual level (maintenance of institutional values and principles). The production level involves how teaching and learning take place. It includes management of courses, the teaching characteristics and the assessment processes. The perceptual level looks at how the institution makes sure that the values and principles are maintained. This can be evaluated using the WFME Basic Educational Standards.

The definition of educational quality by UNICEF (2000) takes into account the global and international influences that propels the discussion of educational quality. From the medical school's point of view, Joshi (2012) states that educational quality is an essential component in enhancing and maintaining the quality of teaching and learning at an institution. He adds that it involves the reviewing and revising, on a continuous basis, of the curricula, the teaching/learning methods, and the assessment methods in order to ensure that quality is assured during each and every stage of a student's career.

In addition, Biggs and Tang (2007) state that it is a broad-based range activity under which both quality management and quality control are included. They highlight that it also includes all the policies, standards, systems and processes that are in place to maintain and improve the quality of medical education and training. Therefore, it should be stated that educational quality in medical schools can be managed through an institutional monitoring that should

include the course evaluation, peer evaluation and the assessment (Josh, 2012). The educational quality improvement within a medical school normally leads to continuous quality improvement initiatives. A medical school that continuously monitors its learning activities is assured of improving the quality of teaching and learning. Monitoring should include course evaluation and the assessment (Cooke *et al*, 2010; McLean *et al*, 2008; Farmer, 2004 and Muller, 2008).

Educational quality can also be used for external quality assurance and accreditation standards by international agencies such as World Federation for Medical Education (WFME). Internationally, the WFME has established a joint policy on improvement of health system performance through improvement of the education of health professionals with an overall mission of promoting high quality medical education (WFME, 2015). The Basic Educational Standards set by WFME need to be localized to medical schools in order to help the learning institutions improve the quality of teaching and learning. Each medical school or units within the school can use the Basic Standards to measure their own educational quality as compared to the laid down standards.

Joshi (2012) further adds that feedback at regular intervals from students on the courses offered, a structured and objective peer evaluation, and the use of a wide range of assessment methods will improve the quality of doctors produced, which in turn, should improve healthcare delivery to the society. Methods which are employed to evaluate knowledge, skills and attitudes, with well-defined learning outcomes that are made known to students, determine educational quality. Biggs and Tang (2007) add that reliable and valid assessment adds to the quality assurance system. Both authors emphasise that learners should be given feedback on assessments given to them.

Educational quality is also an important component in accreditation. Accreditation is important because it gives assurance to the public, in particular to prospective students, that the education provider meets education quality standards required in the global market. It also helps prospective students feel secure in accessing the international market when they need to measure the quality of different learning institutions. The University of Zambia, School of Medicine is accredited to the Health Professional Council of Zambia. According to UNICEF (2000), educational quality involves quality of learners, quality of environment, quality of content and quality processes with student outcomes.

It should be noted that all these activities are done to bring about quality learning. In addition, Osborne (2013) proposes that quality learning in the modern world is a combination of the following elements:

A. Personalized Learning

It is stated that no two individuals learn in the same way, nor do they bring the same prior knowledge to a learning experience (Farmer, 2004). The way we learn is as unique as our fingerprint. This means that for quality of learning to take place, there is need to use a variety of teaching strategies. Sampson, *et al* (2010) added that the concept of personalized learning builds mainly on the cognitive and constructivist theories of learning.

Cognitive learning theory is based on the idea that humans process information which they receive. This happens when the learner plays an active role in seeking ways to understand and process the information received. Unlike behaviourist learning theory, cognitive learning theory proposes that information processing is governed by an internal process (Schunk, 2005). Therefore, cognitive approach to learning theory pays attention to mental process. Some examples and applications of cognitive learning theory include discussion and problem solving among many other teaching approaches.

On the other hand constructivist learning theory is based on the premise that learners are to construct their own perspective of the world based on their own individual experiences and internal knowledge. The theory advocates that since everyone has a different set of experiences and perceptions, teaching then must be unique and different for each person. Therefore, the learner needs a significant base of knowledge to use to interpret and create ideas. Some teaching methods used in constructivism are simulations and problem based learning which the Medical School of the University of Zambia has been using from 2013.

Constructivist instructional theory requires that instructional designers determine which instructional methods and strategies would help learners to acquire understanding. During the instructional designing, it is important to put into consideration different approaches to learning and teaching so that all learners are helped in acquiring the required knowledge quality (Osborne, 2013). It is thus clear that management of teaching and learning activities is a component in educational quality.

B. Socially Constructed Learning

The theory of learning best fit in socially constructed learning is Situated Learning Theory. This theory posits that learning is unintentional and situated within authentic activity, context, and culture (Zimmerman, 2010). Therefore, it is important that knowledge is presented in an authentic context (settings and situations that would normally involve that knowledge). In order to bring about learning, learners need to be involved in a community of practice which embodies certain beliefs and behaviours to be acquired.

Students learn through interaction with others and the physical world. Learning about any disease is more powerful if students visit a patient in a ward in addition to learning about them in a classroom or textbook. When students learn something that is not connected to the physical environment, they mostly forget and even lose interest in the concept.

The collaboration, peer-tutoring and reciprocal teaching that occurs when students work together results in a deeper understanding of the material being covered. Hence it is suggested that if students work in groups as peers, they get motivated to work harder and perform better in examinations (Boekaerts *et al*, 2006 and Wolters, 2003). This is one of the factors which contribute to quality education. This is noticeable in most higher learning institutions where students sit and discuss different questions from past examination papers and tutorial questions. They normally assign each other questions and topics to present during discussions. In this way, each presenter does more reading on the subject matter thereby gaining more understanding (Zimmerman, 2010). From the above, it can be concluded that when students work in groups as peers, it contributes to educational quality.

C. Differentiated Learning

The prior knowledge we all bring to a task means individuals require different levels of challenge, pace, content and context. Lawrence-Brown (2004) from his study in the USA among secondary schools stated that with differentiated instruction, students with different learning abilities can acquire quality education in a general education classroom. This requires lecturers to plan well for such types of lessons and to state the lesson objectives in order to offer the teaching that will achieve learning. This also requires standard-based

instructional context with helpful instructional strategies and real-life examples. Therefore, teaching characteristics play a major role in bringing about quality of education.

D. Learning that is Initiated by Students Themselves

This type of learning is referred to as self–regulated learning. This is the type of learning where learners set goals for their learning and later attempt to monitor, regulate, and control their cognition, motivation, behaviour and the guidance of the environment (Zimmerman, 1990 and Schunk, 2005). The contextual regulation include learners' perceptions of the task and context. Puntambekar *et al* (2005) propose that for quality education to take place in any learning institution, approaches to learning should aim at scaffolding students' effort. Puntambekar *et al* (2005) also suggest that for this to be achieved, lessons need to be designed in such a way that students initiate the learning process in accordance with their educational goals and personal aspirations. In this case, it is acceptable to re-direct students to do programmes which they did not choose as their personal aspirations are shattered.

E. Summary of Quality Education and Outcomes

If the aforementioned measures are taken into consideration, then it is expected that there will be quality education which will be shown by the expected quality outcomes. According to UNICEF (2000) variables used in quality outcomes include GPA and examination attrition rates. This can be summarised in Table 2.1 below.

Table 2. 1: Quality Education and Quality Outcomes

Quality Learning Environment	**Quality Content**	**Quality Learning Process**	**Quality Outcome**
Adequate learning materials, gender sensitive, safe and healthy	Relevant curricula and applicable content	Personalised, socially constructed, differentiated and self–regulated learning	High GPA and low examination attrition rates.

(Source: Field data, 2018)

It is important at this point to understand the relationship between quality of education and quality outcomes.

2.1 Relationship Between Quality Education and Quality Outcomes

It should be stated that numerous investigators in medical school settings have identified undergraduate institution educational quality as an important predictor of educational success or quality outcomes (Dockter, 2001). Quality education has been applied as a way of improving performance in learning institutions (Kaynak, 2003). Several studies have shown the link between quality education and quality outcomes, using both factual data (Reason, 2009) and perceptual data (Dockter, 2000). To study this link, the data analysis was based on a series of multiple regressions (Pascarella *et al*, 2005) and correlations (Curkovic *et al*, 2000). However, few empirical studies identified the direct and indirect effects of quality education on performance of the students.

Two studies, carried out by Kaynak (2003) in the USA on Total Quality Management (TQM) examined these direct links using structural equation models and educational quality as a multidimensional construct as stated above. The studies used exploratory study to investigate how the two were related. From their studies, the findings showed that the two major quality outcomes were GPA and examination attrition rates. Therefore, it is important to state that there is correlation between the two quality outcomes (GPA and examination attrition rates). The link between education quality and quality outcome indicated that when there is quality education, the students' performance is high. This means that if courses are well managed, quality teaching and acceptable assessment processes; the examination attrition rates shall be low as many students shall perform well with high GPAs (Schindler, *et al*, 2015; Pokorny, 2016 and Bateman, 2016).

2.2.1 Correlation between Grade Point Average and Examination Attrition Rates

Grade Point Average (GPA) is defined by Reason (2009) as the average of total amount of grades by a candidate in a semester or academic year or programme while examination attrition rates refer to the ratio of the number of students failing in the examination as

compared to those who passed. It should be noted that examination attrition rates and GPA are related and have an impact on each other. Grade Point Average affects the retention and graduation rates. Many researchers (for instance, Reason, 2009 and Wilson, 2015) have demonstrated that low GPA can result in low graduation rates and low retention of students. Kuhn (2006) stated that Grade Point Average (GPA) is associated with time spent preparing for class, coming to class prepared, asking questions in class, receiving prompt feedback from faculty and having a favourable evaluation of overall educational experiences in the learning institutions.

Most investigators have looked at the influence of undergraduate GPA on retention in Medical schools (Watson *et al,* 2000; Dockter 2001; Weddle *et al,* 2003; Reason 2009 and Wilson 2015). Some of these investigators have found that undergraduate GPA is a significant predictor of success in medical school (Dockter 2001). Several other scholars report GPA to be a major and direct predictor of attrition or retention (Biggs and Tang 2007; Smith 2009; Mashaba *et al,* 2003).

Sulaiman and Mohezar (2006) also found that first-generation college students' end of first year semester GPA, was generally the best predictor of academic success. This was affirmed by Choy (2001) from his studies that showed that students' GPA was important because of the linkage it had to students' persistence and attrition. The study conducted by Choy (2001) also established that first-generation college students who had lower GPAs at the end of their first semester of college struggled to complete their studies in higher learning institutions. It can therefore be inferred that the lower the GPA of first-generation college students, the lower the probability of graduating within the stipulated period of time (Choy, 2001).

Studies by Dockter (2001) through a survey from seven (7) Physical Therapy (PT) programmes in Mid–West and Eastern portion of the US also revealed by using stepwise multiple regression analysis that the best predictors to graduation of students were undergraduate GPA, gender and race. Balogun (1986) also conducted a study among Interservice Physician Assistant Programme (IPAP) at Fort Sam Houston, Texas to examine the predictors of academic success in the Russell Sage College physical therapy programme. They used Pearson Product Moment Correlations and multiple regression techniques in their analysis of 83 graduates of their programme. Enrolled students who dropped out of the programme were deleted from the statistical analyses. These researchers found a correlation between GPA and attrition rates GPA of 0.63 ($p < .01$). From the regression analysis, they

found that undergraduate GPA alone explained 40% of the variance in attrition rates which was expected.

Pascarella *et al* (2005) from their research from some selected universities in the USA also showed that grades probably can predict student retention, degree completion and graduate school enrolment. High GPA reduces chances of students' attrition and increases the probability of timely degree completion. The study also showed that both first year grades and trends in subsequent grades predicted degree completion beyond the effects of other variables. In the same study by Pascarella *et al* (2005) it was found that undergraduate GPA explained 30.5% of the variance in academic achievement as measured by a comprehensive written exam administered at the end of the programme. Undergraduate GPA was also found to be predictive of clinical performance.

From the literature above, evidence shows that GPA and attrition rates are related. Those with high GPA have a high chance of completing their studies. It is also true that in courses or programmes with high examination attrition rates, the GPA is low and when the pass rate is high, it also implies high GPA in that course or programme. Both GPA and examination attrition rates are affected by the quality of education offered by an institution. Table 2.2 below shows a summary of researches on GPA and examination attrition rates.

Table 2. 2: Researches on GPA and Examination Attrition Rates

Researchers	**Findings**
Reason (2009) and Wilson (2015)	Low GPA can result in low graduation rates and low retention of students.
Kuhn (2006)	Both GPA and examination attrition rates are associated with time spent preparing for class, coming to class prepared, asking questions in class, receiving prompt feedback from faculty
Biggs and Tang (2007), Smith (2009) and Mashaba *et al* (2003)	GPA is a major direct predictor of attrition or retention
Sulaiman and Mohezar (2006) and Choy (2001)	First-generation college students' end of first year semester GPA is generally the best predictor of academic success.

Dockter (2001)	The best predictors to graduation of students are undergraduate GPA, gender and race.

(Source: Field data, 2018)

In the next sub-section, the relationship between educational quality and GPA is explained.

2.2.2 Relationship between Quality of Education and GPA

The studies on the relationship between educational quality and GPA, started from as far as four decades ago. For example, Evans (1975) examined the records of 66 minority students enrolled in the Case Western Reserve University School of Medicine, USA in the early 1970's. These investigators quantified each student's undergraduate institution quality based on GPA. It showed that undergraduate quality contributed to student' GPAs. The study related GPA of students to the quality of learning that took place. The researchers above argued that when students are taught well they perform well.

Additionally, other studies also showed that the most common measure of educational quality is GPA (Watson *et al*, 2000, Weddle *et al*, 2003, DeFreitas, 2011 and Diseth, 2007). The good grades were assumed to be a result of good teaching. Those with high GPA progressed up to graduation without academic problems and graduated within the required period of time. They progressed without academic problems due to the quality of education offered. This is in agreement with what was done earlier by Tinto (1975) from his studies on academic progression who reported that grade performance in many studies have shown it to be the single most important factor in predicting persistence in college. All these evidences show that there is a relationship between educational quality and GPA.

Roehrig (1990) in the past two and half decades did a study in some selected medical schools of the USA where students in a physical therapy programme were divided into those who experienced academic problems in the programme (including those who dropped out or failed) and those who did not. Using the t-test statistic, Roehrig found a difference between the two groups in their undergraduate overall GPAs. Those who did not experience a problem in the physical therapy programme had a higher undergraduate GPA than those who did experience a problem. In this study, students were not satisfied with course management. The

courses were perceived to have been difficulty and the pace was faster. The time allocated to these was not enough and the course loads were said to be heavy. Therefore, the management of courses had an effect on the education outcomes like GPA.

Levine *et al* (2006) conducted a four year study among American secondary schools to assess how entry selection helps in maintaining quality of education in high learning institutions. In their study, Levine *et al* (2006) showed that students coming from pre-professional programmes with high bench mark quality standards had relatively high GPAs and were better prepared for the rigorous demands of the professional programme than those enrolled in programmes with lower bench mark quality standards. This therefore showed that high GPA for such students indicated that there was high quality education where they came from.

Earlier, Templeton *et al* (1994) at East Carolina University examined the predictive ability of 12 pre-admission academic variables on physical therapy GPA. They examined the records of 111 physical therapy students in their programme. Using multiple regressions, they found that the way the undergraduate science courses were handled had a significant effect on physical therapy GPA.

Bean *et al* (2006) conducted a study on the impact of quality learning environment of the institution as an important variable in determining the educational quality and how the latter contributes to students' GPA. Satisfaction of the student with the learning environment makes a student feel he or she belongs loyal to the institution. This study showed that quality-learning environment in an institution is highly correlated with high GPA. The researchers therefore concluded that student satisfaction seems to have a stronger effect on grades than vice versa (Bean *et al*, 2006).

From the aforementioned literature, it is clear that there is a strong relationship between educational quality and students' GPA. Literature has demonstrated that teaching characteristics, management of teaching and learning activities and course management have a bearing on the GPA of the students. In the next sub–section, the relationship between educational quality and examination attrition rates will be discussed.

2.2.3 Relationship between Educational Quality and Examination Attrition Rates

It should be mentioned that low retention, low graduation rates and high examination attrition shall be used interchangeably as they carry the same meaning in this study. Knowing predictors of academic failure and success is also important for medical schools that are trying to ensure high completion rates and develop support mechanisms for students with inadequate performance. The recurrence of high examination attrition has been attributed to various factors which include; quality content, quality learning environment, quality process and quality learners. Different researches have been carried out to investigate the various factors that contribute to attrition.

Reason (2009) indicates that enrolling into medical school represents the start of a demanding and stressful period for students. He adds that despite a multitude of social, academic, and emotional stressors, most students successfully cope with a complex new life role and achieve academic success. Other students are less able to successfully manage this transition and eventually fail to progress to the next level or to graduate (Billings, 2005). Therefore, there must be some factors which lead to their failure to progress to other levels.

There is a strong link between attrition and educational quality as evidenced from students' performance on standardized tests Billings (2005). From the aforementioned, it can be suggested that examination attrition rates are one of the most important indicators being used to measure student performance. Yates *et al* (2006) also state that high student attrition represents an inefficient use of resources if students who leave the school before graduating cannot use in the labour market, whatever human capital they have gained during their courses.

Smith (2009) states that high examination attrition results from cognitive overload especially if where the students came from they were used to taking few courses. The research which was done among nursing students in the USA showed that most of the causes of attrition were academic in nature. The academic reasons for attrition were; failure to meet academic standards, students quit academic difficulty, and lack of trained academic staff in methodology which were contributors to poor educational quality. These findings imply that poor educational quality results in high examination attrition rates.

In the field of nursing, different researchers have investigated student attrition. Mashaba *et al* (2003) mentioned in their article that the attrition rate, or what they called "wastage" was between 18% and 50% in the different nursing schools in South Africa. From their surveys of students who dropped out of university-affiliated nursing schools in South Africa, they found

that 90% of them were first generation college students. During the analysis on causal factors, it was discovered that teaching practices were questionable in most of these nursing schools. It was also discovered that most lecturers were so busy in private hospitals. These lecturers missed many lessons and rarely gave detailed feedback to the students. The lecturers were also not available for consultation and their teaching did not promote critical thinking. As a result, the students did not perform well in the examination. Consequently, this contributed to high attrition rates (Mashaba *et al*, 2003).

Based on demographics in the United States (Gardiner, 2016), it was found that more than 90% of the nursing students who drop out in the United States are first generation college students. In the United States, attrition in medical schools has also been studied from way back by Kassebaum *et al* (1995) and by Fitzpatrick and Wright (1995) using national databases. Kassebaum *et al* (1995) used data from the Association of American Medical Colleges' Student and Applicant Information Management System and from unspecified publications from the Department of Education.

Kassebaum *et al* (1995) and Fitzpatrick and Wright (1995) investigated at nationwide student performance in medical school between 1984 and 1990. These investigators found that the percentages of medical students who failed to graduate within the expected four years were as low of 16.7% in 1984 and as high of 18.8% in 1988. They attributed these examination attrition rates to poor teaching methodologies. The examination attrition rates were similar to the Medical School of the University of Zambia examination attrition rates which varied from 6.7% for BSc. Environmental Health to 17.3% for MB ChB programmes (Source: Field Data, 2018). The causal factors of the examination rates in the case of the University of Zambia medical school were thus investigated in this study.

Fitzpatrick and Wright (1995) investigated medical school attrition in the United States between 1973 and 1992 using the annual reports on medical education published in the Journal of the *American Medical Association* as their data source. To calculate attrition rates, Fitzpatrick and Wright (1995) divided the number of medical school graduates for a given year by the number of students entering medical school four years earlier. They noted that the attrition rate increased steadily from the 1970s to the early 1990s. The lowest attrition rate calculated was 2.51% for the class entering in 1975 and the highest attrition rate was 8.02% for the class entering in 1986. They attributed these varieties of attrition rates to educational quality.

Shelton (2003) notes in her article that the National League for Nursing Accrediting Commission in the USA has set a standard of 20% or less as a desirable attrition rate for all nursing programmes. The implication of this professional organization's goal has been that a substantial number of nursing programmes have attrition rates greater than 20%. In the field of medicine, the attrition rates of medical students also have been studied and appear to be lower than the attrition rates of nursing students investigated earlier (James *et al*, 2001). The aforementioned authors did not investigate this further to seek the causes of these variances. In the Shelton article, some variables which were discovered in the study were poor feedback and content of the curriculum which had some concepts not related to the environment.

Johnes *et al* (2004) who investigated among Humanities and Science students at the University of Adelaide found out that 36.4% attrition in higher learning institutions was a result of personal engagement by lecturers while 35.6% was due to poor assessment practices. The same research showed that attrition was due to academic factors. This means that different programmes have different examination attrition rates. More research needs to be done to ascertain the cause of such differences.

In addition, Bolan *et al* (2003) examined the attrition rate of students in a Canadian nursing programme which is closer to the United States geographically and socioeconomically. The study targeted all 159 students who were in a nursing programme between 1996 and 1998. They noted that of the out of the 69 who responded to the questionnaire, 48 (69.6% were still in the programme and continuing with their classes, 12 (17.4%) had left the programme, and 9 (13.0%) were progressing behind their original class. Thus over 30% of the nursing students in this one programme either were not going to graduate or they were not going to graduate on time. The study showed different factors contributing to these high attrition rates. Some of them included heavy course workload and failure by lecturers to explain the difficult concepts.

Another study was conducted in the United Kingdom by James *et al* (2002) on attrition between 1970 and 1995 of medical students at the University of Nottingham. The review covered 2270 students who had been in that medical school for over a 25-year period. They noted that 6.5% of the students had left the programme before graduating due to failing examinations. The study investigated the causal factors and discovered that most students cited ill preparedness for the final examination. Johnes *et al* (2004) also from their study

indicated that educational quality was one of the academic factors that led to some students not graduating on time.

It can therefore be concluded that there is a relationship between educational quality and examination attrition rates. Some of the educational quality variables cited from the above literature are mismanagement of courses, poor assessment practices and teaching practices which this study focussed on. It can be assumed that if courses are well managed with good assessment practices there can be low examination attrition rates. In the next section, the researcher discusses in detail the factors contributing to low GPA and high examination attrition rates.

2.2 Factors Predicting GPA and Examination Attrition Rates

Different authors have suggested different causes of high attrition rates and low GPA. Bean (2007) and Frankola (2001) states that inadequate time for learning, poorly designed courses and incompetent instructors are reasons for high attrition rates and low GPA. Therefore, identifying reasons why students fail and get low GPA is critical in determining the quality of services and delivery methods a particular learning institution would need to put in place (Nash, 2005). The implication on practice to those who complete with low GPA is that they normally have low self-esteem in places of work during early days at places of work. In addition, such students never progress in their academic career path as they just end with first degree as they fail to qualify for higher degrees and feel discouraged (Bean, *et al*, 2006)

The factors leading to low GPA and high examination attrition rates need to be understood as this has not been understood even in the case of the Medical School of the University of Zambia. Many studies have been carried out to investigate the causes of these variables. However, depending on the setting, the predictors might be different. An overview of the predictors is given and then specific causes are discussed in the other sub–sections.

2.3.1 Overview of the Predictors

In this section, each of the variables that predicts attrition and low GPA is reviewed with the plausibility of including each in the School of Medicine model. Given the conflicting research, it is challenging to draw conclusions about predicting attrition rates and GPA. From

the two models discussed in this paper, there are studies that verify the predictive ability of each while other studies find them not useful. The same is true of the variables used to predict GPA and attrition.

It should also be stated that the use of Chickering and Gamson's (1987) Seven Principles provides insight on contributing factors which lead to a decrease in attrition. These include both teacher and student components and educational practices. In most cases, people just analyse the outcomes without considering what goes on in the institution to give such results. It is assumed that attending to these variables can lead to students' high GPA and low attrition rates. This study therefore, by using institutional experience level of Tinto's model and the five principles of good education of Chickering and Gamson's (1987) tries to bridge up this gap and suggest the measures to be taken in order to lower the attrition rate and raise the students GPA.

Research strongly supports the strength of high school GPA and college admission test scores to predict their retention in the college (Kuh *et al*, 2005). These are the only measures that seem distinctly different among a population of students with generally similar family characteristics and backgrounds. They reflect the student's academic potential, intellectual ability, and motivation. In the community college setting, students who do not have sufficient academic preparation from high school find themselves in remedial classes. Often they will be required to take several semesters of developmental coursework in math and English to be able to take basic college-level classes. By that time, the student who entered with adequate academic skills would have far surpassed them in terms of credits earned. In the case of the School of Medicine, students are selected depending on their performance as they are selected from the School of Natural Sciences. The assumption is that in the School of Natural Sciences, the students are well prepared to do courses at the Medical School. The question that this study tried to investigate was why are there high examination attrition rates and low GPA from selected good students?

The literature also has revealed an almost universal agreement as to the principle variables examined as predictors of student performance in examination. These variables include quality content and quality process (Mirchandani *et al*, 2009). Terry *et al*, (2008) also developed a model based upon a production view of student learning to examine the determinants of performance on the business major field achievement examination. Their findings from the model were consistent with much of the previous research in this area, that

academic ability as measured by Grade Point Average (GPA) and attrition are institutional input, course management, teaching characteristics and assessment processes which are of interest in this study.

The argument at hand is to understand the phenomenon at the University of Zambia; School of Medicine where there is an increase in examination attrition rates and low GPA among undergraduate medical students. This has produced various deleterious effects for the society and Ministry of Health. The deleterious effects on society include; inadequate of medical personnel and negative image from the community. The Ministry of Health invests a lot of money for the programmes and high examination attrition rates results in loss of resources.

For almost every study that finds a variable valuable, there seems to be another study to show no relationship with GPA and attrition. After explaining the variables used as they link to GPA and attrition and keeping in mind the unique characteristics of the School of Medicine, a new conceptual model shall be presented.

In this case, only five (5) predictors to GPA and examination attrition rates have been explained as they relate to this study's focus. It should be mentioned that these principles have been utilised in different programmes and results have been positive. Kuh (2006) applied these principles to on-line nursing education and there were minimal examination attrition rates with high students GPA. The study focused only on the three and how they have contributed to the Medical educational quality thereby affecting students' GPA and examination attrition rates. The five predictors discussed in the sub – sections which follow include pre-medical school achievement, institutional characteristics, course management, teaching approaches and assessment processes.

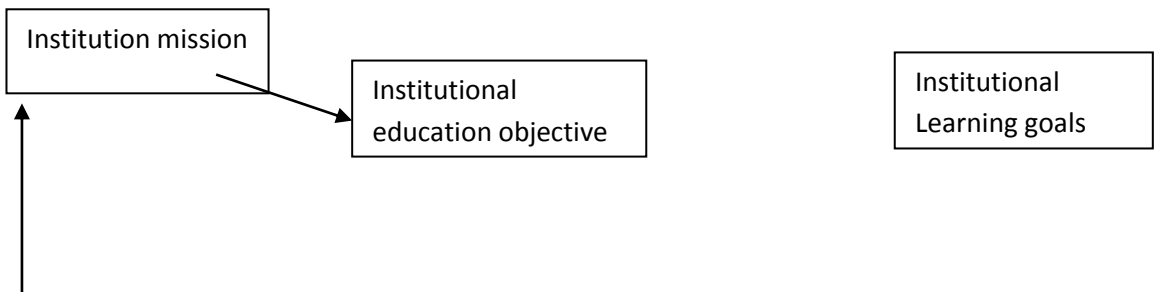
2.3.2 Pre-Medical School Achievement

Research strongly supports the strength of pre-medical school GPA and college admission test scores to predict retention (Li *et al*, 2006). These are the only measures that seem distinctly different among a population of students with generally similar family characteristics and backgrounds. They reflect the student's academic potential, intellectual ability, and motivation. In the Medical School of the University of Zambia, the pre–medical school GPA is already set as the standard for the school to select and admit the high scoring students from the School of Natural Sciences.

2.3.3 Institutional Characteristics

It should first be emphasised that upon enrolling into a higher learning institution, students enter environments that have the power to shape their behaviour and influence their success. Berger (2001-2002) reviewed the available researches of undergraduate persistence in selected colleges and universities in the USA on the organizational effects of college on students. He grouped these studies into two categories; the first dealt with the "structural-demographic features" of institutions, the other with "organizational behaviour dimensions". Studies in the structural-demographic category examined the influences of such institutional traits as source of support (public vs private), size, curricular mission, or admissions selectivity. The organizational behaviour category included studies based on concepts of organizational behaviour, culture, and climate. Organizational behaviour, according to Berger and Milem (2000, p.274), can be defined as "the daily patterns of functioning and decision-making within an organization".

From the above researches, findings revealed that both structural-demographic features and organizational behaviour dimensions contribute to students' examination attrition rates at undergraduate level. In the case of the School of Medicine of the University of Zambia, the admission selectivity, age and financial resources do not apply as the admitted students are taken from the School of Natural Sciences. As students enter in the School of Natural Sciences, at the end of the year, the students enter into different quotas according to their choices and performances. The quotas are determined by the performance of the students. Those who fail to enter in Pharmacy, Physiotherapy, Nursing Sciences, Environmental Health and Biomedical Sciences remain in the School of Natural Sciences. Those who choose Medicine quota are expected to perform better at second year than the rest. At the end of second year, those who perform better are selected to the School of Medicine and the rest remain in the School of Natural Sciences. From here, we can see that the School of Medicine of the University of Zambia selects the best performers. The factors which need to be taken into consideration are academic system, missions and objectives of the institution, faculty input and classroom experiences. Chart 2.1 demonstrates how the mission and objectives are supposed to be linked for effective educational provision.



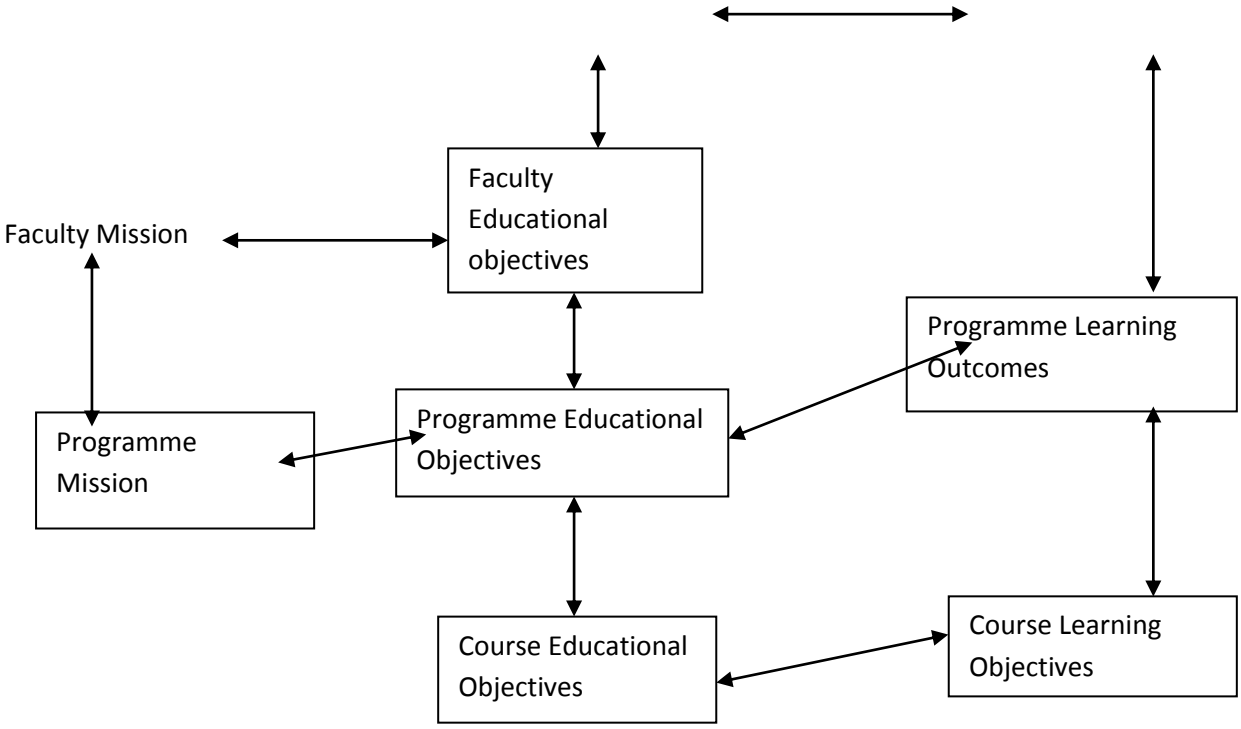


Chart 2.1: Flow of institutional Missions and Objectives

(Adapted from Kuh et al, 2005)

When this flow is followed, the students become aware of the institutional characteristics and are aided to work hard to in order for them to achieve the stated institutional objectives and goals. The guide should be from institutional objectives through programme objectives to course learning objectives. From this study's conceptual framework, it is proposed that all students should be oriented in institutional objectives before being exposed to any course content. Apart from the institutional characteristics, course management is also discussed in the sub–section that follows.

2.3.4 Course Management

The issues discussed in this section focussed on curriculum development and time management during teaching.

A. Curriculum Development

In order to sharpen the focus of higher education onto student learning outcomes, it is important to go beyond mere tinkering with traditional structures and methods but to do a paradigm shift in educational philosophy and practice. The traditional type of curriculum

design focuses on the teacher's input and on assessment in terms of how well the students absorb the materials taught. A departure from this traditional paradigm is very important so that we focus on the student-centred approach where the emphasis is on what the students are expected to be able to do at the end of the learning experience. This approach focuses on what knowledge students have actually acquired, and the abilities developed. And the fundamental role of assessment in this approach is to monitor, confirm and improve student learning.

Such shift from teacher delivery to student learning is in line with the theory of constructive alignment (Biggs and Tang, 2007, 2011). This theory puts learning as a product of the student's activities and experiences rather than the lecturer's. The emphasis is on what students can actually do at the end of the learning experience. It is also important that the learning outcomes, the teaching and learning activities, and the assessment all be aligned (Biggs, 2003; Biggs and Tang, 2007, 2011). Aligning these three elements ensures compatibility and consistency where the desirable learning outcomes agree with the teaching and learning activities and the assessment tasks in a coherent manner. When the three elements are working in synergy, the learning outcomes are in fact driving the curriculum design, with the other elements including teaching and assessment falling in place.

The way the curriculum is developed has the highest effect on the performance (GPA and examination attrition). This includes; the bulkiness of the course, time allocated to the course, practical activities included in the course and the relevance or applicability of the course. Kane (2006) states that the level of understanding of the course content by the students contributes to students' GPA. Biggs and Tang (2007) and Black *et al* (2004) also propose that the poorly structured course and if it has no applicability to the close environment contributes to low high GPA.

One of the questions which needs to be asked is whether the current courses were developed following the normal processes of curriculum development where needs assessment is done. If so, how often have they been reviewed and after how long? How interlinked are the concepts from one level to another? With the introduction of technology in teaching, how has it been used or integrated? Mirchandani *et al* (2001) devised a framework for the effective use of technology in teaching especially when designing new curricula which is illustrated below in Figure 2.1.

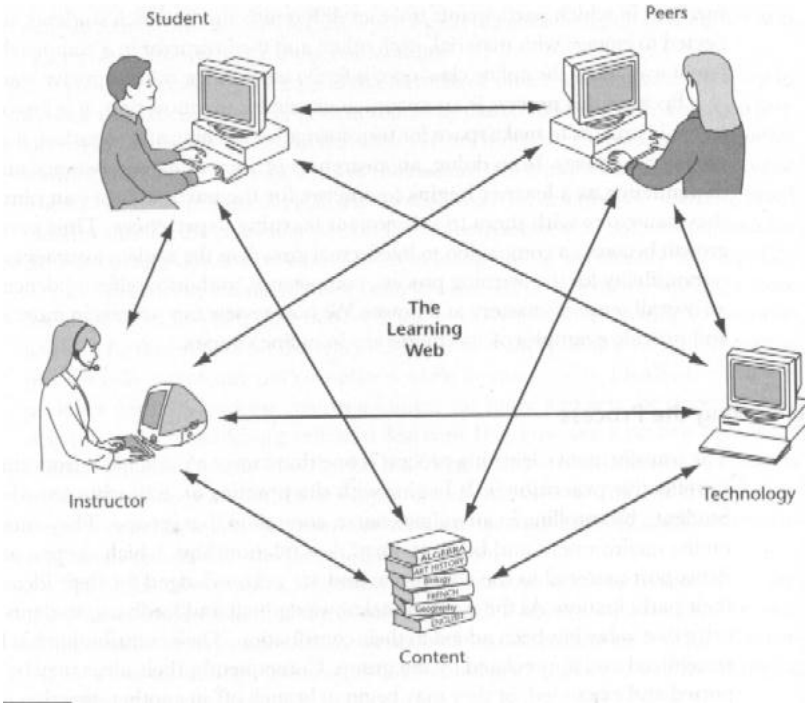


Figure 2.1: Effective Use of Technology in Teaching

Source: Mirchandani et al (2001)

The authors proposed some thoughts when designing a course or new programme. Some of the ideas include;

- **"It is not curriculum we are converting, but our pedagogy."**
  It is a paradigm shift regarding the whole mode of delivery. The content covered should link to the method of delivery of that content. In most curricula, content covered does not link to the type of approach to use in delivering the stated content.

- **"Technology does not teach students, effective teachers do".**
  In some cases, lecturers just use power point slides without explanation. This has been found as an ineffective use of technology in teaching (Kane, 2006). Thus our study investigated how the lecturers in the School of Medicine use technology for teaching and how this strategy can be improved on.

- **Technology should not drive the course --- instead, the desired outcomes of the course and needs of the participants should be the deciding factors.**
  As the use of technology increases in teaching, it is important to have in mind that what determines the method to use is the desired outcome in our curriculum. There are some topics which might not need the use of technology but might need to go on sight and have a physical analysis of the subject under study.

- **As with any good course, an instructor needs to begin with the end in mind.**
  What do we want students to learn as they interact with this course material? What skills and abilities should they be able to take with them? Is the teaching in the School of Medicine in line with developing the desired skills and knowledge?

If the above statements are answered correctly and some positive actions are taken, the attrition rate can be reduced and there can be high GPAs. Kuhn (2006) suggests that when a programme is running, it is important to evaluate it in order to determine systematically and objectively as possible the merit, value or worth of an intervention. Therefore, this study tried to objectively determine the merit of the interventions that the Medical school had put in place.

Swail (2004) emphasises that it is of primary importance to academic offices to be have continuous process of curriculum review and revision. This process should in fact become a mainstream component of curriculum development. Especially in terms of science, medicine, and nursing, academic content must reflect the current dynamics of industry practice to be worthwhile and effective (Kuhn, 2006). Mirchandani *et al* (2001) advise that to prepare students for employment in science, in the near future, it follows that science, medicine, and nursing curricula must relate not only to current industry trends and practices but also to anticipated practices and procedures for example, cutting-edge technology and research.

It is now a common trend especially in Europe and America that courses are evaluated by the students at the end of the course (Beckner *et al*, 2002). This can help the course coordinators

to see how students rate the course. Beckner *et al* (2002) found from their research, evaluation variables which included; level of difficulty, bulkiness whether it can easily be applied, and whether the students were comfortable with the knowledge attained. This is important because it can help the Course Coordinators to adjust accordingly.

Learning institutions should develop an integrated process of curriculum review to ensure that all pieces of the curriculum are up–to date and relevant to society's needs (Black *et al,* 2004). At many universities, individual faculty members are left in isolation to decide what to include in a course syllabus, leaving much to be desired in terms of quality control. This issue is of great relevance, considering that most faculty have little or no background in learning theory or educational practice (Tang, 2011). Therefore, a systemic and cyclical review process that allows faculty to review all curricula on a rotating basis helps control the content delivered in classes.

The study investigated how the review of curricula is done in the school and how new lecturers are oriented by the departments when employed. The study tried to find out the gaps that might be there between curriculum development and curriculum delivery.

B. Time Management

One of the major considerations during curriculum development is time allocated to topics to be covered. Chickering *et al* (1987; 1) suggest that "time plus energy equals learning". For concepts to be covered in depth, there is need to allocate enough time to each topic in the syllabus. It is also vital that lecturers have the skill of managing the time allocated to the topics. This is what Chickering and Gamson (2007) stated later in their study that time management is a critical attribute for students and professionals. If the lecturer reports to class late, it will result into non-completion of the topics in the course and in the near future students might also not be time conscious at places of work. The variables cover the issue of managing time while handling the course and keeping time when lecturing. In this study, time management was assessed under course management to assess whether courses are allocated enough time in the School of Medicine. The study also assessed the level of difficulty of courses and the pace at which they are covered.

2.3.4 Teaching Approaches

Teaching approaches of quality process or teaching processes shall be a centre of discussion in this section. Quality process looks at teaching characteristics and supervision and support offered to learners.

A. Teaching Characteristics

It has been stated by some authors in medical education that the most contributing factor to students' good performance has been the type of instruction received during the course of learning and the continual evaluation and monitoring of courses (Kane, 2006). Therefore, it is important that the type of instruction used by the instructor (lecturer) is evaluated. Harris (2007) emphasises that teacher quality is a key element in improving student achievement. Other authors echo that student performance is affected by quality of teaching (Wayne *et al*, 2003, Rice, 2003, Wilson, 2003). In relation to the point highlighted above, in most African learning institutions, evaluation of teaching staff has been met with a lot of resistance (Peggy, 2010).

Rice (2003) and Kane (2006) state that low quality teaching of an educator will have a negative impact on the performance of the students and the level of understanding of the course content contributes to students' attrition rate. Beckner *et al* (2002) also adds that poorly structured courses and no applicability to the close environment contribute to low performance. Harris *et al* (2008) then propose that within these changing perspectives, learning institutions need to re-invent themselves in improving teaching and learning if they wish to maintain high student performance. This entails that learning institutions like the University of Zambia, School of Medicine should evaluate its learning processes in order to come up with workable strategies which can result into quality of learning.

Hovancsek (2007) argues that learning is an active process. Problem-based, or inquiry-based, learning has gained a strong foothold in health science education. Most learners especially adults lose interest in an educational experience without the incorporation of active learning. Billings *et al* (2005) also agrees with the aforementioned author that active engagement in an experience promotes critical thinking skills and improves long-term retention of content. Cioffi (2001) also adds that active learning increases motivation and interest in the learning domain. Another research done by Gordon *et al* (2006) considered past examination results and demonstrated that improvement in critical thinking, improved cognitive retention and enhanced clinical decision-making correlated with low examination rates.

Most of the scholarly work on teaching and learning indicates that the passive lecture format where faculty do most of the talking and students listen is contrary to almost every principle of an optimal learning environment (Bain, 2005; Biggs and Tang (2003). Rather, active and collaborative learning approaches feature three elements that matter to student learning; involving students, increasing their time on task, and taking advantage of peer influence (Bain, 2005).

Active learning is any teaching method that gets students actively involved; cooperative learning is one variety of active learning which structures students into groups with defined roles for each student and a task for the group to accomplish (Cejda et al., 2010). Active and/or cooperative teaching techniques involve the students in the class and increase retention of information following the class period. Active learning techniques are easier to apply and take less class time, while cooperative learning techniques require more advance planning and may take an entire class period.

Schaeffer *et al* (2010) state that active and collaborative learning is an effective educational practice because students learn more when they are intensely involved in their education and are asked to think about and apply what they are learning in different settings. Bain (2005) states that there is some evidence that active and collaborative learning can have compensatory effects for lower ability students. Schaeffer *et al* (2010) further state that improving learner engagement positively impacts on retention rates and students' success. This practice if implemented might be able to reduce the examination attrition rates and raise the student GPAs.

Rogers (2007) mentions that students arrive at learning experiences with different learning styles. He further states that students process learning experiences through visual, auditory, and tactile. He further adds that if one strategy is used for teaching, other students will be affected negatively and result in high examination attrition rates. He also points out that institutions that adopt educational philosophies that value undergraduate student learning also tend to encourage the use of such engaging pedagogies as active and collaborative learning, classroom-based problem solving, peer teaching, service-learning, and various forms of electronic technologies. He concludes by stating that faculty members' ability to deliver materials in an exciting, interesting, and motivating manner is also essential to the quality of education delivered by an institution.

The approach of learning has been seen as a major contributing factor in addition to other academic environmental and social integration variables (Allen, 2016). The major theoretical contributions to understanding the student attrition process have relied heavily on approaches used in teaching as well as socialization with the college environment (Wilson, 2015). In this vein, some researchers have shown that constructivist approach forms the basis of learner-centred instructional methodologies that are relevant and meaningful for students (Allen, 2016). Diaz *et al* (2001) contributed that constructivist instructors guide learning and do not direct it as the instructor involve students in shaping the learning objectives.

A learner-centred approach requires the instructor to adjust instructional strategies to best meet the needs of their students (Allen, 2016). This does not mean to adjust the overall course objectives or expected outcomes but to fine-tune the course learning strategies to meet the learning outcomes. Diaz *et al* (2001) insist that it is important to develop strong and supportive relationships within the course to increase student comfort with the instructors and each other. The process of achieving this relies on the learning strategies used. The continuous assessment results also can aid instructors to consider additional and poignant interaction with students who demographically appear to be at risk of failing or low GPA.

Another consideration is that learners in a new environment are confronted by multiple challenges and learning curves which have an impact on their confidence and ability to succeed (Wilson, 2015). The major contributing factor in this case has been stated by Paas *et al* (2008) as Cognitive Load Theory. This theory states that learning is initially processed in a working memory (Tyler-Smith, 2010). Working memory is short term, low in storage capacity and can only process a very limited amount of new information at a time. Using working memory is a disadvantage in the learning of complex or technically demanding material which requires building mental models or cognitive schemas about the subject being studied or the skill being developed over time (Paas *et al*, 2008). This means that learning new material or a skill for which a schema in long-term memory is undeveloped or non-existent can cause working memory to quickly overload its limited capacity.

This is so because the overloading can result in a learner becoming highly anxious and losing confidence, which in turn can lead to freezing of the learning process and the learner being unable to cope with the situation (Tyler-Smith, 2010). The scale and scope of new learning required can easily overload a learner's working memory. The students who come from

School of Natural Sciences to the School of Medicine might have such challenges. It has been argued by Allen (2016) that assessment activities and teaching approaches can ameliorate or mitigate cognitive overload in the learning of new and complex material. This is also applicable to multiple learning tasks such as doing more courses than before which do not have similar concepts (Wilson, 2015).

B. Supervision

Another principle under teaching practices involves supervision which lecturers offer to students. Pascarella *et al* (2005) reports that there is empirical support for the relationship between student learning outcomes and classroom teaching practices and instructor characteristics. Pedagogical approaches that encourage active, collaborative, and cooperative learning provide advantages, in relation to academic and cognitive gains, over more passive instructional approaches. Similarly, factors such as instructor preparation/organization, clarity, availability, and helpfulness; the quality and frequency of feedback provided to students; and instructor rapport with students all positively and significantly promote course content acquisition and mastery. Teacher preparation and organization (e.g., material well organized, class time is used effectively) also seem to facilitate gains on more general measures of learning which can result into students' higher Grade Point Average and low examination attrition rates (Braxton *et al*, 2008) .

Braxton *et al* (2000) took their research a step further by linking classroom activities to students' examination attrition. Using Tinto's (1993) Conceptual Framework on institutional departure model as a guide, Braxton *et al* (2000) and (2008) demonstrated both direct and indirect relationships between in-class experiences, social integration, and students' examination attrition. Specifically, Braxton *et al* (2000) demonstrated links between good teacher behaviours (e.g., clarity, organized presentation of material) and lower examination attrition rate. Braxton *et al* (2008) found a positive link between active teaching pedagogies (e.g., classroom discussion) and higher Grade Point Average. However, our study found a negative relationship between a passive pedagogy (i.e., testing for facts) and higher Grade Point Average. In both studies, the positive relationships demonstrated were direct as well as indirectly through greater student social integration. Extending the findings of Braxton *et al* (2000) and Pascarella *et al* (2008) found a direct relationship between exposure to organized and clear instruction and progression into the next year of study.

The principle of supervision and support of students suggests that faculty members are in a good position to guide students (Chickering and Gamson's (1987). Childress (2005) proposed that in nursing, it is important for faculty and students to recognise that the student role is transient, eventually these student nurses would be professional colleagues.

Titus (2004) reports that the most consistently influential variable on students' academic achievement and cognitive growth are items about faculty behaviours representing being well prepared for class and designing assignments students consider meaningful. Pascarella (2001) further adds that the behaviours of faculty also appear to be associated with gains in students' cognitive development. Instructor qualities that matter include preparation and organization, clarity, availability and helpfulness, and concern for and rapport with students. Schafer (2003) also adds that lack of consultation by academic staff causes high attrition rates and low GPA.

With challenges of not having private time to research by most University of Zambia lecturers (Field Data, 2018), this study tried to investigate whether students met their course lecturers for consultation and how that translated into good performance by the students in those courses. This is because literature demonstrates that contact with faculty plays an important role in retention (Braxton *et al*, 2008). The contact can either be formal or informal.

It has been suggested by Jeffries *et al* (2007) that when people are expected to do well with guidance and support they will succeed. It is a well-known fact that holding student high expectations is appropriate for all students. Setting high expectations for students and encouraging students to set personal learning goals also helps them achieve and succeed academically. It is also stated by Herman *et al* (2011) that it is important for faculty to have high aspirations for learning outcomes, clear expectations for student performance, and standards for holding students accountable. This also helps students to work hard academically and reduce the attrition rates.

Kuh *et al* (2005) argues that setting high expectations and then supporting and holding students accountable for reaching them is an effective strategy for encouraging student success. He further highlights that high expectations for student performance characterize institutions with higher than predicted student engagement and graduation rates. According to Herman *et al* (2011), students tend to adjust their behaviour and comply, regardless of their

prior academic history, with the academic expectations of the environment. The author found that students at selective institutions promoting high academic expectations exceeded predicted performance expectations, suggesting that a self-fulfilling prophecy was at work. Although high expectations for student success should be encouraged at all institutions, Adelman (2006) cautions that it must be accompanied by realistic advice to students about degree completion and what is necessary to succeed. Our study thus tried to find out if academic staff in the School of Medicine practiced this.

The contact between students and faculty helps faculty to play the role of primary debriefer to help direct the flow of topics for the student to understand more (Riley, 2008). Debriefing also allows for reflection-on-action and encourages the student to think broadly. Childress (2005) suggested that in Nursing, it is important for faculty to recognise that the student can become a professional colleague if he/she is well counselled. In addition, it has been stated by most scholars that creating collaboration among students in form of discussion groups helps students support each other in the acquisition of knowledge and skills (Childress, 2005 and Dixon, 2007). It also helps them to improve their communication skills, critical thinking skills as well as decision making skills in the health care team even after graduation (Li *et al*, 2006). Students also learn how to function as an interdisciplinary team.

Herman *et al* (2011) also adds that adult learners need active learning otherwise they lose interest in an educational experience. The students at this level are mostly aged between 22 and above. Therefore, they require active learning. It is stated that active engagement in learning promotes critical thinking skills and improves long-term retention of the content (Billings and Tang, 2005). Cioffi (2001) adds that it increases motivation and interest in the learning domain. This then can help students recall and apply when it comes to examination thereby improving the GPA and lower attribution rates. In this study, the researcher investigated the impact that consultation had on students' performance. The study compared the performance of students in courses of lecturers who had consultation time with the students with those courses of lecturers who did not have time. This variable is discussed under teaching characteristics in the new model developed in this study.

In addition, Jeffries *et al* (2007) emphasize that when people are expected to do well, with guidance and support they will succeed. They further add that when faculty and students share high expectations for learning experience, positive results are often achieved.

Hovancsek (2007) alludes to the fact that in a safe learning environment nurses are able to expand competency levels of learning. The safe learning environment is attributed to high expectation from the faculty. As lecturers give academic counselling to the students, they should motivate them. Hence our study also explored the relationship between motivation (verbal) and students' performance. The study evaluated the performance of students in relation to motivation.

2.3.5 Assessment Processes

Assessment is defined as a systematic collection, review, and use of information about educational programmes undertaken for the purpose of improving student learning and development (Coverdale *et al*, 2013). Assessment can either be formative evaluation as an on-going process throughout the course (this is referred to as modifying and adjusting) or summative evaluation which occurs at the end of the course and is most often the model used in academic institutions. If instructors are truly establishing a collaborative, transformative process, then both forms of evaluation need to occur.

From the definition above, some of the questions which may arise are the type of assessment tools used and the weighting of these tools. The current argument has been that "all educators should demonstrate that they are assessing skills and competencies necessary and relevant to the course taken," (Borich, 2000; 7). The assumption has been that if the educator is assessing what he/she taught, there should not be many students failing in that course. If many fail, then the assessment tools need to be investigated.

Two issues are discussed in this section. These are feedback in the first sub–section and validity and reliability in the other sub–section. Let us start with feedback processes and its role as a predictor of GPA and examination attrition rates.

A. Feedback

Assessment processes involve a variety of variables which include grading of assignments and tests, reliability and validity of the assessment tools used and feedback. The subject of feedback has been extensively explored and theorized. This section first presents a synthesis of Hattie and Timperley's framework on feedback that was used on assessment in this the study. Hattie and Timperley (2007) formulated a theoretical framework on feedback which

can be applicable in a learning context. The framework helps to understand how feedback contributes to learning. There are four levels in this framework.

- **Level 1:** ***Personal Feedback:*** This is the type of feedback given to an individual that can be either positive or negative depending on the learner's performance. An example is when the lecturer writes comments praising the student's mastery of content in order to boost that student's confidence (Mubuuke, 2018).

- ***Feedback regarding the task:*** This focuses on the task and how well the student is tackling it, but does not focus on the individual (Mubuuke, 2018). For this to be effective the task must be made in such a way that it involves analysis and formation of concepts thereby encouraging a deep approach to learning as also described by Husain and Khan (2016).

- ***Feedback about processing of the task:*** This level of feedback is given when learners apply what they have learnt in a particular task to another situation. This is in line with how the curriculum is developed where topics are sequenced in such a way that concepts are arranged in a manner where they build on each other (Van Dijk and Kluger, 2011). Students use the knowledge acquired at earlier levels to solve more challenging or untried tasks (Mubuuke, 2018).

- ***Feedback regarding self-regulation:*** This is feedback that enables learners to monitor, regulate, and control their cognition, motivation, behaviour and the guidance of the environment. These are important concepts of self-regulation in learning (see section 2.1 D on educational quality and learning that is initiated by students themselves). This is a very important level in feedback as it is at this level that feedback from lecturers trigger the students to also engage in the process of self-assessment and critique (Bowen, *et al.,* 2017).

Feedback process does not only drive learning, but also improves the facilitation of that learning process (Hughes, 2011). Therefore, feedback from lecturers needs to be detailed so that it allows learners to reflect on the task and do some self–assessment. In addition,

feedback should be given in such a way that learners are encouraged to seek further guidance and clarification from lecturers for more understanding (Orsmond, *et al.*, 2013).

The literature reviewed showed that lack of detailed feedback lowers students' GPA and increases examination attrition rates. To start with, Riley (2008) observes that if students are not given feedback, students make similar mistakes and even fail in most course assessments. He emphasizes that learners learn from their errors and later develop autonomy in decision-making which can be utilised in the examination. He further argues that the immediacy of the response provides students with the feedback necessary for learning. He also points out that if feedback delays or is not provided; students will not know whether they have failed or are correct and when a similar question comes in the examination, students make the same mistakes. Such practices might result in high examination attrition rates.

Pascarella *et al* (2005) in addition highlights that feedback that furthers learning provides students with on-going guidance and information about whether they are on track in a way that enables adjustment. Kuh *et al* (2005b) also adds that faculty members provide appropriate challenge and support to students when they communicate high standards to students and provide timely and apt feedback and support to meet their students' needs. He emphasises that the best feedback is interactive and involves teachers, staff, and students in a conversation about how the student is performing. This can raise students GPAs and reduce the examination attrition rates.

Pascarella *et al* (2005) summarises faculty behaviours concerning prompt feedback as follows:

- Good teachers are knowledgeable about their subject matter, are enthusiastic, encourage students to express their views through discussion, and interact with their students, both in and outside of class.
- Students learn more from courses when they are given timely feedback that is supportive, interactive and corrective.
- When students are expected to work hard, academic achievement, class attendance, and their sense of responsibility all increase.
- Because every student learns differently, individualized instruction is more effective under most circumstances.

Jeffries (2007) also indicates that students learn from their errors. He adds that if feedback is not provided on time or not all the student may repeat the similar error in the final examination. Rogers (2007) also adds that the timing of feedback to the students from the faculty is very vital. He stresses that prompt feedback is the best so that it is easy for the students to recall what they were asked. The feedback in assignments and tests helps serve as a corrective measure and helps the students to improve upon what they did not understand. Timely feedback refers to a situation where students are given feedback before they write their final examination and before they are assessed on some other items (Kuh *et al* (2005b). Detailed feedback means that the lecturer comments on the students' mistakes or correct answer. Such feedback helps the students to understand the marks awarded and can enable the student to answer the question correctly in case they failed it at first. Therefore, our study investigated how students performed in courses where the lecturers gave timely and detailed feedback. This variable is discussed under assessment standards in the new model developed in this study.

B. Validity and Reliability of Assessment Tools

The development of assessment tools that are robust, feasible and of educational value remains among the biggest challenges faced by educators within the health profession. In addition to creating higher performance, Balon *et al* (2013) found that "validation"—an enabling, confirming, and supportive process initiated by faculty and other agents of socialization in and out of the classroom—fosters student success, particularly for historically underserved students. He states that validation activities in the teaching and learning context include calling students by name, working one on one with students, praising students, providing encouragement and support, encouraging students to see themselves as capable of learning, and providing vehicles for students to support and praise each other. These validation actions induce "transformational changes" in students, accompanied by an increased interest and confidence in their capacity to learn.

The validity of assessment is vital and, as a consequence, there is an increasing drive towards the development of instruments that can be used in the practical setting to sample across a wide range of contexts and judge (Van Der Vleuten, and Schuwirth, 2005). Validity refers to whether an instrument actually does measure what it is purported to. Newer developments concerning assessment methods in relation to validity have typically been associated with the desire to attain a more direct assessment of clinical competence by increasing the authenticity

of the measurement. This started in the 1960s with the assessment of 'clinical reasoning' by patient management problems and continued with the introduction of the OSCE in the 1970s. Authenticity was achieved by offering candidates simulated real world challenges, either on paper, in computerised forms or in a laboratory setting. Such assessment methods have passed through major developments and refinements of technique (Schuwirth and Van Der Vleuten, 2003).

Apart from validity, reliability of the assessment tools is also vital. Reliability refers to the reproducibility of the scores obtained from an assessment. It is generally expressed as a coefficient ranging from 0 (no reliability) to 1 (perfect reliability). Often 0.80 is regarded as the minimal acceptable value, although it may be lower or higher depending on the examination's purpose - for instance, it will have to be higher for a licensing examination (Schuwirth and Van Der Vleuten 2012).

The predominant condition affecting the reliability of assessment is domain or content specificity because competence is highly dependent on context or content. This means that we will only be able to achieve reliable scores if we use a large sample across the content of the subject to be tested (Cook *et al*, 2016). To illustrate our point, let us look at the OSCE. The OSCE was developed as an alternative to the then prevailing subjective and unreliable clinical assessment methods such as vivas and clinical ratings. The main perceived advantage of the OSCE was objectivity and standardisation which were regarded as the main underpinnings of its reliability. However, an abundance of study evidence has since shown that the reliability of an OSCE is contingent on careful sampling, particularly across clinical content, and an appropriate number of stations, which generally means that several hours of testing time are needed (Van Der Vleuten and Schuwirth, 2005).

However, in assessment we tend to persist in our inclination to break down the competency that we wish to assess into smaller units, which we then assess separately in the conviction that mastery of the parts will automatically lead to competent performance of the integrated whole. This contextualisation is considered an important quality or validity indicator (Van Der Vleuten, 1996). The validity of any method of assessment could be improved substantially if assessment designers would respect the characteristic of authenticity (Norcini, et al., 1985).

Setting up standards and assessing students are very vital factors that contribute to correct grading of students. Standard setting of assessment is an important element of medical education. This is understandably so: It is difficult to qualify for medical school in the first place and once there, most assessments are high-stakes and failure rates need to be justified. As a consequence, numerous procedures have been established to determine cut-off values for examinations. A cut-off value is the score of an assessment that determines who passes the exam and who does not. The cut-off in turn determines the failure rate, which is the percentage of students below the cut-off value who fail the exam. There are two main categories of methods to determine the cut-off: criterion-referenced methods and norm-referenced methods. Criterion-referenced methods, which are also referred to as test-centred standard setting, are independent of the test results and are concerned with ascertaining whether the students meet a pre-determined set of requirements.

Standard or cut-off scores should be used to determine whether the examinee attained the requirement to be certified competent. There is no perfect method to determine cut-off scores on a test and none is agreed upon as the best method. Setting standards is not an exact science. Legitimacy of the standard is supported when performance standard is linked to the requirement of practice (Smith, *et al*., 2003). Test-curriculum alignment and content validity are important for most educational test validity arguments. Any assessment tool should be reliable, valid, feasible and acceptable to learners and assessment leads. It should also be effective in relation to its cost, and it should have educational power (Smith, *et al.*, 2003). In order to examine the acceptability and feasibility of the assessment tool, it is important to take into consideration the time available to complete the task (Van Der Vleuten, 1996).

2.4 Accreditation of Medical Schools

Smith, *et al* (2003) advise that whenever a programme is running, it is important to evaluate it in order to determine systematically and objectively as possible, the merit, value or worth of an intervention. Evaluation answers the question, "What have we achieved and what impact have we made?" It can also be referred to as the systematic way of learning from experience to improve current activities and promote better planning for future action. It is designed specifically with the intention to attribute changes to intervention itself. It focuses on comparing expected and achieved accomplishments (in this case educational programme, the issues of attrition, retention, graduation rates and Grade Point Average apply). The

aforementioned quality educational outcomes are discussed in the sections which follow with focus on researches which have been carried out in medical schools.

One way in which evaluation of quality of education has been done is through the accreditation processes. The medical schools are evaluated using different standards in order to see if they are met. These standards in other literature are referred to as institutional inputs (McGaghie *et al*, 2011). The institutional inputs may include; academic staff, educational resources and missions and objectives of the institution. These are assessed to determine accreditation. In this study, the WFME Basic Standards were used to assess the institutional input to educational quality.

Accreditation is the primary means of quality assessment and assurance used by higher education institutions in different parts of the world. Accrediting agencies such as the Health Professionals Council of Zambia (HPCZ) and High Qualification Authority (HEA) have experienced an increasing public concern for accountability of higher education in medical schools like the School of Medicine of the University of Zambia as pressure to focus their own processes for reviewing institutional quality on student outcomes—student progress through the institution as well as student learning. The quality review processes that include a focus on student learning draw the accreditation process itself nearer to its true purpose of assessing the quality of education offered by an institution of higher education.

Accreditation, by design, evaluates institutional quality. Institutional quality is determined by how well an institution fulfils its purposes and the University of Zambia, School of Medicine had a mission and objectives to achieve. From the perspective of WFME, producing learning is one of the core purposes of an institution of higher education though the indicators used in assessing quality of learning are limited and more have been included in this study. In assessing institutional quality, accreditors are evaluating the student learning produced by the institution in the context of the institution's own mission, its stated learning objectives, and its identified means of assessing student learning.

The challenge to the School of Medicine is to identify the expected student learning outcomes in the context of mission and the institution's own curriculum and to develop the means of assessing that learning. The Health Professions Council of Zambia (HPCZ) views its central purpose as improving institutional quality. To this effect, HPCZ acknowledges that

institutions take time to reach excellence. All accreditors have standards to assess institutional effectiveness regularly, and it is expected that the institutions utilize the assessment to identify and plan needed improvements, to implement those improvements, and to check their impact during another cycle of institutional assessment.

Evidence that an institution has set expected learning outcomes might include course syllabi given to students, official course outlines that an institution uses to inform faculty teaching a course, or similar documentation of the expected learning outcomes designed for student services activities or learning support activities. Evidence that an institution has aligned the learning outcomes of a single educational experience (such as a course or a workshop) with the learning goals of a programme or culminating degree or certificate includes records of institutional discussions, rubric, charts, or other graphics that show the summative learning goals the institution has defined (McGaghie *et al*, 2011).

2.5 Conceptual Framework

Before discussing the gaps identified from the literature, the historical background of student attrition phenomenon and GPA and conceptual frameworks used in this study shall be discussed. The conceptual frameworks used in this study are Tinto's (1997) model and Chickering and Gamson (1987) model.

2.5.1 Historical Background of Student Attrition and GPA

Student retention rate has been a major concern for tertiary institutions around the world since the establishment of formal education as this might affect the image of the tertiary institutions in many different ways including their academic reputation and financial plans. To deal with such a critical issue, learning institutions need to come up with strategies and plans that are based on the findings of scientific research to reduce attrition rates and raise students' GPA. The literature of student retention in higher education is rich of the theoretical models and empirical studies that gained consideration among researchers and educators over the last four decades. Although the student attrition phenomenon has been a major concern for educational institutions and educators since the establishment of the formal education system (Habley, Bloom, & Robbins, 2012; Seidman, 2005; Tinto,1993), theoretical models

arising from the systematic study of the phenomenon were not developed until the early 1970s (Berger, Ramirez, & Lyon, 2012).

Since then, many student retention studies have been conducted and theoretical models have been developed such as Tinto's Institutional Departure Model (1975, 1993), Bean's Student Attrition Model (1980, 1982), the Student–Faculty Informal Contact Model (Pascarella, 1980), Astin's Student Involvement Model (1984), the Non-traditional Student Attrition Model (Bean & Metzner, 1985) and the Student Retention Integrated Model (Cabrera, Nora, & Castaneda, 1993). However, the focus of these studies was principally on the characteristics of individual students rather than on their interactions with college environments.

Often, however, the psychological and sociological perspectives seem to be the umbrella categories under which most student retention models fall. Some of these theoretical models are reviewed in this paper. This study integrated Tinto's model in different college systems and environments, giving the model more credibility and validity and also the Chickering and Gamson's Seven Principles for good practice in teaching. The two (2) were chosen because they are broad in nature and cover a lot of depth when dealing with factors relating to course management, teaching approaches and assessment processes which were the focus of this study.

2.5.2 Tinto's Conceptual Model

Building on Spady's (1970, 1971) theoretical views on the undergraduate dropout process, Tinto published the first version of his well-recognised Institutional Departure Model, also known as the Student Integration Model (Tinto, 1975). Between 1975 and 1993, this model went through many examinations and revisions by the original author. The Institutional Departure Model is mainly based on interaction between students and the academic and social systems of their institutions which is one of the important variables covered by this study.

Linking to this, Tinto argued that a student's persistence or departure is a reflection of his or her success or failure in navigating the stages towards incorporation into the community of the institution. Tinto claimed that during the stage of separation, new college students need to

detach themselves from the groups of their previous communities such as family and high school, which have different values, norms and behaviour to the new communities of their academic institution (Habley, 2012). This stage can occur during or after the first one. Finally, having successfully passed through the first two stages, the student can begin the process of integration into the new community of the college. This factor was not considered in this study as the students under study were taken from the School of Natural Sciences. This meant that they already passed the integration stage into university life.

The final version of Tinto's Model (1993) states that colleges consist of two systems; academic and social. Students need to be integrated into both systems to persist in their academic institutions. According to Tinto's model, academic integration can be measured by the students' grade performance and intellectual development, while social integration is measured by students' interaction with college society (Seidman, 2005). The model suggests that a student enters college with some goals and commitments. According to the model, the student's experience at college (academic and social integration) will continuously modify (weaken or strengthen) his or her level of initial goals and commitments.

Tinto's Model of Institutional Departure (1975, 1993) has been subject to extensive testing and examination over the last four decades and has been cited in many studies investigating the attrition problem in which the constructs, hypotheses and postulations of the models have been empirically used, tested and critiqued (Barnett, 2006; Braxton & Lien, 2000; Caison, 2007; Liu & Liu, 2000; Jeffreys, 2012; Jones, 2008). These studies adopted and tested Tinto's model in different college systems and environments, giving the model more credibility and validity. Thus the justification of using this model in our study.

2.5.3 Chickering and Gamson's Seven Principles for Practice of Teaching

The seven principles for good practice were written by Chickering and Gamson in 1987 in order to summarize the results of a task force composed of university professionals and students. The task force's purpose was to examine the characteristics of effective undergraduate education courses (Bigatel, *et al.,* 2012). The principles were originally written in regard to face-to-face learning. The seven (7) principles are as follows:

- **Principle 1: Encourage Contact Between Students and Faculty**

Chickering and Gamson (1987) state that the first principle for good practice is the encouragement of contact between students and faculty. Chickering and Gamson state that faculty need to demonstrate concern for students so that they feel supported when they are struggling academically. In our study, this principle is considered as availability of staff for consultation. Increased interaction between the instructor and student has not only been considered important by students and faculty, but the increased interaction has resulted in better academic performance (Pascarella and Terenzini, 2005).

- **Principle 2: Develop a Reciprocity and Cooperation Among Students**

Chickering and Gamson (1987) consider learning to be more effective when it is social rather than competitive. They stress that students should collaborate, share ideas, and respond to each other's ideas. The collaboration would then lead to a deeper level of understanding for all of the students. This principle however is not assessed in our study as the focus of the study was not in this line of thought.

- **Principle 3: Encourage Active Learning**

Chickering and Gamson's third principle involves the use of active learning methods rather than relying on passive methods such as text books and lectures. They indicate that students need to relate the material to their own lives. This type of pedagogy is within the constructivist realm. It is learner-centred rather that teacher driven. Research indicates that most college teachers recognize the need for learner-centred, constructivist assignments but many still do not use them in traditional classes (Smith & Valentine, 2012). In regard to online courses, faculty rate an active learning approach as one of the most relevant competencies for instructors (Bigatel, *et al*., 2012). This principle is assessed in this study under teaching approaches used by the academic staff.

- **Principle 4: Give Prompt Feedback**

Supplying prompt feedback to students is the fourth principle of Chickering and Gamson's theory (1987). They describe feedback as necessary to allow students to assess their level of knowledge so they can determine what they still need to learn. Chickering and Gamson (1987) state that students should also be given frequent suggestions for improvement. Young

(2006) also found that students support the principle of prompt feedback. In her study, students indicated that giving prompt feedback is an important behaviour for effective teachers. Apart from prompt feedback, our study assessed whether the feedback given was detailed or not.

- **Principle 5: Emphasize Time on Tasks**

An emphasis on the amount of time spent learning is the fifth principle. Chickering and Gamson (1987) indicate that instructors should help students to realistically estimate how much time should be allocated to assignments. In addition, they advocate that instructors should help students to learn good time management techniques. Since many students are adults who have jobs and families (Moore, 2003), time management is often a critical issue. Finally, Chickering and Gamson (1987) indicate that learning takes up time and therefore students have to be allocating ample time to their learning tasks if they are to be effectively learning. The study assessed if the Medical School had the academic counsellors to implement this type of principle.

- **Principle 6: Communicate High Expectations**

The sixth principle of the theory is that instructors should communicate high expectations. Chickering and Gammon (1987) indicate that setting high expectations for students leads them to put forth a higher level of effort. They indicate that the instructors' expectation level for the students becomes a self-fulfilling prophecy for those students. Finally, the constructivist approach studies has been shown to place a high expectation on learners (Gold, 2001) and has led to successful outcomes. These outcomes can be communicated to the learners through orientation as they enter into the university and also during lectures through lesson objectives. This was another principle which was evaluated.

- **Principle 7: Respect Diverse Talents and Ways of Learning**

The last principle says that good instructors present a range of learning experiences in order to accommodate students with different learning styles. Chickering and Gamson (1987) indicate that this involves using various "hands on" activities as well as lectures. Research indicates that most instructors agree that a range of learning opportunities should be offered, but that most instructors still do not incorporate a variety of learning tasks (Smith &

Valentine, 2012). One way in which courses can be made more effective is to address a variety of learning styles.

Chickering *et al* (2007, 3) say, "Students' need to be able to show their talents and learn in ways that work for them". Students may process learning experiences through visual, auditory, tactile or kinesthetic means (Barry *et al*, 2005). The classroom needs to be arranged equipped to reflect a real world. The students are also supposed to be availed with well-prepared course outlines, syllabi and curriculum so that they know beforehand what they will cover. This encourages students to do more research and read in advance on the topic so that they have basic knowledge to be built upon by the lecturer (Smith & Valentine, 2012). Thus our study strove to establish if lecturers were oriented in the school curriculum before they started teaching. This was important as the strategies used in teaching were dependent on the objectives to be achieved from the course syllabi. The use of ICT and other ways of teaching were investigated in this study under teaching approaches.

2.5.4 Combination of the Conceptual Framework

Over the past four decades, the retention of college and university students has been a major concern for educators and administrators in higher education. Theoretical models designed to predict whether students will persist or not have been valuable tools for retention efforts relative to the creation of services in academic and student affair. Scholars agree that there is no one model that can predict low students' GPAs and examination attrition rates (Reason 2009; Sarrico *et al*, 2016 and Wilson 2015). Despite this challenge, the models are helpful in understanding and predicting the examination attrition and GPA attainment. Many variables in different models overlap with each other, although the relationships and levels of importance may be dependent on the study taken.

The conceptual framework used in this study rose from Tinto's Longitudinal Model of Doctoral Persistence (1993) and Chickering and Gamson's (1987) Seven Principles For Good Practice in Undergraduate Education. Tinto's Doctoral Model is used instead of undergraduate model as it is one to be applied in this study. From inspection of Tinto's model, it is noteworthy that there are various factors that can derail students on their road to degree completion. His model has been recommended by most researchers as a

comprehensive one (Hagedorn 1993 and Wilson 2015). On the other hand the Chickering and Gamson's (1987) Seven Principles are identified by some researchers as good practices in undergraduate medical education for the purpose of raising students' GPA and lowering the attributes rates (Dixon 2007 and Billings *et al* 2005).
The two models contain variables which were applicable in this study in relation to educational quality. It is therefore important to review some of the studies conducted which utilized the two models and related to this study.

Some studies that have been conducted using Tinto's longitudinal model of graduate education and Chickering and Gamson's seven principles have shown that certain factors in the learning institution contribute to quality outcome (Jeffries, 2007). It has been found out that for quality outcomes to be realised, there is need for quality content, quality process, quality learning environment and quality learners (Caison, 2007). The above factors shall be discussed in line with Tinto's longitudinal model of graduate education and Chickering and Gamson's seven principles in detail in the sections that follow.

Chickering and Gamson's (1987) seven principles for good practice in undergraduate education provided a common sense base approach to enhancing the teaching and learning outcomes in higher education. The seven principles are based on tenets of quality education. These seven principles for good practice in undergraduate education have been included in the National League for Nursing Education Simulation Framework (NESF) (Jeffries, 2007). The NESF provided a framework for the development of scenarios and included teacher and student components, outcomes, and educational practices. The use of Chickering and Gamson's (1987) seven principles provided insight into why the above programme resulted in decreasing attrition. For the purpose of our study five (5) of these principles are reviewed namely; contact between students and teachers, active learning, prompt feedback, high expectations and diversity of learning styles.

In order to make the similarities and differences readily apparent, Table 2.3 was created with the independent variables from the two models and assigned to each author's model.

Table 2.3: Independent variables predicting GPA and Attrition rates

Author	Independent Variables
Tinto	Availability of course outlines Structure of the syllabus Training of staff
Chicken and Gamson	Feedback Time Management Motivation Learner-centred teaching Consultation

(Source: Field Data, 2018)

At first glance, it does not seem as if there is much overlap. The two are similar though Chicken and Gamson's Principles cover more than Tinto's. The variables seem to be very similar with what is prevailing in the Medical School of the University of Zambia.

2.5.4 Limitations of the Two Models and Research Gap

Studies of the examination attrition rates and GPA issues in tertiary institutions, including the theoretical models, as in other research fields, have their shortcomings and limitations. One of the most well recognised limitations of the student retention studies concerns their generalisability (Jeffreys, 2012). Most student retention studies are undertaken in particular institutions and their findings are usually not easily generalised to other institutions (Boston & Ice, 2011; Pascarella, 1980). This might be because low student retention is a campus-based phenomenon (Berger *et al.*, 2012). Hence, every case has unique characteristics and circumstances that make it difficult to generalise its findings to other cases (Cabrera *et al*., 1993; Caison, 2007). Hence, the need to conduct this study to come up with findings which could be applicable to the School of Medicine of the University of Zambia.

Other limitations of student retention studies relate to the research strategies they utilise and the types of sample institutions and participants they study. One of the criticisms of student

examination attrition rates and GPA studies is that they have primarily focused on traditional academic institutions and traditional types of students (Bean & Metzner, 1985; Braxton & Lee, 2005) which is the same case of this study as the study focussed on the School of Medicine alone and its students.

It should be stated that little systematic research has been conducted in Zambia and other parts of the world on the correlation of course management, teaching practices and assessment approaches on one hand and students' GPA and examination attrition rates on the other hand. In all the aforementioned studies, few studies have been conducted to evaluate the challenges that lecturers who are trained in pedagogy face when in class and managing courses. In any learning institution, there are some specifics which the lecturers need to be oriented in for them to perform to optimum. This study explores some of the challenges and later proposes the measures to be taken.

In addition, few studies have been conducted on management of teaching and learning activities so this study investigates more in this area. The study also investigates assessment practices in the Medical School of the University of Zambia.

2.5.6 New Conceptual Framework Model

Therefore, the two conceptual frameworks were combined to come up with one model. The four variables used in this study were; institutional characteristics, course management, teaching characteristics and assessment standards. In this study factors have been included to make the study more conclusive. From Table 2.4, the new ones which have been included are in bold. Table 2.4 shows how the variables from the two authors fuse in the current one. The current one has the variables in bold.

Table 2.4: Combination of Tinto and Chicken and Gamson's Variables

Variable	**Factors**
Institutional Characteristics	Training of staff (Tinto) **Academic staff** **Educational resources** **Mission and objectives**
Course Management	Structure of syllabus (Tinto) Time management (Chickering and Gamson) **Course workload** **Pace of the course presentation** **Degree of difficulty** **Time spent on the course**
Teaching Approaches	Learner-centred (Chickering and Gamson) Motivation (Chickering and Gamson) Consultation (Chickering and Gamson) Availability of course outlines (Tinto) **Access to handbooks** **Access to teaching schedule** **Available qualified teaching staff** **Lecturers using ICT in teaching** **Lecturers' punctuality** **Lecturers attend to all classes**
Assessment Processes	Feedback (Chickering and Gamson) **Fairness in grading** **Timely and detailed feedback** **Assessment matches with the scope** **Reliable and valid assessment** **Objectivity in assessment**

(Source: Field Data, 2018)

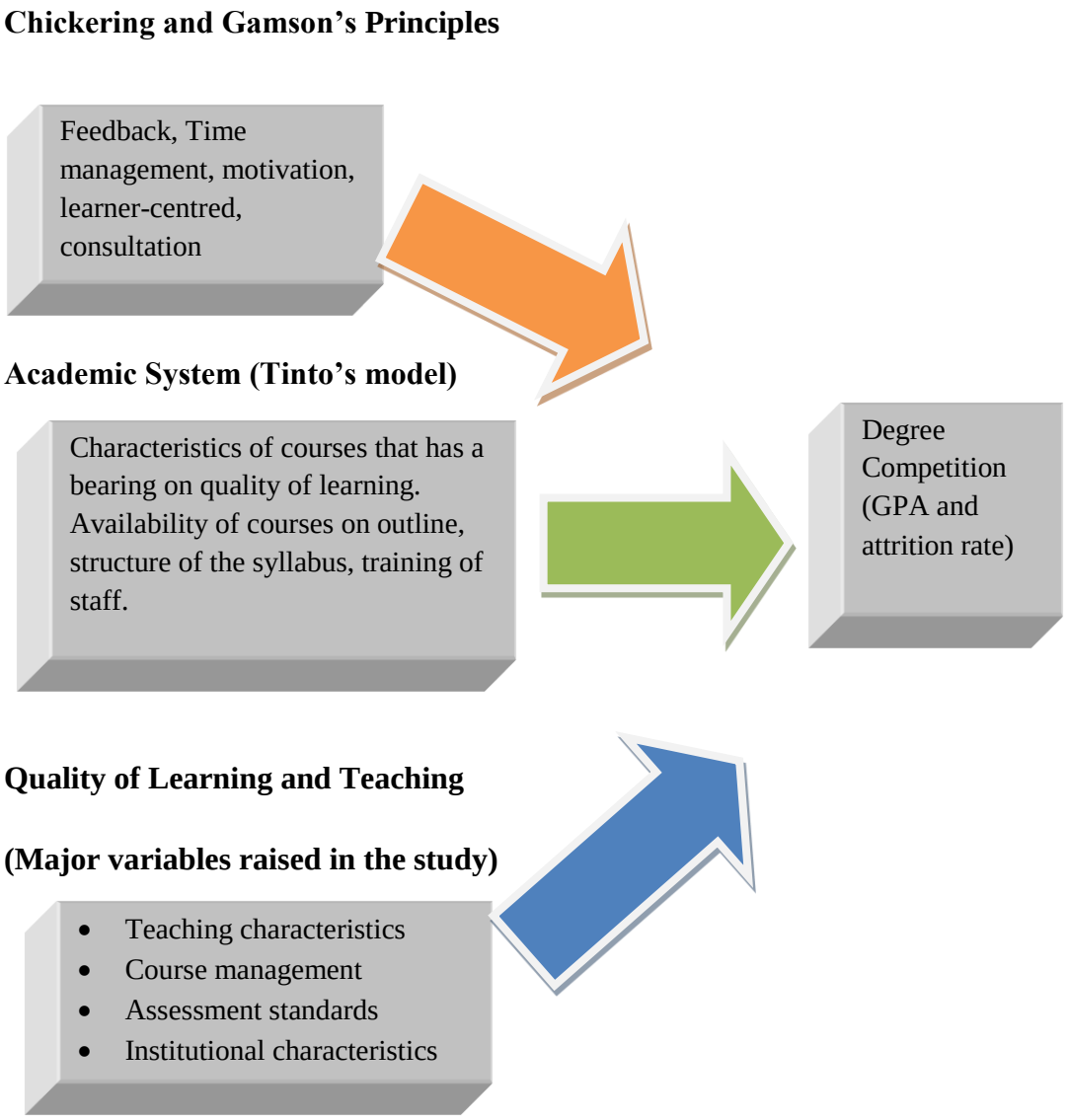


Figure 2.2: Tinto's, Chickering and Gamson's Principles

(Source: Field Data, 2018)

Figure 2.2 above represents the different variables raised in this study. The variables from the Quality of Learning Teaching box were arrived at by the researcher as the ones applicable to the study. Different factors under each variable were used in the study to astern their impact on the students' GPA and the Medical School examination attrition rates.

Course management was taken as the first variable in the process of quality teaching and formed the first research question, '*How have undergraduate courses been managed at the Medical School of the University of Zambia?*' After managing the courses well, teaching

practices were also considered in the study and this formed the second research question, '*How has been the teaching of undergraduate students done at the same institution?*' Quality of teaching is incomplete without assessment processes. The quality of assessment processes considered how the assessment items were prepared (validity and reliability) followed by how marking was done (fair, consistence and thorough). The study also evaluated feedback (timely and detailed). The 3rd research question was '*How have been assessment processes of students*?' Thus ends the Conceptual Framework that informed the methodology of the study.

2.6 Conclusion

Literature has revealed that quality of teaching in medical schools affect students' academic performance. This has been shown from many studies in the United States of America, a few in African countries and other in Europe. The review also demonstrates that it is not just the quality outcomes that should be focused upon but also the causal factors. The literature also evaluates different learning processes used in medical education learning institutions and related to workable strategies which result into educational quality. However, there has not been any systematic study done from the Zambian medical schools with regard to quality teaching and how it contributes to students' academic performance (student attrition and GPA). There is only one case study done in one department of the Medical School, University of Zambia where the focus was on finding the GPA of the students (Banda, 2004).

The current UNZA School of Medicine (2010 Senate approved) MB ChB Curriculum emphasizes on instructors using quality of teaching approaches and has recommended the term system and moving away from semester system. As such a policy is being implemented, a better understanding of the attrition process and low GPA would be beneficial to the School of Medicine administrators, instructors and students. There is also need to understand better the potential obstacles and later develop strategies for successful completion of educational goals which include high GPA for students and low attrition rates.

In order for the School of Medicine (SoM) to maintain quality of learning there is need to evaluate teaching and learning by the students. This is in line with the University of Zambia (UNZA) approved School of Medicine road map which looks at policies, administration and curriculum goals for MB ChB programme. This will help the School achieve objective 4 (To develop the monitoring and evaluation mechanism in order to facilitate appropriate

intervention and attainment of objectives) of the Strategic Plan**.** In order to make it more efficient, all the components of the programme need to be evaluated as this is one of the standards described by the World Federation for Medical Education (WFME, 2003). The components include mechanisms for programme evaluation, student performance involvement of stakeholders and teacher/student feedback. The next chapter gives a detailed research design and methodology that were used to conduct this study.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents the research paradigm where the historical approach using archival data was used. It is followed by a design of the study of historical approach which used diagnostic research design. The context of the study, access and recruitment of participants will then follow. The description of data collection, instruments and the section on threats to reliability, validity and trustworthiness and how they were handled follows later then an ethical consideration section. The chapter ends with a summary of data collection and analysis.

3.2 Research Decisions Influencing the Research Methodology

It is necessary to explain the philosophical research framework that formed the foundation of the study as this is crucial to understanding the overall perspective from which the study was designed and carried out. Mackenzie and Knipen (2006) emphasises that without using a paradigm as the first step, there cannot be any basis of choosing methodology, methods or literature design. The term paradigm comes from a Greek word *paradigm* which means pattern and was initially used by Thomas Kuhn (1962) to denote conceptual framework.

Creswell and Clark (2011) proposes four types of paradigms which exist as frameworks: Post – Positivism, Constructivism, Advocacy and Participatory and Pragmatism while Punch (2009) suggests that some scholars use two paradigms: Positivism and either Interpretivism or Constructivism. Bryman (2004) also cites positivism and interpretivism as the commonly used paradigms. Denscombe (2002) defines positivism as an approach to research that applies the natural science model of research to investigate while he considers interpretivism as an umbrella term for a range of approaches that reject the assumptions by positivism.

The study takes on a historical approach using archival data where the process of learning and understanding the background and growth of a chosen field of study or profession offer insight into organizational culture, current trends, and future possibilities. The question of the nature, and indeed the possibility of sound historical method is raised in the philosophy of history as a question of epistemology.

The historical method which uses archival data type of research applies to all fields of study because it encompasses their origins, growth, theories, personalities, crisis, etc. In this study, the past results were used to show the GPA of the students and the examination attrition rates of the Medical school of the University of Zambia. Both quantitative and qualitative variables were used in the collection of historical information. Once the decision was made to conduct historical research, there were steps that were followed to achieve reliable results. This was in line with Azrin *et al* (2001) who gave six steps for conducting historical research using archival data:

- The recognition of a historical problem or the identification of a need for certain historical knowledge. In this study, the historical problem referred to the high examination attrition rates and low student' GPA in the School of Medicine of the University of Zambia.
- The gathering of as much relevant information about the problem or topic as possible. In order to collect such relevant information, data was collected from many stakeholders who directly contributed to students' academic performance. All programmes were involved though the Department of Nursing Sciences was used in the pre-test pilot. The administration, lecturers and laboratory technicians were all involved.
- If appropriate, the forming of hypothesis that tentatively explains relationships between historical factors.
- The rigorous collection and organization of evidence, and the verification of the authenticity and veracity of information and its sources. Data was collected using the survey questionnaires from students and self-evaluation questionnaire from the lecturers. The evidence was verified using the Focus Group Discussions from the students and the in-depth interviews from the administration, lecturers and laboratory technicians.
- The selection, organization, and analysis of the most pertinent collected evidence, and the drawing of conclusions; and
- The recording of conclusions in a meaningful narrative.

There are a variety of places to obtain historical information. Primary resources or archival data are first-hand accounts of information. Brundage (2002) states that finding and assessing primary historical data is an exercise in detective work. It involves logic, intuition,

persistence, and common sense. Some examples are; personal diaries, eyewitness accounts of events and oral histories. In this study archival data was the raw data of students past results. Such information was collected from the past examination results and an analysis was done to calculate the students' GPA for different programmes and the examination attrition rates.

Secondary sources of information were collected from other works that had been done in the school regarding quality of teaching and learning. Secondary sources refer to records or accounts prepared by someone other than the person, or persons, who participated in or observed an event. Secondary resources can be very useful in giving a researcher a grasp on a subject and may provide extensive bibliographic information for delving further into a research topic. In this study, the information from the laboratory technicians and Heads of Department provided useful information to help the researcher relate with what was calculated from the GPA and examination attrition rates.

During the study, participants shared their classroom learning experiences, information about the school climate, and perceptions about motivating students to perform to high expectations. The researcher provided an unprejudiced description of the phenomena recorded, as objectivity is the expression of fidelity to the phenomena investigated (Vibe *et al*, 2015). This method allows the researcher to discern and capture emerging patterns without predetermining or presupposing the results (Appplebaum, 2011).

The two paradigms (positivism and interpretivism) influence the perception of the distinctions between qualitative and quantitative research. Quantitative research rests upon the positivist assumptions while qualitative research rests upon interpretivism assumptions. This study employed different data gathering methods, both in the qualitative and quantitative paradigms. However, questions may be asked regarding the rationale behind using this approach.

3.2.1 Rationale for Qualitative and Quantitative Research Methodologies

The choice of historical approach method was necessitated by a combination of research sub-questions which could be answered using methods from both the quantitative and qualitative

paradigms. It is important to note that it can be difficult to carry out both quantitative and qualitative research by a single researcher especially if the two approaches are used concurrently (Creswell, 2009) as the case was in this study. Despite this difficulty sequential approach was utilised to offset cost challenges.

Qualitative and quantitative research designs are better understood when contrasted though they overlap in many cases. Qualitative research tends to be sceptical about the use of statistical analysis methods for the study of human feelings, attitudes and perceptions. It also concerns the activities in the social settings and identifies either the presence or absence of something. Its goal is to understand the causes of something and in this case, the causes of high examination attrition rates and students low GPA.

Quantitative research on the other hand imposes restrictions on the scope of investigations and requires rigidly adhering to some procedures like sampling procedures and data analysis techniques (Bernard & Ryan, 2010). Quantitative research also focuses on the details that can be measured in order to produce results which can be generalized (Charmaz, 2006). In most cases, statistical analyses are used in this type of research design (Schreier, 2012 and Boeije, 2010). In our study, perceptions of students' and their views were quantified with the view that the results could be used as learning points to other University of Zambia Undergraduate Programmes and Schools about quality of teaching and learning. In order for the researcher to understand the problem the study was exploring, the research required both qualitative and quantitative data and hence the adoption of mixed method.

3.3 Research Design

In this study, mixed method research design was used. According to Creswell and Clark (2011), there are six types of mixed methods designs namely; (i) the explanatory sequential design, (ii) the embedded design, (iii) the convergent parallel design (iv) the convergent parallel design (v) the multiphase design and (vi) the transformative design. Research design refers to a plan used in collecting data so that the desired information can be obtained with greater precision (Creswell, 2009). A research design is the detailed blueprint used to guide a research study towards its objectives. It determines how information is obtained. It is the glue that holds the research project together. It involves the intersection of philosophical strategies of inquiry and specific methods (Creswell, 2009). Shende (2012) terms it as guide posts to keep one in the right direction.

Research design is in short a blue print for collection measurement and analysis of data. It also makes specifications of the methods to be adopted for manipulation of the independent variable and for the measurement of the dependent variable along with suggesting ways are to be analysed. According to Yin (2013), a research design is defined as the function of a research as it refers to the overall strategy that you choose to integrate the different components of the study in a coherent and logical way thereby ensuring you will effectively address the research problem. It constitutes the blueprint for the collection, measurement, and analysis of data. The design ensures that the evidence obtained enables us to answer the initial question as unambiguously as possible. Obtaining relevant information, therefore, entails specifying the type of evidence needed to answer the research question, to test a theory, to evaluate a programme or to accurately describe some phenomenon.

This study used the explanatory sequential design mixed methods in a diagnostic way. In explanatory sequential design the researcher begins by conducting a quantitative phase ~~follows~~ and follows up on specific results for the purpose of explaining the initial results in depth (Subedi, 2016). It is this focus on explaining results that is reflected in the design name.

The purpose of the design is to use a qualitative strand to explain initial quantitative results (Creswell and Clark, 2011). The design is most useful when the researcher wants to assess trends and relationships with quantitative data and to explain the phenomenon leading to the trends. In this study, this was chosen because the low GPA of the students and the high examination attrition rates were not understood. Therefore, using this design the researcher hoped to explain the causes that led to the scenario. The data collected was then analysed from one paradigm and later the other. For instance, in this study, the researcher first collected the quantitative data, analysed it and later collected the qualitative data, analysed it and finally did the interpretation.

The basic rationale for this design was that one data collection paradigm would supply strengths to offset the weaknesses of the other paradigm and provide a complete understanding of the research problem. In this case, the data collected from the quantitative method was verified and triangulated with the data from the qualitative methods. Figure 3.1 shows a visual illustration of how the exploratory sequential design was applied.

Figure 3.1 Illustrations of Explanatory Sequential Design

Source: Adapted from Brannen (2005)

3.3.1 The Mixed Methods Approach

In mixed methods research, both collection and analysis of qualitative and quantitative data are combined into one study. The strengths of both research designs are integrated and the weaknesses are minimized. The rationale for using the two methods in this study was that neither quantitative nor qualitative approach was adequate to reveal the details of the situation of the relationship between the quality of education in the School of Medicine of the University of Zambia and the assessment outcomes. Creswell and Clark (2011) proposes that even if quantitative research may be weak in revealing the situations and context in the way people respond to questions about a certain phenomenon, its primary focus is about numbers and not participants' explanations that are important.

On the other hand qualitative research is viewed as deficient because personal subjective interpretation may introduce some interview bias which might make it difficult to generalize findings of a small to a bigger population. Thus when used correctly, the two approaches complement each other in data collection and analysis. Mixed methods research has several designs and the section that follows explains the approach that was used in this study.

In mixed method, there is need to build the knowledge and its main principle is that qualitative and quantitative methods are complementary. Masaiti (2013) adds that by implication, both numerical and text data collected either concurrently or sequential lead the researcher to understand the research problem. There are three issues which need consideration in mixed methods namely; priority, implementation, and integration (Green *et*

al, 2011). Priority refers to which method, either qualitative or quantitative, is given prominence in the study. In this study, quantitative was given priority as compared to qualitative. Implementation refers to whether the qualitative and quantitative data collection and analysis comes in chronological stages or in parallel or concurrently. Integration refers to the stage in the research process where the mixing or connecting of qualitative and quantitative data occurs (Mulenga, 2016).

In this study, quantitative phase was used to collect historical data from the past examination results (from 2008 to 2014). This period was chosen as it was the only period where the past results were available and also this was the period after the first project of DFID and during the MEPI project. The two (2) projects were initiated by the School of Medicine to improve quality of education at the institution. This data helped the researcher to choose the programmes and courses to focus on during the research. The GPA and examination attrition rates were calculated from the past examination results and the programme/s with both low and high GPA and those with high examination attrition rates and low examination attrition rates were chosen to be focused on during data interpretation. In addition, quantitative phase was also used to collect information on the staff and students' perception on institutional characteristics of the School of Medicine, course management, teaching practices and assessment processes of the school.

The qualitative data was later collected to verify some of the trends collected from GPA and examination attrition rates. This was done through the individual interviews of some Course Lecturers, Heads of Departments, Laboratory Technicians and the Assistant Dean (General). The study explored students' perceptions of how courses were managed by seeking their views on courses which needed to be changed and those which were outstanding. In addition, students were also required to state their views on the teaching characteristics of the lecturers in the School and how the assessments were done. The other views were collected from the in-depth interviews with key informants as Creswell (2009) posits that exploratory nature research permits the gathering of new information and can reveal valuable attitudes and perspectives that can hardly be accessed through the traditional quantitative approach alone.

This was done to get the view of the service providers as to why the trends from the quantitative data in some courses. The Focus Group Discussions (FGDs) with the students were also done to solicit more detailed information on the causes of the low GPA and high examination attrition rates among some courses in the school. The two methods and their

analysis helped the researcher to explain and link the statistical outcomes by explaining participants' view in further depth and comparing the two data sets in order to help make interpretations and draw the correct conclusion. The historical data in combination with the diagnostic way helped the researcher to come up with correct and helpful strategies in improving the quality of learning in the School of Medicine.

The historical approach of data from 2008 to 2014 of the School of Medicine final examination results used diagnostic research design. The diagnostic research design endeavours to find out the relationship between express causes and suggests ways and means for the solution. Thus, diagnostic studies are concerned with discovering and testing whether certain variables are associated. Such studies may also aim at determining the frequency with which something occurs or the ways in which a phenomenon is associated with some other factors. The study tried to explain the phenomenon of high examination attrition rates and low GPA of students despite the measures the Medical School had put in place to improve quality of teaching and learning.

Diagnosis studies determine the frequency with which something occurs or its association with something else. In this study, the frequency of low GPA of students and high examination attrition rates in the School of Medicine. Such studies require procedures that would not only reduce bias and increase reliability but could permit drawing inference about causality.

Diagnostic studies are mostly motivated by hypotheses. In this study, three hypotheses were generated (see section 1.7).

A primary description of a problem serves as a basis to relate the hypotheses with the source of the problem and only the data which forms and corroborates the hypotheses is collected. The study investigated the problem of low GPA and high examination attrition rates in the School of Medicine. The focus of the data collection was on the variables which were directly related to teaching and learning processes. These included the way the courses were managed, how teaching was done, the availability of educational resources as provided by the school and how the assessment process was managed.

As regards the objectives of diagnostic research design, it is based on the type of knowledge which can also be motivated or put into practice in the solution of a problem. Therefore, it is obvious that the diagnostic design is concerned with both the cause as well as the treatment.

The study came up with the conceptual framework and proposed solutions which the School of Medicine could put into practice to raise students' GPA and reduce the school examination attrition rates.

The research design of diagnostic studies demands strict adherence to objectivity for elimination of any chances of personal bias or prejudice. In this study, the researcher was from the School of Education and had little knowledge of how teaching in the School of Medicine was managed. The survey questionnaire was prepared before Focus Group Discussion and in-depth interviews in order to avoid asking bias questions in the survey. In addition, the data was entered by people who were not students and did not know any of the subjects mentioned in the study. Utmost care was taken while taking decisions regarding the variables, the type of evidence to be collected and tools of data collection.

In diagnostic designs, the researcher wants to know about the root causes of the problem. The factors responsible for the problem situation are described. In the conceptual framework of this study, the major factors leading to low retention in medical schools have been discussed.

There are four stages in this approach, as discussed by McCullagh (1984). It involves;

i) **The development of the premise of the investigation, identifying events/concepts, etc that may explain the phenomena.** At this stage, the researcher identified quality of teaching as the main concept that may explain the low GPA of the students and the low retention rates at the Medical school of the University of Zambia.

ii) **Choose the case(s) to examine**. The School of Medicine of the University of Zambia was chosen as a site of study and the undergraduate programmes in the school were studied.

iii) **Examine the similarities and the differences.** In comparison with other studies done on students' attrition rates and GPAs, the variables chosen which were applicable to this study were; institutional characteristics, course management, teacher characteristics and assessment standards.

- **Finally based on the information gathered propose a casual explanation for the phenomena.** From the data collected and analysis done, the study came up with conclusions to the causes of low students' GPA and high

examination attrition rates. The study also proposed the strategies of raising students' GPA and lowering the school's examination attrition rates.

In such studies, the factors must be separated and analysed so that causality can be ascertained. In this study, the factors leading to high examination attrition rates and low Grade Point Average were separated and analysed in order to ascertain their causes. It is causality that brings us to yet another key issue in methods for historical comparative research, the nature of the questions which are asked in attempting to propose causal relationships between a set of variables. In the collection tools, the questions on quality of teaching and learning attempted to do so.

McCullagh (1984) discusses the three criteria which must be met in order to have a causal relationship. These include, association, time order and non-spuriousness. Association simply means that between two variables, the change in one variable is related to the change in another variable. What was expected to be the case in this study was that the change in the attrition rates was to be similar to the GPA. If there were low attrition rates, then it was also expected that there would be high GPA. Time order refers to the fact that the cause (the independent variable) must be shown to have occurred first and the effect (the dependent variable) to have occurred second. In this study, it was expected that the factors determining quality of teaching and learning might have an effect on the attrition rates and the GPA.

Non-spuriousness is a criterion where the association between two variables is not because of a third variable. The final two criteria are; identifying a causal mechanism - how the connection/association among variables is thought to have occurred - and the context in which this association occurs. The deterministic causal approach requires that in every study, the independent and dependent variable have an association, and within that study, every case study the independent variable has an effect on the dependent variable. It was shown from this study that the independent variables like Course Management and Teaching Performance and many others had an effect on the dependent variables (GPA and attrition rates).

The research method on the other hand referred to the systematic methodological and accurate execution of the employed design. This study employed methodological triangulation in order to have in-depth and breadth understanding of the research questions at hand (Bryman, 2004). Both qualitative and quantitative approaches were used so as to collect

different information of data to answer the research questions in this study. The use of both qualitative and quantitative approaches in this study was necessitated by the differences in the research questions addressed and the desire of a diverse range of views in order to cross validate findings and ensure completeness (Bryman, 2004).

Bryman (2004) states that many researchers agree that the qualitative and quantitative approaches differ in both their epistemological and ontological perspectives. For instance, while qualitative approaches are based on an interpretive epistemological position and a constructivist ontological orientation, quantitative approaches, on one hand use the positivists' epistemological position and are objectivists in their ontological perspectives (Tashakkori *et al*, 2003). This means that in qualitative research, social phenomena and their meaning are created by social interaction between individuals, while in quantitative research, social phenomena is believed to exist independently of individuals. In this case, the primary (quantitative) method addressed the teaching performance and the course characteristics while the qualitative method addressed the perceptions of administration, lecturers and students of the reasons for the low GPAs and high examination attrition rates. The rationale behind methodological triangulation is that it facilitates comparison, statistical aggregation, corroboration and completeness of the findings (Bryman, 2004). A summary of research methodology is shown Table 3.1.

Table 3. 1 Summary of Research Method

Research question	**Specific Paradigm**	**Data Collection techniques**	**Data type**	**Data analysis methods**	**Statistical tests**
How are undergraduate courses managed	Interpretivism and positivism	Questionnaire, In – depth interviews and FGDs	Qualitative and Quantitative	constant comparative method	ANOVA, Post Hoc Turkey and Chi- Square
How is the teaching of undergraduate done?	Interpretivism and positivism	Self-administered questionnaire and FGDs	Qualitative and Quantitative	Triangulation method	constant comparative method, One way ANOVA
How are the assessment processes	Interpretivism and positivism	Questionnaire and In – depth interviews	Qualitative and Quantitative	Descriptive and Triangulation method	Measurement of association, and Post Hoc Turkey

done?					

(Source: Field Data, 2018)

The first research question was answered in two ways. Firstly, the institutional characteristics were assessed and later the managing of courses followed. The institutional characteristics focused on educational standards in relation to the external accreditation body. This involved how the students in the School of Medicine were oriented in the school mission and objectives and whether the students were aware of the school's educational programmes. It also included how the school was managed and other environmental factors. Secondly, the study went on to look at how courses were managed.

The second research question dealt with the approaches used in the school by lecturers and how these approaches contributed to quality learning. This involved managing teaching and the teaching characteristics of the academic staff. The last research question tried to investigate the assessment processes used in the learning process of the students in the School of Medicine.

3.3.2 Visual Model of the Research Project

Figure 3.2 shows a visual model of the Explanatory Sequential mixed methods as it was applied in this study. The model illustrates the exploratory sequential approaches that the research used. Both quantitative and qualitative phases started with collection and analysis of data. The model depicts the procedures and the kind of results of data analysis. All the details of the procedures explained in the sections which follow while the findings and discussions are presented in Chapter Four and Five respectively.

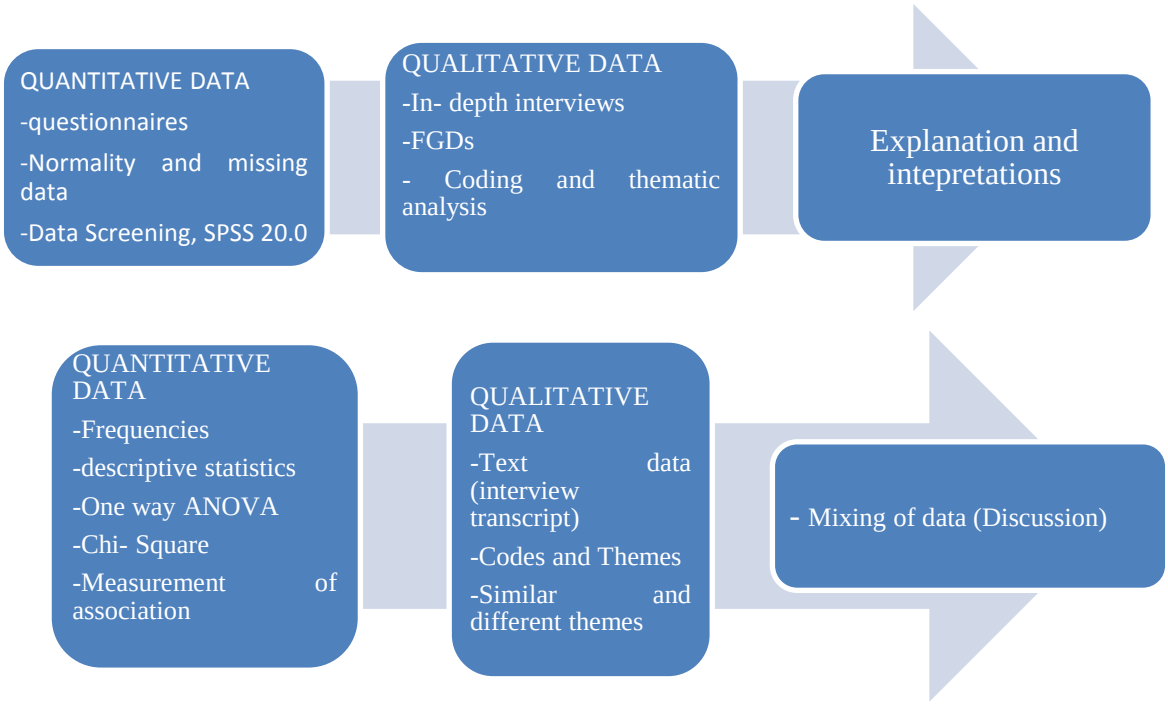


Figure 3.2 Result Explanatory Sequential Design

(Source: Field Data, 2018)

Even though the qualitative method shed more light on the quantitative data through the exploration of the research themes, the predominant method was quantitative method**.** However, both data sets were very useful in achieving the objectives of the study. The results of both quantitative and qualitative approaches are integrated during the discussion.

3.3.3 Advantages and Disadvantages of Mixed Design

Creswell (2012) and Haines (2011) have discussed advantages and disadvantages of mixed methods research. The advantages of the mixed methods design are;

i. The mixed method approach is easily carried out when variables and procedures are well defined.
ii. The design gives an understanding of the research problem as the design facilitates the collection of both quantitative and qualitative data.

iii. They complement each other as the qualitative data help verify the quantitative data though one may be given more prominence.
iv. They build on the strength of the other as none of them is comprehensive.

The design has also the following disadvantages:

i. It demands a lot of time to complete.
ii. If the problem is not well defined, the mixed method can confuse the researcher.
iii. The researcher needs to understand both methods of data analysis.
iv. There can be discrepancies between qualitative and quantitative findings.

With regard to how the researcher can solve the limitations stated above, Ritchie (2003) pointed out that such disadvantages should not be seen as a problem but as an opportunity for further studies and understanding. Therefore, it is dependent on how the researcher responds to the limitations in the study.

3.4 Target Population

3.4.1 Study Site

The study was conducted at the University of Zambia-School of Medicine situated at University Teaching Hospital (UTH) and The Ridgeway Campus. The University of Zambia was established in 1966. The School of Medicine was established as an independent School of the University of Zambia in 1970 and it was the first public medical school in Zambia. The School of Medicine had thirteen (13) Departments at the time of the study namely:

a) Department of Anatomy
b) Department of Biomedical Sciences
c) Department of Medical Education and Development
d) Department of Nursing Sciences
e) Department of Paediatrics and Child Health
f) Department of Pathology and Microbiology
g) Department of Pharmacy
h) Department of Physiological Sciences
i) Department of Physiotherapy

j) Department of Psychiatry
k) Department of Public Health
l) Department of Obstetrics and Gynaecology
m) Department of Surgery

Its scope of academic instructional delivery had increased over the years to include not only the MB ChB Programme, but also Pharmacy, Nursing Sciences, Biomedical Sciences, Physiotherapy, Environmental Health. However, students in the stated programmes had been graduating with low GPAs and high examination attrition rates compared with other schools in the University. In the year 2017, the institution transformed itself into four faculties, namely, School of Medicine, School of Health Sciences, School of Nursing Sciences, and School of Public Health.

3.4.2 Study Population

According to McMillan and Schumacher (2001, 169), 'A population is a group of elements or causes, whether individuals, objects or events, that conform to specific criteria and to which we intend to generalize the results of the research.' Kombo and Tromp (2006) explains that the greater the diversity and differences in the population, the larger the researcher's sample size should be. This allows variability and hence reliability of the study. The target population for this study were all undergraduate students in the School of Medicine of the University of Zambia, Assistant Dean (General), Heads of Department (HODs), Lecturers and Laboratory Technicians of the School. Some of the students formed the study sample because they were all participating in learning.

3.4. 3 Sample Size

Flowers *et al* (2005) defines a sample as a group of subjects or situations selected from a larger population. Teddlie and Yu (2007) also defines a sample as a strategically and systematically identified group of people or events that meet the criterion of representativeness for a particular study. It is thus a subset of the population taken to be a representation of the entire population (Anderson, 2005). In our study, a sample of 800 respondents in the School of Medicine for all years of study and programmes were targeted. 16 of these were key informants to the study, 784 were students studying in different

programmes except for those doing Nursing programme as these were used in the pilot study. The sample size was all students in the stated programmes, 3 Heads of Department and 3 Sampled Laboratory Technicians from different departments. In addition, since the study was both qualitative and quantitative in nature, the interest of the researcher was to carefully select smaller numbers of cases to give a greater depth of information on the topic under study through Focus Group Discussion with students (Teddlie and Yu, 2007).

3.5 Sampling Procedure

3.5.1 Sampling

Sampling is an important component for any research because of the significant impact that it can have on the quality of the results. Due to methodological triangulation adopted in the study, census was used in the study. Kombo and Tromp (2006) posit that census method is used where a complete enumeration of a group of people is targeted. In this study, census method was used to reduce sampling errors and also to provide a true measure of the population. This method has an advantage over partial enumeration method as detailed information about the small sub-groups within the population is more likely to be collected (Flowers *et al,* 2005).

In this case, all students in the School of Medicine were targeted except those in the Department of Nursing Sciences as these were used in the pilot study. This method was suitable in order to have a higher degree of accuracy and no margin of error. This method of data collection gives an opportunity to an investigator to have an intensive study about a problem and gathers a lot of knowledge. It is also applicable to units or departments having heterogeneity. The heterogeneity of the departments lies in the way each department manages their courses and how lecturers in each department teach.

3.5.2 Sampling Techniques

Purposive sampling, also known as judgmental**,** selective or subjective sampling, is a type of non-probability sampling technique. A core characteristic of non-probability sampling techniques is that samples are selected based on the subjective judgment of the researcher, rather than random selection. Purposive sampling was used only to select key informants to

the study. During the period under study, three (3) different Assistant Deans (General) served in this office and the researcher chose the one who was in the office at the start of the study as she was aware of the whole study programme. HODs, Lecturers and Laboratory technicians were sampled after the survey questionnaires were administered so as to do some follow-up questions from the issues raised from the responses of the students. In addition, lecturers were selected across programmes so as to collect diverse views on the subject under study. The number of years teaching in the school was another consideration. In this case, the researcher chose lecturers with different number of years (0 to 30). This was done to get different views on course management, teaching approaches and assessment practices employed.

According to Kombo and Tromp (2006), the power of purposive sampling, lies in selecting information-rich cases which can be used for in-depth analysis related to the central issue being studied. This is very common for qualitative data as purposive sampling is employed to identify and select strategically, individuals who understand the central phenomenon. These are participants who are in key positions and who are 'more knowledgeable people' about the students' examination attrition rates and low GPA in the School of Medicine (Patton, 1997).

This was a census study where the entire population of the students in the School of Medicine was used from which every Department and year of study were represented. Non-Probability Purposive Sampling was used to collect information from students Focus Group Discussions. In this case the class representatives for programmes were selected and three (3) other students based on gender basis and availability were selected. This is a type of sampling that is done in a non-random manner. Since high examination attrition rates and low GPA concern all students in the School of Medicine, all students at all levels were targeted for this study. These included students in each programme and in each year of study. This was because they met the criteria of being included in the study. These were students who were selected on merit (best achievers) with high GPAs to get into the School of Medicine.

3.5.3 Study Sample

A sampling frame "is the listing of all units in the population from which a sample is selected," (Bryman; 2004, 698). In this study, the sample comprised of 16 key informants, 719 students from UNZA, School of Medicine. The sample size therefore was 735. The School of Medicine had in 2015 a population of 1, 575 full time students. Therefore, the

Student Class List from the office of the Assistant Registrar, School of Medicine was used to ascertain the number of students in a particular programme. The researcher chose to sample all courses from the all programmes except for the Department of Nursing Sciences where the pilot study was done. The researcher did not just focus on MB ChB programme where the 2008 to 2014 results showed low GPA and high examination attrition rates but included other programmes in order to assess why in other programmes the examination attrition rates were low and had higher GPAs.

3.6 Research Instruments

3.6.1 Self-Administered Survey Questionnaires

In order to investigate the cause of low GPA and high examination attrition rates in the School of Medicine of the University of Zambia, the following areas were covered in the questionnaire based on: (a) course management and institutional characteristics as compared to the WFME educational standards, (b) the teaching approaches of the academic staff in the school and (c) the assessment processes (see Appendix II). These themes informed the design of the questionnaire's content. The survey questionnaire was formulated by the researcher with the Principal Supervisor's guidance and was presented to the School Board of Studies for approval. The items were measured on a continuous 5-point Likert Scale in the questionnaire. The questionnaire had also a few open-ended questions which were designed to clarify answers on the closed-ended questions. Demographic characteristics such as sex, programme of study, accommodation status, and sponsorship and admission type (school leaver direct, non-school leaver or non-school leaver- health professional) were also included.

Brace (2008) defined a questionnaire as a written list of questions, the answers to which are recorded by respondents. Bryman (2004) also defined a questionnaire as a collection of questions administered to respondents which must be answered as correctly as possible. Self-completion questionnaires were administered to students to collect quantitative data especially in answering all research questions except the last one. The UNZA SoM Undergraduate booklet questionnaire which focused on teaching and learning evaluation was used. The other self-evaluation questionnaire was administered to 10 Lecturers teaching undergraduate programmes to verify some of the questions from the UNZA SoM Undergraduate booklet questionnaire. All of these survey questionnaires were administered by the researcher except in few cases where respondents answered through filling online forms.

One of the advantages of the self-completion survey questionnaire was that they were designed in exactly the same way for each respondent. This phase was primarily designed to get more objective information than just mere opinions. As a result most of the questions were closed-ended because usually in research most respondents easily answer closed-ended questions than open-ended questions. All the closed-ended questions were in tabular form in order to make them as clear as possible and to compel the respondents to choose a response from the scale.

In the questionnaire, most of the closed-ended questions were developed to measure such things as how the School of Medicine educational standards related with the WFME educational standards, how the courses in the School of Medicine were managed, and the teaching practices and the how assessments were done in the school. Dillman *et al* (2009) proposed some of the design considerations in choosing the self-completion survey questionnaire.

Some of the major ones are:

a) Ensure that all the responses are mutually exclusive.
b) Make sure that both sides of the question are included in the case that a question included requires a response to an "either/or". If that is not done, there may be strong bias to the one side that was mentioned.
c) Asking respondents to rank a long list can result in confusing the respondents and some respondents might skip some (that is why this study opted for the short tables in most cases with descriptions of themes as a guide before each one of them).

These and other design recommendations were considered when designing the questionnaires. These considerations helped to ask questions which required answers that could be easily analysed. Where occasional open-ended questions were used (all were used at the end of each theme of research questions) they were designed to let the respondent provide additional information to justify and clarify some close-ended responses. In order to maximize the response rates, questions were not double-barrelled in nature and were simple terms and complete sentences. All these compelled the respondents to answer all questions and provided the researcher with non-ambiguous information. This process took time from the development stage through to questionnaire testing until the instruments were administered to the intended sample.

In addition, there were several advantages to having a questionnaire administered by the researcher. To begin with, interview surveys typically attain higher response rates than mail surveys do. A properly designed and executed interview survey ought to achieve a completion rate of at least 80 to 85 percent.

Respondents seem more reluctant to turn down the researcher standing on their doorstep than to throw away a mail questionnaire. The presence of the researcher also generally decreases the number of "don't know" and "no" answers. If minimizing such responses is important to the study, the interviewer can be instructed to probe for answers e.g. "If you had to pick one of the answers, which do you think would come closest to your feelings?"

Further, if a respondent clearly misunderstands the intent of a question or indicates that he or she has not understood, the researcher can clarify matters, thereby obtaining relevant responses. Survey research is of necessity based on an unrealistic stimulus-response theory of cognition and behaviour. Researchers assume that a questionnaire item will mean the same thing to every respondent, and every given response must mean the same when given by different respondents. Although this is an impossible goal, survey questions are drafted to approximate the ideal as closely as possible.

The key steps which were used in administering the survey questionnaires to the undergraduate students were as follows:

- Pre-test pilot study was done among the Bachelor of Nursing Sciences students. The study targeted all the students in all years of study. After analysis, the survey questionnaires were reviewed. Some information was changed (see section 3.6.4.1) and this led to the researcher not including the data from the Pilot study into the main data.
- The questionnaire was put on the School of Medicine UNZA Home Page by the Centre for Information and Communication Technologies (CICT) for others to fill online.
- The School of Medicine, Assistant Registrar provided the researcher with a list of course class representatives. The researcher called for a meeting with them and explained to them the study objectives. This was done so that the class representatives could be able to arrange the days and hours in their courses for the researcher to administer the survey questionnaires. The researcher assured

the class representatives that participation or non-participation in the study had no effect on their course grades in their degree programme.

- A timetable was made of how the questionnaires would be administered.
- During all sessions, the researcher first explained the objectives of the study to the students and students were free to participate in the study or not to do so. The questionnaires were given only to those who showed willingness to participate in the study.
- Some students preferred to use the online method to answer the questions. They were allowed to do so after the researcher explained the process to them. Such questionnaires were printed out by the researcher and coded accordingly.
- The questionnaires were collected back during the same session though in some cases where students were going for other classes, the class representatives collected on behalf of the researcher.
- All the questionnaires collected were kept in a lockable room accessed by the researcher.

Using this process, there was almost no opportunity for human bias to manifest itself. Respondents were not selected on such subjective criteria as whether they looked friendly and approachable. Second, the process was dependent on whether the student was available in class that day though prior announcements were done by class representatives using their group social contacts (Facebook) which worked very well. They did not have to follow the researcher to participate in the study but the researcher followed them.

3.6.2 Semi-Structured In-Depth Interviews

Key informant interviews are qualitative in-depth interviews with people who know what is going on in the community. The purpose of key informant interviews is to collect information from a wide range of people including community leaders, professionals, or residents who have first-hand knowledge about what is to be collected. These experts, with their particular knowledge and understanding can provide insight on the nature of problems and give recommendations for solutions. The two common techniques used to conduct key informant interviews are Telephone Interviews and Face-to-Face Interviews. In this study, Face-to-Face Interviews were conducted.

The researcher formulated the interview questions in consultation with the supervisors and the template was presented to the School Board of Studies for approval. The in–depth interview questions were piloted among the lecturers and HOD in the Department of Nursing Sciences. There were no changes in the content of the interviews after the pilot study. The semi -structured in depth - interviews with an interview schedule were used to collect data from the key informants in the study. These were Assistant Dean (General), sampled Heads of Departments, sampled Lecturers from each department and sampled Laboratory technicians (see section 3.4.2). Due to its flexibility, both open and closed-ended questions were used to collect in-depth information to get a complete and detailed understanding of the issue at hand (Kombo and Tromp, 2006). Sapsford (2007) points out that semi-structured interviews do not have a standard format but there are points that are used to ensure that necessary information is collected. The advantage over the questionnaire is that a researcher can probe and request the respondents to elaborate the answers and crosscheck them. The researcher used this approach and probed more clarifications to issues raised from the questionnaires.

The major domains in the interviews were issues related to (i) institutional characteristics, (ii) course characteristics, (iii) teaching and learning activities, (iv) teaching characteristics and (v) assessment processes. For the key informants, appointments were sought with them in advance in order to them to secure dates for interviews. The researcher had to carry an official introductory letter from the Assistant Dean (Post Graduate) for identification purposes. The interviews were conducted wherever the respondents felt most convenient and comfortable. Most of them preferred to use their offices. This worked to the interviewer's advantage because there were few interruptions and they could access some of the information from their files which were readily available in their offices.

3.6.3 Focus Group Discussion

Lastly, Focus Group Discussions were conducted to collect further detailed information on the subject at hand from students who were selected from across programmes (see section 3.4.2). The students selected were among those who participated in the survey questionnaire. The template was prepared by the researcher and was later presented for approval at the School Board of Studies meeting. The template was also piloted (see section 3.5.2) and nothing was changed. The questions were also piloted with the Department of Nursing

Sciences and nothing changed. The questions in the Focus Group Discussions were designed to seek clarification on some responses from survey questionnaires, Lecturers' self – evaluation questionnaires and In–depth interviews on issues (see section 3.5.2).

Three (3) separate Focus Group Discussions were held with 6 participants in each. The discussions were recorded using a recorder. A Focus Group is usually composed of 6-8 individuals with similar characteristics of both male and female. When properly planned and facilitated, Focus Group Discussions can produce a lot of information quickly and are good for identifying and exploring participants' beliefs and perceptions (Kombo and Tromp, 2006). Focus Groups aim at discussing a fairly tightly defined topic and the emphasis is on interaction within the group and the joint construction of meaning (Bryman, 2004). In this case, the focus group aimed at discussing issues related to how courses were managed and how learning took place. Focus group discussions were used to assess needs, develop interventions, test new ideas or improve existing programmes.

In the case of Focus Group Discussions, the selected students were contacted in advance and a date was fixed for this activity. Since the sessions took more than one hour, some soft drinks were provided to the participants as a way of motivation and not coercion. The selected students were from different programmes and this allowed the researcher to compare the information from the questionnaires from respondents from different programmes and year of study.

3.6.4 Document Analysis

The researcher requested and collected the raw examination results from the office of Assistant Registrar, School of Medicine. The checklists and course outlines were collected from the offices of HODs while the lecturer attendance checklist and other checklists were collected from the class representatives. Important official reports and publications relating to the study were examined through the document analysis method. In this case, the raw past examination results from 2008 to 2014 were used to calculate the GPAs of students and examination attrition rates. Other documents included; programme outline for all programmes under study, syllabus completion checklist, lecturer attendance checklist, and registers from skills laboratory, syllabi and course outlines.

3.7 Data Collection Procedure

This section describes the procedures which were employed to collect the data needed to answer the research questions. The section discusses the procedure of the whole research process. The Semi-structured interviews, questionnaire, document analysis and Focus Group Discussion guide were used to collect data. Since the researcher used explanatory sequential research design and historical approach, document analysis was first done in order to help the researcher understand what prevailed with regards to the GPAs and examination attrition rates of the school. These included the past examination papers from 2008 to 2014. GPA and examination attrition rates were calculated using excel. Later, the Survey questionnaires were administered to get the perceptions from students on the variables (course management, teaching approaches and assessment processes).

The self–evaluation questionnaires were then followed to have the perception of lecturers on the subject under study. This was followed by key informant interviews with Heads of Department, Lecturers, Laboratory Technicians and the Assistant Dean for Undergraduate verify and have some clarification on issues raised by the students. Focus Group Discussions concluded the data collection process where issues raised in the In–depth interviews were clarified and discussed by the students. All the respondents were anonymous and their identity was not disclosed at any time during the reporting. The information collected from the key informants was taken as general data collected and no specific identity was revealed in the write-up or dissemination of the results.

3.7.1 Ethical and Procedural Features

White and Arzi (2005, 210) refer to ethics as,

A set of moral principles which is suggested by an individual or group, is subsequently widely accepted, and which offers rules and behavioural expectations about the most correct conduct towards experimental subjects and respondents, employees, sponsors, and other researchers, assistants and students.

Some behaviour in research that cause harm to individuals, breach confidentiality, or the improper use of information and introduce bias are referred to as unethical.

Throughout the research, ethical principles relating to issues of informed consent, non-deception and confidentiality of participants were strictly adhered to. Participation in this study was based on informed consent and on voluntary basis, with right of withdrawal at any time (Bryman, 2004). Further, the names of the participants were withheld in order to protect their identity.

Before the study commenced, the tools were discussed by the School of Medicine Board of Studies to seek clearance from the school. The data collection tools and the proposal were then presented to the University of Zambia Biomedical Research Ethics Committee (UNZABREC) for approval and an approval was issued with the approval number 002 – 08 – 14 (see Appendix XVIII). All the instruments were approved by the School of Medicine Board of Studies Committee. The researcher used this letter when administering the questionnaires to both students and lecturers and also when doing In–depth interviews with the key informants.

In this study, respondents remained anonymous as they did not use any of their identity for records. All respondents in the survey were advised not to write their names on the questionnaire and each respondent was advised to fill in the questionnaire independently. In addition, no information from the respondents was made public as there was confidentiality. For those who submitted the student questionnaires through emails, the CICT system was created in such a way that no identity from the sender was shown.

Participants also had a right to decide when, where, to whom, and to what extent their attitudes would be revealed. Information was given anonymously to ensure privacy. Student participants were assured that participation or non-participation in the study had no effect on their course grade in their degree programme. All in all, possible methods of protecting the respondents were applied. However, it was pointed out to participants, Heads of Departments, Lecturers, Laboratory Technicians and Assistant Dean (General), of the possibility of being identified even though their names were not to be used. In such cases, the participants were asked if they were still willing to be part of the study.

Furthermore, no information was revealed that would embarrass participants or endanger their academic performance. The researcher ensured that no participant experienced mental discomfort. No value judgments were made under any circumstances whatsoever on the cultural aspect of the communities.

Informed consent was sought after placing emphasis on accurate and complete information so that participants fully understood and consequently made a voluntary and reasoned decision about their participation but the researcher also made sure that this did not affect the internal validity.

Therefore, participants were not forced to take part in the study but did so willingly. They were aware about their entitlement to refuse at any stage. All questionnaires were issued and collected by the researcher.

The issue of whether or not to compensate research participants in kind as way of reciprocity is controversial because it affects the level and quality of data (Patton, 2002). It is recommended that compensation should be discouraged as it may induce, unnecessarily, favourable responses in order to please the researcher. In this study, all participants were told that the research was purely academic and no benefits were to be given to them. There was no deception or coercion with incentives, which would have represented the research as something other than what it was, because of the question of professional self-interest (Bryman, 2004).

3.7.2 Reliability, Validity and Trustworthiness of Data

Quantitative data was collected using document analysis and questionnaires (course evaluation, lecturer evaluation and self-assessment by lecturers) while qualitative data was collected using Focus Group Discussions, In-depth interviews and some parts from the questionnaires.

3.7.2.1 Reliability of Quantitative Instruments

Issues of validity and reliability of instruments are very important in quantitative research for minimizing errors that might arise from measurement procedures (Ivankova, 2002). Vithal and Jansen (2003) define validity as an attempt to check whether the meaning and interpretation of an event is sound or whether a particular measure is an accurate reflection of what you intend to find out while reliability is the consistency of a measure, score or rating. Creswell (2012) defines validity as a degree to which a study accurately reflects or assesses

the specific concept or construct that the researcher is attempting to measure and reliability is the accuracy and precision of a measurement procedure.

Norcini *et al* (2011) refers to reliability as the degree to which a test measures what it measures. For the two questionnaires, the test–retest reliability of the survey instruments were obtained through pilot testing of the instruments. Both the Teaching and Learning UG Evaluation Booklet questionnaire (undergraduate students) and the Lecturer Self-evaluation form for academic staff (academic staff) were pre-tested in the Department of Nursing Sciences among students and lecturers, respectively. Pre-testing of the questionnaires was considered as one of the most important way of testing the reliability of the instrument. The piloting of the questionnaire aimed at identifying some of the problems including the following:

i. Clarity of instructions to the respondents.
ii. The logic of the order of sections and questions.
iii. The adequacy of response options.
iv. Clarity of the wording and sentence structure.
v. Design elements that may confuse respondents.

The following comments and suggestions in actual words were made by the respondents from the pilot that was conducted:

i. Current year of study is confusing to those who came from the School of Natural Sciences. Is it just for the School of Medicine?
ii. The difference from the Likert Scale (Rarely and Sometimes) is not clear.
iii. I propose that you remove the part where the names of lecturers are to be mentioned.

The suggestions that were made were implemented in the questionnaire and during analysis. Thus, piloting of the questionnaires enhanced clarity of the instruments.

In order to determine internal reliability of the quantitative instruments (i.e. UNZA SoM Undergraduate booklet questionnaire and self-assessment by lecturers) computation of Chronbach's alpha (α) values was done. The Chronbach's alpha (α) values for the Teaching and Learning Undergraduate Evaluation Booklet was .94 and for the Lecturer self-assessment form was 0.83. This was done to check the reliability of the quantitative

instruments (institutional characteristics, course management, teaching practices and assessment processes).

These values were acceptable measures of reliability because they were between 0.8 and 1, indicating minimum error variance. In other words the effect of errors of measurement (random errors) resulting from a variety of causes had been reduced and so the reliability of each instrument was acceptable (Bryman, 2004). All the information above had to do with the quantitative aspects of the study.

3.7.2.2 Validity of Quantitative Instruments

Face validity is the idea that a test should appear to any person to be a test of what it is supposed to test. In other words, it is the researchers' subjective assessments of the presentation and relevance of the measuring instrument as to whether the items in the instrument appear to be relevant, reasonable unambiguous and clear (Golafshani, 2003). In the current study, to ensure that the questionnaire had face validity, all the items were based on the WFME standards of assessment.

Content validity refers to the degree to which a test measures an intended content area (Norcini *et al*, 2011). It samples the range of behaviours presented by the theoretical concept being measured. In order to ensure that content validity of the quantitative instruments, all the questions were reviewed with the help of medical education experts in the Department of Medical Education and Development. For content validity, experts checked for the extent to which the items in the instruments and the scores from the items were representative of all possible questions in the quality of learning and course development. In addition, the self-assessment questionnaire was analysed as to whether it was in line with the conducive environment for teaching. This helped to assess whether the quantitative instruments' questions were appropriate for the concepts they were intended to measure, and were found to be well constructed.

3.7.2.3 Trustworthiness of Qualitative Instruments and Findings

The term trustworthiness is used in qualitative studies to replace validity and reliability which are used in quantitative studies. However, in qualitative studies, this concept is more obscure

because it is put in different terms. In qualitative studies, researchers do not use instruments with established metrics about validity and reliability. However, it is still pertinent that qualitative researchers establish that the research study's findings are credible, transferable, confirmable, and dependable.

Since the study was not only quantitative, but also embraced the qualitative paradigm, there was need to address issues of validity and reliability of the qualitative side as well. Both internal validity and external validity were taken in consideration as well as reliability of the qualitative research. This was because trustworthiness is all about establishing these four things, which are described in more detail below (Schreier, 2012).

Credibility: This refers to how confident the qualitative researcher is in the truth of the research study's findings. This boils down to the question of "How do you know that your findings are true and accurate?" (Boeije, 2010). Qualitative researchers are more concerned with validity than reliability (Downing, 2003). They seek believability, based on coherence, insight, instrumental utility (McAlpine, 2002) and trustworthiness (Downing, 2003) through a process of verification rather than through traditional reliability computations. This process is termed as credibility establishment.

In this study, credibility was established by way of evidence based on structural corroboration, consensus and referential or interpretive adequacy (Ary *et al,* 2010). The researcher used triangulation to show that the research study's findings were credible. Structural corroboration was put to use by employing multiple sources of data in the study: Focus Group Discussions with students, In-depth interviews from different groups (Laboratory Technicians, Heads of Departments Lecturers and Assistant Dean for undergraduate). Consensus among medical education experts was established during the development of the interview and Focus Group Discussion questions. All data collection instruments were subjected to scrutiny by those in the field of medical education and research supervisors.

Internal validity refers to the validity of a research study (White and Arzi, 2005). It can also be referred to as the degree to which the research findings can be distorted by extraneous variables (White and Marsh, 2006). Different strategies are used to deal with threats to internal validity of qualitative research which are different from those used for quantitative research. This is because it can be fair to use the quantitative yardstick for quantitative

research. In our study, logical validity was attained by creating a balance between 'letting the object speak for itself' and using abstracted categories for analysis and interpretation; gathering data until the point of theoretical saturation had been reached. This meant that the collection of data continued until no new affirmative or contrasting information was obtained.

Concept and content validity were achieved by preparing a comprehensive record of categories of data established to be used during data analysis, guarding against bias and perspectives that the researcher might instil in the participants, as well as their prejudices that might influence their responses and indicating whether the researcher's attitude had changed through exposure to the research.

Transferability: This refers to how the researcher demonstrates that the research study's findings are applicable to other contexts. In this case, "other contexts" can mean similar situations, similar populations, and similar phenomena (Bernard, *et al*., 2010). In this study, the researcher made sure use of thick description so as to achieve external validity. External validity refers to the degree to which the findings can be generalized to the population from which the participants were drawn (White and Marsh, 2006). White and Arzi (2005) put this in a different way and defined it as validity of the research results regarding the intended object of the study.

Since the external validity relates to the validity of research results, the researcher ensured that there was external validity of qualitative research by making sure that accurate description of the research process was given, and reasons for the choice of methods were also provided including the context in which the research was conducted. The researcher also made explicit the patterns of cultural and social relationships and put them in context to show that the research study's findings were applicable to other contexts, circumstances, and situations

Reliability of qualitative research is also divided into internal and external reliability. Internal reliability refers to the reliability during the study while external reliability is the verification of the findings of the research if the same study would be conducted by independent researchers under the same circumstances and using the same participants (White and Arzi, 2005).

In this study internal reliability of the results was accounted for by using cross-examination (comparing the current findings with those of other researchers), triangulation and thoroughly selecting and training research assistants to ensure that the people who assisted in the research were competent.

White and Arzi (2005) posit that external reliability is ensured by exposing the theoretical starting points and arguments underlying the various choices made in the research are included in the report. In our study, this was achieved by including the description of aspects such as status and role of the research subjects the researcher used, relevant characteristics of the participants, concepts that were used, theoretical ideas and methods of research.

It is important to mention that high reliability does not guarantee valid results. For example a weighing machine can measure the mass of the patient on three different occasions as 70kg although the patient's correct mass could be 69kg. This type of scale is reliable but not valid.

Confirmability: This refers to the degree of neutrality in the research study's findings. In other words, this means that the findings are based on participants' responses and not any potential bias or personal motivations of the researcher (Schreier, 2012). This involves making sure that researcher bias does not skew the interpretation of what the research participants said to fit a certain narrative. In order to establish confirmability, the researcher in this study provided an audit trail, which highlighted every step of data analysis that was made in order to provide a rationale for the decisions made. This helped to establish that the research study's findings accurately portrayed participants' responses.

Dependability: This is the extent to which a study can be repeated by other researchers and the findings be consistent. In other words, if a person wanted to replicate your study, they should have enough information from your research report to do so and obtain similar findings as your study did (Bernard, *et al.,* 2010). Therefore, the researcher presented the findings to other journal clubs and the supervisors as an inquiry audit in order to establish dependability (outside person to review and examine the research process and the data analysis) and ensure that the findings were consistent and could be repeated.

3.7.2.4 Reliability and Validity of Data Entry

The researcher was not a member of academic staff in the School of Medicine so this reduced biasness in the data analysis. To ensure both internal and external reliability of the research instruments, a pilot study was carried out. Double entry was employed also in order to make sure there were no errors. The research assistants were trained for seven (7) days in the process of data entry. The research assistants had to counter check each other's entries. The forms which were responded to online were also printed out and coded accordingly.

3.7.2.5 Validity of the Findings

Apart from considering the validity of the research design, instruments and qualitative research, the study also considered the validity of the findings by triangulation. White and Marsh (2005) view triangulation as a method that may be used to combine qualitative and quantitative research. White and Arzi (2005) also state that triangulation provides the researchers with the means of testing the strength of their interpretation to establish validity and reliability. This study used data triangulation with data sources such as oneself, informants, interviews, questionnaires and documents. The study gathered information through the use of a variety of sources, namely, questionnaires, interviews, documents and Focus Group Discussions.

3.8 Data Analysis

This study generated both quantitative and qualitative data. The data was analysed as described in the following subsections.

3.8.1 Analysis of Quantitative Data

Data analysis is the process of bringing order, structure and meaning to the mass of collected data (Kombo and Tromp, 2006). Qualitative and quantitative data collected in this study was analysed differently. Quantitative data analysis is the process of presenting and interpreting numerical data. Descriptive statistics include among others, measures of central tendency (averages – mean, median and mode) and measures of variability about the average (range and standard deviation). Bickel and Lehmann (2012) state that these descriptive statistics give

the reader a 'picture' of the data collected and used in the research project. Inferential statistics are the outcomes of statistical tests, helping deductions to be made from the data collected, to test hypotheses set and relating findings to the sample. The coefficients were determined using the Statistical Package for Social Sciences (SPSS) computer software.

Quantitative data which was collected through questionnaires was first coded. Each questionnaire was coded with a specific number. In order to enhance confidentiality and ethical issues, data entry was done by students outside the School of Medicine. Double entry was used in order to reduce errors encountered during data entry.

Participants' responses to items in the questionnaire were scored and assigned a score. For the Teaching and Learning Undergraduate Booklet questionnaire, "Strongly disagree" was assigned a score of 1, "Disagree" was assigned a score of 2, "Uncertain " was assigned a score of 3, "Agree" was assigned 4 and "Strongly agree" was assigned 5. For the other part of the questionnaire which had different responses from these above, the score was assigned as follows:

"Excellent" was assigned 5, "Good" was assigned 4, "Uncertain" was assigned a score of 3, "Poor" was assigned 2 and "Very Poor" was assigned 1.

"Never" was assigned 1, "Sometimes" was assigned 2, "Most times" was assigned 3 and "Always" was assigned 4.

This quantitative data was analysed using the Statistical Package for Social Sciences (SPSS Version 20) to generate simple descriptive statistics in form of percentages, frequencies, pie charts and bar graphs. Frequencies and Percentages of students' responses from the course and lecturer evaluation questionnaires were computed first from a 5-Point Likert Scale rating of 'agree, strongly agree, not applicable, disagree and strongly disagree' concepts. Later, agree and strongly agree were combined, disagree and strongly disagree were combined separately and not applicable was computed as a single entity.

In the findings, the researcher used the interval categories (continuous) from the 5-Likert scale as most of the responses from this study were based on perception. The range was from low perception (disagree) to strong perception (agree) with the middle being uncertain or right. The maximum (strong perception) number was 5.0 while the minimum (low

perception) was 1.0. The only exception was in the case of characteristics under the variable course management were different terms were used on the Likert scale. The analysis under this variable was done as follows:

- **Course workload**: The range was from very heavy (1.0) to very light (5.0). In this case, if the respondents on average were happy with the course workload then the Mean value would be above 3.0.
- **Pace of the course**: The range was from too fast (1.0) to too slow (5.0). In this case, if the respondents on average were happy with the pace of the course then the Mean value would be above 3.0.
- **Degree of difficulty of the course:** The range was from very difficult (1.0) to very easy (5.0). In this case, if the respondents on average were happy with the degree of difficulty of the course then the Mean value would be above 3.0.
- **Time spent on the course**: The range was from too little (1.0) to way too much (5.0). In this case, if the respondents on average were happy with the time spent on the course then the Mean value would be above 3.0.

Data at this level showed the differences between agree and disagree parts. Then, the differences between and among the different variables and different lecturers were analysed.

The study began with descriptive statistics to see what correlation existed between course management, teaching practices and assessment processes with examination attrition rates and GPA at the Medical School of the University of Zambia. After determining the correlation, there was need to find out if those variables were the causes or not. Then inferential statistics were used to provide measures of how data supported the hypothesis and if data was generalizable beyond what was tested. To do this, the One way ANOVA, Post Hoc Turkey and Chi-Square were used through the computer software SPSS.

The same procedure was used to analyse data on lecturers' self-assessment. In addition, frequencies and percentages were calculated. Then data was analysed statistically for differences between and among group variables using independent samples and One-Way ANOVA tests and Post Hoc tests. Chi-Square tests were also carried out to measure what was

observed with what was expected as the Chi–Square tests for differences between distributions.

Concerning the other variables (Teaching practices and Assessment processes), frequencies, percentages, ANOVA and measurement associations were used to analyse the data. The statistical data was later related to the qualitative data collected and the GPA and examination attrition rates of the 2014/2015 academic year final examination results.

Analysis of variance (ANOVA) is a collection of statistical models used to analyze the differences among group means and their associated procedures (such as "variation" among and between groups). Thus, the basic idea is to test whether the samples are all alike or not. Since ANOVA doesn't tell you everything such that even if you find a significant effect using this type of test and conclude that there is a significant difference between some of the conditions in your experiment, you will not know where this effect exists. The significant difference could be between any or all of the conditions in your experiment. In order to determine where significance exists you need to conduct a post hoc test and Chi – Square.

Likert-type or frequency scales use fixed choice response formats and are designed to measure attitudes or opinions (Boone and Boone, 2012). These ordinal scales measure levels of agreement/disagreement. A Likert-type scale assumes that strength/intensity of experiences is linear, that is, on a continuum from strongly disagree to strongly agree (as in the case of this study), or very light to very heavy (in case of course characteristics) or from never to always, and makes the assumption that attitudes can be measured. Respondents may be offered a choice of five to seven pre-coded responses with the neutral point being neither agree nor disagree or uncertain (as was the case in the study) or right (in the case of course characteristics). In its final form, the Likert scale is a five point scale which is used to allow the individual to express how they agree or disagree with a particular statement.

Data analysis was done by:

- First determining the mode for each item, then
- Generating frequencies and percentages
- Displaying the distribution of observations in a bar chart.
- One way ANOVA and Chi-square

According to McLeod (2008), Likert scales have the advantage that they do not expect a simple yes/no answer from the respondent, but rather allow for degrees of opinion, and even no opinion at all. Therefore, quantitative data is obtained, which means that the data can be analysed with relative ease.

As in all surveys, the validity of Likert scale attitude measurement can be compromised due to the social desirability where individuals may lie to put themselves in a positive light. In order to improve validity of the questionnaire in this study, participants were told not to indicate their details such as names, computer numbers and phone numbers on the questionnaire. Even those who responded online, the questionnaire was just uploaded and the answers entered into the software without indicating the email or contacts of the sender. This was so because studies have shown that more desirable personality characteristics are reported when people are asked to write their names, address and contact numbers on their questionnaire (Graig *et al*, 2003).

The researcher also analysed the GPA and examination attrition rates of the 2014/2015 in order to come up with courses and programmes which the study focused on. At first the GPA and examination attrition rates were calculated using excel for all courses except for those courses in the School of Nursing Sciences as seen in Appendix VIII. Later the researcher picked courses which had high GPA and low GPA. In addition, the researcher picked courses with high examination attrition rates and those with low examination rates. The idea was to investigate the causes of the stated outcomes and relate them to course management, teaching practices and assessment processes. The average GPA and examination attrition rates for each programme were then calculated.

The institution characteristics in this study were compared with the World Federation for Medical Education (WFME) standard with what was evaluated in 2005 by the School of Medicine of the University of Zambia. The difference was discussed to assess whether there has been any improvement in the provision of quality of education in the school.

3.8.2 Analysis of Qualitative Data

It has been contended by Creswell (2012) that qualitative research is based on the theoretical and methodological interpretive science. The process involves the development of new concepts and theories by relating evidence to abstracts concepts and to theory generation. One of the major challenges that the researcher faced in analysing this data was the process of synthesizing all large volumes of interviews and quantity of information collected. Nevertheless, the use of research questions as a guide to analyse different types of data helped the researcher in grouping data of the same theme with less difficulty.

Once all data was transcribed, the researcher did all the analysis manually. This was done first by using the *open coding* which involved reading through the data carefully and taking note of the themes. Secondly, *axial coding* was used to see how the identified themes were related so that the major categories could be identified. Then the final *selective coding* was done to bring together the themes identified in the data to determine how they were related. The related themes were later used in the structure of the results presentation and discussion of results chapters supported with appropriate verbatim quotes. During the data analysis, the researcher searched for patterns of data which were later interpreted.

The qualitative data used in this study where descriptive answers from the Teaching and Learning UG Evaluation Booklet on the following concepts: Comments on Accreditation Standards, reasons why some courses were outstanding and why some needed to be changed, reasons of outstanding lecturers and some who need to be reviewed, and reasons of assessment practices which needed to be changed and those which were outstanding. Participants wrote a brief description of each concept from which their justifications were revealed. Therefore, to analyse the data the study used the constant comparative method as described by Bryman (2004) below.

First, the researcher read each text or description given by each participant more than once and as he did so, he took down any impressions he had which he thought would be useful later. Then, the researcher identified the key question of the study which the analysis was to answer. Next, the researcher focused on the analysis to see how all subjects responded to each of the questions. Data for each question was put together so that it was easy to identify consistencies and differences. Finally, the researcher explored the connections and relationships between the data as emphasised by Renner and Powell (2003).

After that, the researcher categorized the information. Some people refer categorizing information to coding the data or indexing the data (Corbin and Strauss, 2008). In this case, categorizing did not involve assigning numerical codes but in order to bring meaning to the words before him, the researcher identified themes or patterns (ideas, concepts, terminologies or phrases) used and organised them into coherent categories that summarised and brought meaning to the text.

The researcher later provided a descriptive label for each category he created. He made sure he was clear about was included in the category and what was excluded. As the categorization was done, the researcher identified other themes that served as subcategories until relevant themes were identified and labelled. The main categories were broken into subcategories to ensure that data was more defined to allow for greater differentiation (Bryman, 2004). The researcher read and re-read each text to ensure that the data was correctly categorized and data that was not suitable was not coded.

The researcher later wrote a summary for each category showing key ideas (reasons) being expressed within a category, including any similarities and differences in the way the subjects responded (Renner and Powell, 2003). In order to show which categories appeared more important, the researcher counted the number of times a particular theme came up, or the number of unique respondents who referred to certain themes. The counts provided a very rough estimate of relative importance but were not suited to statistical analysis, though they revealed general patterns in data (Corbin and Strauss, 2008).

It should be stated that after defining categories and labelling data, grouping the data into categories involved cutting and sorting. When cutting and sorting, the researcher kept track of the source of the data (Bryman, 2004). Under each variable, different themes were identified regarding institutional characteristics, course management and teaching contribution standards evaluation and assessment standards evaluation.

Finally, the themes were used to explain findings. Important findings were developed as a result of categorizing and sorting data. An outline was developed for presenting the results. Quotes were included to illustrate the points and bring the data to life.

In summary, the method of open coding was used which required reading through the data carefully and noting the themes or categories which might have been there. In addition, axial

coding which involved seeing how the categories already identified were related was used. Axial coding was used so that major categories and subcategories could be identified. The final step used was selective coding which intended to bring the themes identified into data to determine how they were connected to each other.

Later, the data was read again a number of times to identify sections which appeared to relate to different themes. The researcher made sure that names represented the main themes that he earlier identified. The themes identified were used to structure the presentation and discussion of results. Pseudonym names were used for names of lecturers and Appendix XVII shows the departments they belonged to.

The correlation coefficients were discussed in relation to the lecturers' views and students' views on the quality of learning. The triangulation of methods of data collection yielded in-depth information on the phenomena of high examination attrition and low GPA among students of the School of Medicine despite choosing the best students from the School of Natural Sciences. Key documents analysed provided valuable information for discussion. In this case, the 2014/2015 academic year results were also used to relate to the findings as the study was done in the same academic year.

3.10 Conclusion

This chapter presented the design and methodology of the study. The study employed a mixed method approach (qualitative and quantitative) and diagnostic research design. The study area was the Medical School of the University of Zambia. The study population comprised 1,575 medical school students from whom 660 subjects formed a census sample. Instruments used were the questionnaire, in-depth interview, Focus Group Discussion and document analysis. Although the issues of validity and reliability were addressed, the study still experienced some limitations. Ethical issues were also addressed accordingly. The chapter that follows presents the findings of the study.

CHAPTER FOUR

RESULTS PRESENTATION

4.1 Introduction

This chapter presents the findings on the research questions of the study. The following are the research questions which guided data collection for the study:-

(a) How are undergraduate courses managed at the Medical School of the University of Zambia?

(b) In the view of staff and students, how is the teaching of undergraduate students done at the School of Medicine?

(c) How is the assessment process of students at the UNZA medical school conducted as understood by staff and students?

(d) Arising from items (a) to (c) what measures should the Medical School of the University of Zambia put in place to improve students' academic performance?

Section 4.1 presents results from primary data section while Section 4.2 presents results from secondary data. Section 4.3 presents data on how undergraduate courses were managed at the

Medical School of the University of Zambia. This has two subsections, namely, Subsection 4.3.1 and 4.3.2. Subsection 4.3.1 presents the institutional characteristics which the accreditation body uses as standards in evaluation while Subsection 4.3.2 presents the perceptions on course management by respondents as done by the Medical School of the University of Zambia. Section 4.4 presents the responses from respondents on teaching characteristics while Section 4.5 presents the results on assessment practices in the School of Medicine, University of Zambia. The data from the questionnaires, interviews, Focus Group Discussions and document analysis provided several themes, but the analysis was narrowed to those which related to the research questions. Section 4.6 presents the key findings for raising the students' GPA and lowering the examination attrition rates.

4.2 Primary Data

To ensure both internal and external validity and reliability of the research instruments, a pilot study was carried out before the actual study. The questionnaire was pilot-tested on the students in the Department of Nursing Sciences while the actual study was carried out in among students and lecturers from the rest of the departments.

The content and face validity of the Teaching and Learning UG Evaluation Booklet and Self-evaluation lecturers form were established. The academic staff in Medical Education Department Development Department went through the questionnaires and their suggestions were incorporated into the final version.

The reliability of each instrument (Teaching and Learning UG Evaluation Booklet and Self-evaluation lecturers form) was calculated using Chronbach's Alpha on an Excel spread sheet. Cronbach's Alpha is a measure used to assess the reliability, or internal consistency of a set of scale or test items. In other words, the reliability of any given measurement refers to the extent to which it is a consistent measure of a concept, and Cronbach's Alpha is one way of measuring the strength of that consistency.

The resulting α coefficient of reliability ranges from 0 to 1 in providing this overall assessment of a measure's reliability. If all of the scale items are entirely independent from

one another (i.e., are not correlated or share no covariance), then $\alpha = 0$; and, if all of the items have high covariance, then α will approach 1 as the number of items in the scale approaches infinity. In other words, the higher the α coefficient, the more the items have shared covariance and probably measure the same underlying concept. The reliability coefficients were found to be .94 and .83 for Teaching and Learning UG Evaluation Booklet and Self-Evaluation lecturers form, respectively.

The pilot study was useful for a number of reasons. First, feedback from the pilot study was used to revise questions in the instruments which were unclear, did not solicit the desired information, or produced negative reactions from participants. Second, it determined whether the resulting data could be quantified and analysed in the manner intended. Furthermore, the pilot study allowed the researcher to determine the adequacy of instructions to respondents who were to participate in the study.

The questionnaires were pilot-tested on the students in the first term of 2014/2015 academic year. The programme of Bachelor of Science in Nursing Sciences was selected for pilot testing as the programme comprised of courses at 2nd year (Human Anatomy, Pharmacology and Biochemistry) and 3rd year (Pathology and Microbiology) which were taught by lecturers from other departments. This helped the researcher to check if the formulated questions would give correct responses. This helped to correct errors in the questionnaire before the actual study. The content of the semi-structured interview schedule on the other hand, was examined by research experts within the Department of Medical Education Development. The following table (Table 4.1) shows how the pilot study was done:

Table 4.1 Programme: Nursing

YEAR OF STUDY	**2**	**3**	**4**	**5**	**TOTAL**
ACTUAL NUMBERS	38	23	69	165	**295**
NO. OF BOOKLETS GIVEN	15	20	30	00	**65**
NO. OF BOOKLETS COLLECTED BACK	10*	20	25	00**	**55**
RESPONSE RATE	66.7%	100%	83.3%		**84.6%**

(Source: Field Data, 2018)

*****The 2nd years in-service were not around during the evaluation exercise as they were all out of campus, so only Pre-service students were filled in the evaluation booklets.

**All 5th years were out of campus during the data collection period.

The section that follows describes how data was collected using particular instruments.

The researcher went into all the classes and explained the study. Only students who agreed to participate were given the survey questionnaires and the numbers of distributed questionnaires were recorded. The class representatives were requested to collect the questionnaires from the students. Some of the students did not fill in while some preferred to use the online form. The total number of forms distributed and those who responded online was recorded. For those who responded online, their anonymity was protected by assigning them a unique numerical code while for those filling in the hard copy questionnaire there was space for an identification number.

The following tables (4.2 – 4.7) were the response rates from all other departments and overall:

Table 4.2 Programme: MB ChB

YEAR OF STUDY	**5**	**6**	**7**	**TOTAL**
ACTUAL NUMBERS	89	119	73	**281**
NO. OF BOOKLETS GIVEN	25	45	35	**105**
NO. OF BOOKLETS COLLECTED BACK	18	09*	32	**59**
RESPONSE RATE	72%	20%	91%	**56%**

(Source: Field Data, 2018)

*Most of the 6th years were not around after being given the booklets and after doing a follow up, they stated some fears in filling even after an explanation. The 20% of the 6th year respondent answered through online. For online surveys, 20% to 50% is considered acceptable (Dommeyer et al, 2004). The low average response rate for this group did not affect the overall response rate for the whole study which is 84.2%.

Table 4.3 Programme: BSC Human Biology

YEAR OF STUDY	3	4	**TOTAL**
ACTUAL NUMBERS	176	134	**310**
NO. OF BOOKLETS GIVEN	90	70	**160**
NO. OF BOOKLETS COLLECTED BACK	83	61	**144**
RESPONSE RATE	92%	87%	**90%**

(Source: Field Data, 2018)

Table 4.4 Programme: B Pharm

YEAR OF STUDY	2	3	4	5	**TOTAL**
ACTUAL NUMBERS	48	82	91	78	**299**
NO. OF BOOKLETS GIVEN	20	60	60	30	**170**
NO. OF BOOKLETS COLLECTED BACK	14	56	55	27	**152**
RESPONSE RATE	70%	93%	92%	90%	**89%**

(Source: Field Data, 2018)

Table 4.5 Programme: Biomed

YEAR OF STUDY	2	3	4	**TOTAL**
ACTUAL NUMBERS	36	66	42	**144**
NO. OF BOOKLETS GIVEN	30	40	35	**105**
NO. OF BOOKLETS COLLECTED BACK	24	39	31	**94**
RESPONSE RATE	80%	98%	88%	**90%**

(Source: Field Data, 2018)

Table 4.6 Programme: BSC Physiotherapy

YEAR OF STUDY	2	3	4	5	**TOTAL**
ACTUAL NUMBERS	20	35	32	35	**122**
NO. OF BOOKLETS GIVEN	15	30	25	20	**90**
NO. OF BOOKLETS COLLECTED BACK	11	26	16	19	**72**
RESPONSE RATE	73%	87%	64%	95%	**80%**

(Source: Field Data, 2018)

Table 4.7 Programme: BSC Environmental Health

YEAR OF STUDY	2	3	4	5	**TOTAL**
ACTUAL NUMBERS	19	38	40	31	**128**
NO. OF BOOKLETS GIVEN	18	30	30	11	**89**
NO. OF BOOKLETS COLLECTED BACK	18	30	30	06*	**84**
RESPONSE RATE	100%	100%	100%	54%	**94%**

(Source: Field Data, 2018)

*Most of the 5th years were not around after being given the booklets and after doing a follow up, they stated some fears in filling in even after an explanation.

Table 4.8 Response rate

TOTAL NUMBER OF STUDENTS	1579
NO.OF BOOKLETS DISTRIBUTED	719
NO. OF BOOKLETS COLLECTED BACK	605
RESPONSE RATE	**84.1%**

(Source: Field Data, 2018)

The 719 booklets were distributed to all programmes under study and for each year of study to represent a census study. The 1579 students were to be given the booklets if they agreed. Booklets were just given to those who agreed to participate in the study and the response rate was calculated from this number as shown in Table 4.8.

The participants by programme of study and gender are as shown in the Table 4.9 below:

Table 4.9: Distribution of Participants by Programme of Study and Gender

	MB ChB	BSc Biomed	B. Pharm	BSc Physio	BSc Env	Total
Male	130	43	90	39	30	332
Female	73	51	62	33	54	273
Total	203	94	152	72	84	605
Percentage	33.6%	15.5%	25.1%	11.9%	13.9%	100%

(Source: Field Data, 2018)

The majority of the participants by gender were 332 (55%) Males compared to 273 (45%) Females. More than half of the respondents were from those doing MB ChB (33.6%) and B. Pharm (25.1%) programmes while the remaining (41.3%) were from the other three programmes.

Table 4.10: Age Demographics by Programme of Study

PROGRAMME OF STUDY	MEAN	SD	MIN	MAX	SE
MB ChB	23.80	2.322	20.00	30.00	.165
BSc Biomed	23.89	3.930	20.00	32.00	.437
B. Pharm	22.35	3.353	20.00	30.00	.271
BSc Physio	21.99	1.988	20.00	26.00	.250
BSc Env	21.94	2.109	21.00	30.00	.265

(Source: Field Data, 2018)

Table 4.10 shows that the age differences were high among those doing BSc Biomed and low for those doing BSc Physio as seen from the Standard deviation of 3.930 and 1.988 respectively. The lowest Mean age was for BSc Env (21.94) while the highest Mean was for those in BSc Biomed (23.89). The standard error of the mean (SE) was lowest for MB ChB (.165) programme due to large sample while highest (198) for BSc Biomed (.437) due to low number of respondents (85).

On accommodation status, slightly more than half (52.4%) of the students were within campus while 47.6% were accommodated outside campus (either rented or had their own). There was no much difference in programmes as to which programme which had more students accommodate within campus or not.

In terms of sponsorship, more than half of the students in each programme were on GRZ Bursary followed by self-Sponsored students.

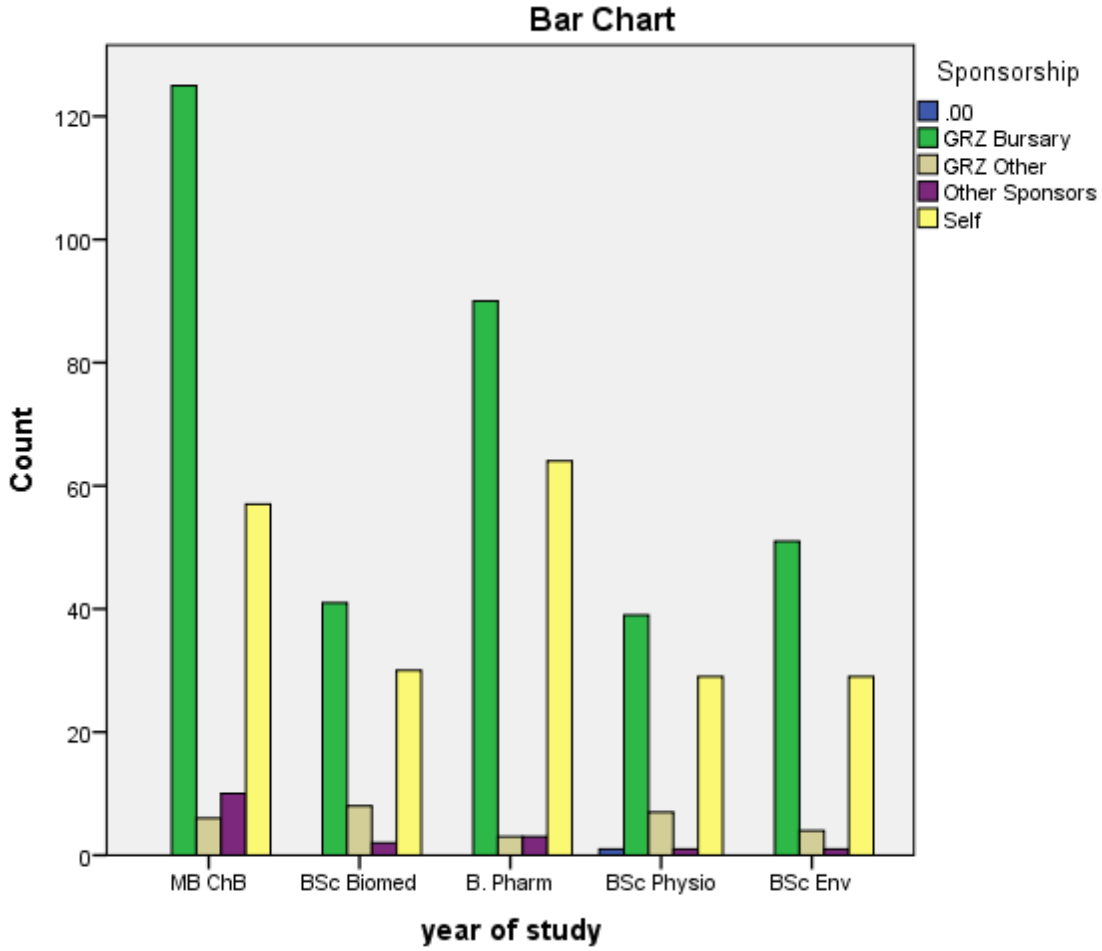


Figure 4.1 Distribution of Students by Sponsorship

(Source: Field Data, 2018)

Figure 4.1 above of a bar chart shows the distribution of sponsorship programme of study of participants. Apart from BSc Env programme which had no student entering as a non-school leaver, all other programmes had student admitted in all three categories including Health Professional and as School Leaver.

The key informants who were purposively selected were 16. The first ones to be interviewed were the laboratory technicians who were directly involved in the preparations of laboratory work for the undergraduate students. Only three (3) laboratory technicians were interviewed. The researcher then interviewed the nine (9) sampled lectures from the all departments. The lecturers were interviewed form their offices. The second last respondents to be interviewed were the three (3) sampled Heads of Departments and the interview process ended with the Assistant Dean (General). The researcher interviewed the Assistant Dean (General) who had

worked in the office from 2008 to 2015. This was done to make sure that there was anonymity to the person interviewed. The participants in Table 4.11 are presented in the order in which they were interviewed.

Table 4.11: Breakdown for interviews

Participants	**Discipline**	**Code**	**Gender**
Participant 1	Lecturer (Environmental Health)	1EH	M
Participant 2	Head of Department (Anatomy)	2AA	M
Participant 3	Head of Department (Psychiatry)	3PP	M
Participant 4	Head of Department (Physiological Sciences)	4PS	M
Participant 5	Lecturer (Pharmacy)	5PR	
Participant 6	Lecturer (Paediatrics and Child Health)	6PC	M
Participant 7	Lecturer (Surgery)	7SU	M
Participant 8	Lecturer (Obstetrics and Gynaecology)	8OG	M
Participant 9	Lecturer (Public Health)	9PH	M
Participant 10	Lecturer (Physiotherapy)	10PT	F
Participant 11	Assistant Dean (General)	11AD	F
Participant 12	Lecturer (Pathology and Microbiology)	12PM	M
Participant 13	Lecturer (Biomedical Sciences)	13BS	F
Participant 14	Laboratory Technician	14LT	M
Participant 15	Laboratory Technician	15LT	M
Participant 16	Laboratory Technician	16LT	M

(Source: Field Data, 2018)

Within the three (3) focus groups, each programme was represented by a student. With those participating in the interviews, there were a total number of sixteen participants from whom data was collected, each department was being represented by either a HOD or lecturer.

Table 4.12 provides a summary breakdown of participants across the two focus groups. The students who participated in the questionnaires were the ones who participated in the focus groups. Three (3) students were selected from each programme taking in to consideration different year of study and gender with one being a class representative.

Table 4.12: Breakdown of students across the Focus Groups

Focus Group	Participant	Code	Gender
FG1	Participant A	PA17	M
	Participant B	PB18	F
	Participant C	PC19	F
	Participant D	PD20	M
	Participant E	PE21	F
	Participant F	PF22	F
FG2	Participant G	PG23	M
	Participant H	PH24	M
	Participant I	PI25	F
	Participant J	PJ26	F
	Participant K	PK27	F
	Participant L	PL28	M
FG3	Participant M	PM29	M
	Participant N	PN30	F
	Participant O	PO31	M
	Participant P	PP32	M
	Participant Q	PQ33	F
	Participant R	PR34	M

(Source: Field Data, 2018)

As with the interviews, Table 4.12 represents the order in which the focus group discussions were conducted. There was equal representation of both male and female in all FGDs. Overall, there were eighteen students who participated in the focus group discussions. This

data was triangulated with data from questionnaires and document reviews. Codes and categories from interviews and focus group discussions are presented separately at this level.

4.3 Summary Qualitative Data Findings

Participant responses from the interviews and focus groups were audio recorded and transcribed. For analysis of the transcriptions, thematic analysis was used in which raw data was coded. The developed codes were further related resulting into categories and subsequently into themes. The responses from the student interviews and focus group discussions were supported by key findings from the questionnaires and document reviews.

4.3.1 Initial Analysis of the Interviews

Data collected from the sixteen in-depth individual interviews conducted with Assistant Dean (General), HODs, Lecturers and Laboratory Technicians from all the twelve departments. The first step of the analysis process was the open coding exercise conducted by the researcher. This resulted in fourteen (14) codes. These obtained codes were reviewed and then related to each other to identify common patterns. They were then aggregated into five (5) categories. Table 4. 13 summarizes the categories and related codes.

Table 4. 13: Summary of Categories and related Codes from interviews

Categories	Related Codes
Category 1 – Institutional Characteristics	The office space is not adequate as some share The secretarial services provided are good The security situation in the school is worrying. The teaching materials are not enough The enrolment numbers do not match with existing infrastructure There is always overcrowding in the laboratory
Category 2 – Course Characteristics	It is difficult to finish all topics due to the bulkiness of the courses (MB ChB)
Category 3 – Teaching and Learning Activities	There is no orientation given to new staff

Category 4 – Teaching Approaches	Teaching is challenging with very limited support facilities There is need for all staff to be trained in Pedagogy Some did not participate in the development of the courses they are teaching
Category 5 – Assessment processes	The knowledge levels of students is worrying so all those who come into the school must first be test through aptitude test Some students do not hand in assignment work on time Due to large number of students, it is not easy to give detailed and on time feedback to students The school must only enrol students from the School of Natural Sciences

(Source: Field Data, 2018)

During the coding process, it was discovered that some codes could fit into different categories. These observations have been reported to be normal during coding in qualitative research (Merriam, 2009). At this stage, it was important to avoid loss of any significant information. The selection of codes and categories were reviewed and discussed with the two supervisors of the study. Later on during level two of the analysis process, some other emerging issues were separated and discussed as individual categories. Therefore, all the categories relate to course management, teaching and assessment processes.

4.3.2 Initial Analysis of the Student Focus Group Discussions

The second set of data was the focus group discussions. The aim of the focus group discussions was to triangulate the data generated. The focus group discussions presented a divergent set of responses, some of which reflected what had already been found in the student questionnaires. As was done for the interviews, the audio-recordings of each focus group were listened to and the focus group transcripts were read to get a clear picture of the meaning of the various responses.

In total twenty–three (23) codes were generated from focus group data. These codes were again related to each other to generate bigger units of meaning that were labelled categories. In total, five (5) categories were generated from the codes of the focus group data. Table 4.14 summarizes the codes and emergent categories from the focus groups.

Table 4.14: Summary of Categories and related Codes from FGDs

Categories	Related Codes
Category 1 – Institutional Characteristics	The idea of repeating all courses when one fails one course is unjustifiable The examination results should just be posted on student personal accounts and not on the notice board There is little open climate in the school Not all courses are uploaded on MOODLE Internet accessibility has improved The enrolment numbers do not match with existing infrastructure. There is always overcrowding in the laboratory
Category 2 – Course Characteristics	There are too many half courses (9) in the 4th year of BSc Biomed Some courses (PGY 2040, PGY 3010 and PTH 4010) are too detailed, bulky and some concepts in them have no application Lecturers in PGY 4110 and PTM 4310 are too fast There is need to engage a Medical Layer in PTM 6410 (Forensic Medicine and Medical Jurisprudence) as the whole course seem not to be clear BMS 3215 (Medical Genetics) and BMS 3225 (Molecular Biology) has a lot of similar concepts and same notes are used
Category 3 – Teaching and Learning Activities	No course objectives are provided to students
Category 4 – Teaching Approaches	Some lecturers use intimidating language Some lecturers just read slides without explanations Some lecturers always come to class late

	Some concepts learnt are easily applicable within UTH setting while others can't
Category 5 – Assessment processes	Lecturers give students assignments on gun points Laboratory work in HAN 3010 needs more time and there is need to reduce the number of students per session Too many assignments are given in MED 415 despite being a half course Some instructions are not clear for laboratory work Lecturers assess the content in the examination which was not covered in classes No feedback is given on time and so rarely detailed

(Source: Field Data, 2018)

Some codes in the focus groups could probably fit into different categories and such were reported in detail in the separate detailed analysis section. However, at this point, the researcher did not want to lose any useful information from the responses of the focus group discussions. The repetition was later eliminated in the subsequent level of analysis. The two supervisors of the study were additional reviewers of the categories that emerged. The categories in Table 4.14 from the focus groups discussions still highlight the experiences of students on course management, teaching and assessment processes in the School of Medicine. The researcher used the same categories for both interviews and FGDs results so that it was easy to see the similarities and verify some information collected. One can recognize the fact that some codes that were observed within the focus group discussions were also reflected within the individual interview data categories (Tables 4.13 and 4.14). This has been reported to be common in qualitative research (Merriam, 2009), and is meant to ensure that findings from the different data sources do re-enforce each other (Charmaz, 2006).

4.5 Secondary Data

All the past results from 2008 to 2014 in the School of Medicine were collected from the Assistant Registrar's office. First, the grades of all candidates in each course were converted into numerical value and the average was found. Then all the averages of each course under

each programme were summed up and the grand average was found which was taken as the average GPA for each programme. The results were entered on an Excel sheet and a formula for calculating the Grade Point Average was inserted. A simple method of calculating GPA was used as shown below.

4.5.1 Simple GPA Calculation

Using the grading scale for point value for each course, add up all the values based on the grade earned for each course then divide the final number by the number of courses taken, e.g.:

NO	GRADE	VALUE
1	A+	5
1	A	5
2	B+	3.7
3	B	3
4	C+	2
5	C	1

(Source: Field Data, 2018)

An example of how to calculate GPA of a third year student doing Bachelor of Sciences in Human Biology is shown in Table 4.15.

Table 4.15 Calculating GPA

NO	COURSE	GRADE EARNED	GRADE POINT	GRADE POINT AVERAGE
1	AN 310	B	3	
2	PGY 310	C+	2	
3	COM 319	B+	3.7	
4	MB 315	B	3	
	TOTAL		**11.7**	GPA=11.7/4 = **2.93**

(Source: Field Data, 2018)

4.5.2 Analysis of the Past Examination Results

The past examination booklets were collected with permission from the office of the Dean, School of Medicine. The grades for the 2008 to 2014 academic year past raw examination results were entered in an Excel sheet and a formula for GPA was inserted. The grades were entered manually and later the final GPAs for in each programme were calculated. The table on the next page shows the GPA for the each programme from the year 2008 to 2014.

Table 4.16 Programmes and their GPA from 2008 to 2014

PROGRAMME	2008	2009	2010	2011	2013	2014	AVERAGE
BSc ENV. HEALTH	2.15	3.27	2.85	2.53	1.97	3.22	**2.66**
BSc PHYSIOTHERAPY	1.65	2.42	2.61	2.12	2.24	3.10	**2.36**
BSc BIO SCIENCES	2.63	2.63	1.73	3.07	2.10	2.73	**2.48**
BSc PHARMARCY	1.92	2.30	2.05	2.10	2.47	2.62	**2.24**
MB ChB	1.95	1.67	1.73	1.86	2.09	2.15	**1.90**
BSc Nursing Sciences	2.71	3.11	2.73	2.90	2.20	3.30	**2.83**

(Source: Field Data, 2018)

From Table 4. 16 analysis, on average MB ChB Programme showed that it had the lowest GPA of 1.90 though there were a lot of variations in the GPA for the various years. In 2008, BSc Physiotherapy had the lowest GPA of 1.65 by BSc Pharmacy with GPA of 1.92. Such variations prompted the researcher to include all other programmes in the data collection in order to compare the factors leading to these differences.

In order to calculate the examination attrition rates for each programme, the researcher manually went through the results for each course in each programme to list the number of students who failed against the total number of students in that particular course. The ratio was calculated as a percentage and averaged according to the number of courses in a particular programme. The final percentage was taken as the examination attrition rate for the programme. The table on the next page shows the examination attrition rates for each programme in the School of Medicine from 2008 to 2014.

Table 4.17 Examination Attrition Rates (%) from 2008 to 2014

PROGRAMME	2008 %	2009 %	2010 %	2011 %	2013 %	2014 %	AVERAGE (%)
BSc ENV. HEALTH	6.67	0.00	6.25	8.75	4.00	14.7	**6.73**
BSc PHYSIOTHERAPY	7.50	20.0	21.5	6.50	25.0	10.0	**15.1**
BSc BIO SCIENCES	0.00	4.33	12.3	6.00	19.0	41.0	**13.8**
BSc PHARMARCY	0.00	15.5	12.0	15.0	18.0	29.0	**14.9**
BSc Nursing Sciences	0.00	11.50	10.00	12.00	20.0	7.50	**10.2**
MB ChB	1.00	30.0	14.0	17.0	12.0	30.0	**17.3**

(Source: Field Data, 2018)

From Table 4. 17 analysis, on average MB ChB Programme showed that it had the highest examination attrition rates of 17.3% though there were a lot of variations in the attrition rates for the various years. In 2009, BSc Pharmacy had the highest at 15.5% while in 2010 and 2013, BSc Physiotherapy had the highest examination attrition rates of 21.5% and 25.0% respectively. It is from such variations, the researcher included all other programmes in the data collection in order to compare the factors leading to these differences.

4.5.3 Analysis of the 2014/2015 Examination Results

Since the data collection took place in 2014/2015 academic year, the GPA and examination attrition rates in each were calculated separately for this academic year. This helped the researcher to relate the findings to specific courses rather than generalized programmes. The 2014/2015 GPA and examination attrition rates were calculated and all the results were shown in Appendix XI. In order to calculate the examination attrition rates, the end of year Results for the 2014/2015 Academic Year were collected from the Dean's Office with permission. All the number of failed students were counted in each course and the ratio and percentages were found.

The GPA was calculated from the grades of students in each course. All the grades were added using Excel and the formula was inserted, then Excel generated the average GPA for each course. Then the average GPA was calculated from the courses in each programme to find the GPA for each programme.

The averages for each programme were done and are presented in Table 4.18 below.

Table 4.18 Averages of GPA and Attrition rates of 2014/2015

Programmes	**GPA**	**Examination attrition rates (%)**
BSc Biomed	**2.65**	**2.70**
BSc Env	**3.04**	**2.12**
BSc Physio	**3.07**	**3.44**
B. Pharm	**2.63**	**8.26**
BSc. Human Biology	**2.54**	**9.97**
MB ChB	**2.99**	**1.13**

(*Source: Field Data, 2018)*

In addition, the courses with both low GPA and high examination attrition rates were picked and those high GPA and low examination attrition rates were presented in results chapter for further analysis to relate course management, teaching approaches and assessment process.

4.5.4 Graduating Students in 2015 and 2016

The researcher also collected information on the number of students that graduated in 2015 and 2016 so as to show the increase in the number of students in the School of Medicine. The school had graduated by the time of the study (2015), 1, 441 doctors (School of Medicine Strategic Plan, 2012-1216). The number of graduating students in the School of Medicine of the University of Zambia has since been increasing. The tables 4.18 and 4.19 show the numbers of graduating students in 2015 and 2016 respectively;

Table 4.19 2019 Graduating Students in the School of Medicine

Programme	**Number**
Bachelor of Science in Human Biology	37
Bachelor of Science in Physiotherapy	29
Bachelor of Science in Pharmacy	69
Bachelor of Medicine and Surgery	70
Bachelor of Science in Environmental Health	30
Bachelor of Nursing Sciences	143
Total	**378**

(Source: Field Data, 2018)

Table 4.20 2016 Graduating Students in the School of Medicine

Programme	**Number**
Bachelor of Science in Human Biology	120
Bachelor of Science in Physiotherapy	34
Bachelor of Science in Pharmacy	83
Bachelor of Medicine and Surgery	113
Bachelor of Science in Environmental Health	38
Bachelor of Nursing Sciences	146
Total	**534**

(Source: Field Data, 2018)

4.6 Views on Management of Undergraduate Courses at the School of Medicine

Here the research question which was answered was **"How are undergraduate courses managed at the Medical School of the University of Zambia?"** By 'management' the

findings here refer to how the School of Medicine, University of Zambia educational standards related with external accreditation body to ensure basic standards. The study evaluated Accreditation Standards to determine whether or not an external accreditation body such as Health Professions Council of Zambia (HPCZ) would vouch for the School of Medicine educational standards. This was done in order to use this as a control before understanding the causes of low GPA and high examination attrition rates. In addition, course management the findings also refer to how the courses were taught in relation to course workload, pace of the course, time allocated to the courses and the level of difficulty. This shall be discussed in the next subsection of this section.

4.6.1 Institutional Characteristics that Affect Quality of Teaching and Learning

Participants were given a questionnaire (Appendix II) containing seven factors with different characteristics under each factor. The responses under each variable were averaged and the mean and standard deviation were calculated using SPSS. All the results were analysed according to programmes under study.

4.6.1.1: Mission and Objectives

Under this factor, there were four characteristics which were evaluated. The respondents were asked if:

- *The School of medicine had defined its mission and objectives,*
- *Students were able to state the School's mission and objectives,*
- *The School of Medicine had defined the competencies which a student must graduate with,*
- *Students were able to state all the competences defined.*

In reference to the first characteristics, Table 4.21 on the next page shows that 63% of the respondents knew that the School of Medicine had the Mission and Objectives and 16% were not aware while 21% were uncertain.

Table 4. 21 Defined its Mission and Objectives

n = 575

Programme	Strongly disagree	Disagree	Uncertain	agree	Strongly agree
MB ChB	12	31	48	77	30
BSc Biomed	0	13	14	43	11
B. Pharm	4	8	21	99	28
BSc Physio	3	7	23	34	10
BSc Env	4	10	22	38	11
Total	**23**	**69**	**128**	**291**	**90**
Percentage (%) Average	**04**	**12**	**21**	**48**	**15**

(Source: Field data, 2018)

From Table 4.22 below, results however show that despite most students being aware of the school missions and objectives, 56% could not state the missions and objectives of the School of Medicine.

Table 4. 22 Characteristics of the Missions and Competencies

n = 575

Missions and Competencies	Strongly disagree %	Disagree %	Uncertain %	Agree %	Strongly agree %
Stating Missions	23	33	10	29	05
Has Competencies	04	07	22	52	15
Stating Competencies	26	30	16	23	05

(Source: Field data, 2018)

From the same Table 4.22 above an average of 67% % of the students agreed that they were aware that the School of Medicine had defined the competencies which a student must

graduate with while only 11% stated that they disagreed that they were not aware that the school had the competencies. However, only 28% of the students agreed that they were able to state the competencies of the school and 56% disagreed and stated that they were not able to state the competencies of the school.

In addition, the results in Table 4.23 below agree with the results in Table 4.22 on students' knowledge about the school having the missions and objectives. The Post Hoc Turkey results showed that the students were aware of the mission and objectives with Eta = 0.14. The results in Table 4.23 also agreed with the results in Table 4.22 that despite most students having the knowledge that the School of Medicine had the missions and objectives, most of them could not state the school missions and objectives. This was also evident from the Post Hoc Turkey results, which showed that most respondents were not able to state the School mission and objectives (low Eta = 0.02).

Table 4. 23 Associations of Missions and Objectives

Characteristics	**Eta**
Knowledge of School missions and vision	0.14
Stating School missions and objectives/vision	0.02
Knowledge of School missions and vision	0.12
Stating school competencies	0.02

(Source: Field data, 2018)

Concerning school competencies, using Post Hoc Turkey, the results in Table 4.23 above also showed that respondents were not able to state all the School competencies (Low Eta = 0.02) though the respondents were aware that the school had defined competences which students must graduate with Eta = 0.12.

The students therefore proposed that it would be better *if the School would organise during orientation period for all those who came to Ridgeway Campus to have a symposium where the School mission, objectives and competencies should be explained*. They also commented

further that *the School missions, vision and competencies should be on all correspondences that the School sends to the students.*

4.6.1.2: Educational Programme

Under this factor, the two characteristics which were evaluated were whether or not:

- *The School of Medicine had clearly stated the curriculum model it had adopted (Traditional, Innovative, Mixed).*
- *Students were availed with a detailed curriculum of their programmes (including curriculum structure, courses, course content, pass/fail criterion, teaching methods and duration).*

In relation to the educational programmes offered in the school, on average, 45% of the respondents were uncertain of the educational programme in the School of Medicine. Only 31% (14% agreed and 17% strongly agreed) of the respondents stated that they aware of the curriculum model adopted by the School of Medicine while 24% (18% disagreed and 06% strongly disagreed) were not aware as in Table 4.24.

Table 4.24 Characteristics of Educational Programmes

Curriculum	Strongly disagree %	Disagree %	Uncertain %	Agree %	Strongly agree %
Aware of Curriculum model	06	18	45	14	17
Students are availed with the Curriculum	12	21	10	53	14

(Source: Field data, 2018)

Concerning students' being availed with the curriculum, most of them (67%) agreed that they were availed with curriculum detail of their programmes where curriculum structure, courses, course content, pass/fail criterion, teaching methods and duration of each course are stipulated while only 23% disagreed.

4.6.1.3: Assessment of Students

This factor of assessment of students comprised of three characteristics, namely:

- *The School of Medicine had clear criteria for pass/fail,*
- *Students were aware of the pass/fail criteria,*
- *Most of the time materials assessed correspond to what is in the curriculum/had been taught.*

Table 4.25 below shows the students' perception about the assessment of students. The results showed that most respondents (71%) agreed that school had clear criteria for pass/fail while on 24% of the students disagreed that the School of Medicine had a clear criteria for pass/fail. The results also showed that 80% of the students stated that they were aware that the School of Medicine had the pass/fail criteria.

Table 4. 25 Assessment of Students

Assessment	Strongly disagree %	Disagree %	Uncertain %	Agree %	Strongly agree %
Has clear pass/fail criteria	10	13	06	42	29
Aware of pass/fail criteria	07	11	02	52	28
Materials accessed in line with curriculum	16	36	12	28	08

(Source: Field Data, 2018)

Table 4.25 above showed also that more than half (52%), of the respondents disagreed with the statement that the materials assessed corresponded to what was taught in the curriculum. Only 36% agreed. The students further stated that some lecturers assessed on what was not taught in class but is in the curriculum during the final examination. This disadvantaged most students who did not have access to the educational material which the lecturers might have used. Furthermore, this was a challenge if topics brought were more challenging to understand. This lead to high low examination attrition rates and low GPA of the students.

The students further complained that the idea of repeating all courses when one failed in one course in a particular year was unjustifiable. The students further stated that they demotivated and that might have contributed to them failing more and even getting lower grade. Some lecturers had the habit of giving assessments (tests) without prior notification to the students. This resulted into students not performing well in the Continuous Assessment which contributes 40% to the final grade. Students cited this as another contributing factor to low GPA in the final examination. *'It was better to put dates for the test in the beginning of the year in order to allow students to prepare'* students said. The students further added that '*Lecturers give students on 'gun point' and threaten those who would argue of failing the course if they were not to submit on the directed dates'.*

The students also stated that the way the final examinations were carried out contributed to high failure rates of the students. The students cited that in some cases the examination papers were brought to the examination room without corrections. The lecturers used to make corrections of the final examination paper in the examination room. Students also stated that some questions in the examinations were not clear. The students added that lecturers had their own format of the examination paper. This affected the performance of the students as in some cases students were not aware of the standard of the final examination paper. The students proposed then that *the examination papers should have a standard format than each lecturer to use his/her own format*.

4.6.1.4: Students' Welfare

Student's welfare factor was assessed using the following characteristics:

- *Students were well represented on many School Committees such that their views were adequately taken,*
- *The School provided adequate academic counselling to students,*
- *The School provided adequate career guidance to students,*
- *The School provided adequate health care services for students.*

When data was computed together as one for different programmes, the results in Table 4.26 showed that more than half respondents (59%) agreed that students were well represented on many School Committees such that their views were adequately taken. In some cases students stated that their views were not taken at all. The respondents from the Focus Group

Discussion cited that the School of Medicine *does not have proper and defined channels of communication when there is an academic grievance.* They stated that only class representatives are like channels of communication only in the cases when the lecturers or the school administration wanted to communicate with the class.

Table 4. 26 Characteristics of Student Welfare

Student welfare	Strongly disagree %	Disagree %	Uncertain %	Agree %	Strongly agree %
Students are represented	11	19	11	49	10
Provides counselling	14	39	02	31	09
Provides career guidance	13	35	04	39	09
Provides health care	05	09	02	74	11

(Source: Field data, 2018)

When referring to provision of adequate academic counselling to students, the results showed that only 40% of the students agreed that the School of Medicine provided adequate academic counselling to students. Findings from the students' questionnaire showed that students were complaining that *Most of the times there is peer counselling and guidance*. In addition, less than half (48%) of the students agreed that School of Medicine provides adequate career guidance to students while the other 48% disagreed. Students said that the lecturers seem to be too busy for the students. They cited that *Lecturers were not found in offices to provide academic counselling and career guidance to students.* However, some said that few lecturers found time to talk to students on academic issues. In most cases, instead of helping students who might not be doing well some lecturers even gave negative comments about such students such as *'you will fail my course'.* In most cases, students found their own way to improvement and career pathways.

Nevertheless, 85% of the students agreed that that the School of Medicine provided adequate health care services and this was highly rated. This was understood as a Medical School, students had easy access to medical care services within the school. The students did not complain of any challenge over medical care. They easily had access to health facilities as this was also the place of learning.

4.5.1.5: Academic Staff

The other very important factor evaluated was academic staff. Under this factor, the characteristics considered were:

- *Most of the academic staff in the School were adequately qualified,*
- *The School had adequate numbers of academic staff to cope with the required schedules,*
- *Most of the academic staff of the School participated in scholarly research in their specialization.*

56% of all the respondents agreed on the overall that most academic staff in the School were qualified as shown in Table 4.27. Nevertheless, 60% from those doing MB ChB programme disagreed with the view that most academic staff in the School were qualified as shown in Appendix IX.

Table 4. 27 Characteristics of Academic Staff

Characteristic of Academic Staff	Strongly disagree %	Disagree %	Uncertain %	Agree %	Strongly agree %
Qualified academic staff	06	30	08	42	14
Adequate academic staff	12	52	01	24	11
Academic staff involved in scholarly research	03	14	54	21	08

(Source: Field data, 2018)

On average, very few students (35%) agreed that the School of Medicine had adequate numbers of academic staff to cope with the required schedules. Most of the students (64%) stated that the school did not have enough academic staff to cope with the required schedules. In addition, the students stated that some lecturers used reported to class very late saying they were from other classes as evidence that the number of staff in the school was not adequate. Students specifically cited the Department of Anatomy as one of the most hit department during this study. Lack of human resource can result into less contact hours which later can translate into inadequate learning in the school. If less learning takes palace, then quality of

education is compromised resulting into low pass rates for the students. The students however added that there was need for more UNZA lecturers to get involved in teaching Clinical courses. When this point was investigated further, the students stated that *lecturers from the Ministry of Health lacked methodology.*

Students further stated that most of the academic staff of the School participated in scholarly research in their specialization, most students (54%) were uncertain. Only 29% agreed while 17% disagreed. Students said very few books and journals were written by the lecturers in the School of Medicine. They also said that very few lecturers cited their own work in class.

4.6.1.6: Educational Resources

The characteristics used to evaluate educational resources included the following:

- *The School enrolment numbers were based on the infrastructure and facilities capacity,*
- *The School had adequate teaching and learning spaces (lecture halls, tutorial rooms, laboratories, wards),*
- *The School had adequate library facilities to support learning,*
- *The School had adequate information communication technology (ICT) to support learning.*

The results showed that 71% of the students disagreed that the School enrolment numbers were based on the infrastructure and facilities capacity. Only 25% of the students agreed. Students said that in most cases when students realised that they were late for class, they would rather miss the lesson than stand in class whilst learning. They stated that the *learning environment was pathetic in the school'.* They proposed that '*the school should enrol based on the capacity of the infrastructure*.

Table 4. 28 Characteristics of Educational Resources

Educational Resources	Strongly disagree %	Disagree %	Uncertain %	Agree %	Strongly agree %
Enrolment based on infrastructure	09	62	04	21	04
There is adequate space for learning	11	56	06	21	06
Adequate library facilities	16	31	09	41	03
Adequate ICT to support learning	05	29	21	35	10

(Source: Field data, 2018)

Table 4.28 shows that 67% of the students stated that the School of Medicine did not have adequate teaching and learning spaces (lecture halls, tutorial rooms, laboratories, wards). The students cited the Laboratory work in Basic and Applied Human Anatomy and Development (HAN 3010) which they said needed more time and the number of students per laboratory session needed to be reduced to avoid crowding. Students stated that in some cases some students did not fully participate in carrying out the experiments as they were in large groups. The lecturers also affirmed that teaching was quite a challenging with very limited support facilities to disseminate knowledge and more of practical skills to the students. They also stated that the classroom facilities were not satisfactory to support a good learning environment. Lecturers observed that in some courses, due to limited teaching space, students even sat on the floor or stood during lectures. The Laboratory Technicians also added that the Laboratories did not have enough space to occupy all students in some courses. In addition, they cited inadequate equipment and reagents spacemen as a challenge in some cases.

On the point of the school having adequate library facilities to support learning, only 44% students agreed that the school had adequate library facilities. They said that there was inadequate teaching and learning spaces and inadequate information technology support. Lastly, 34% of the students stated that the School had adequate information communication technology (ICT) to support learning while 34% disagreed with this assertion. They said that they did not fully benefit from MOODLE and not much information had been provided. They, however, noted that few lecture notes were uploaded on MOODLE platform though most students stated that they did not have access to e-Granary/MOODLE. It was also stated

that internet accessibility had improved in the School as Wi-Fi was accessible around the Library, Student Centre and near some hostels. Students stated that if access to internet was improved, then students' access to information would improve also. This would help students study on their own on some topics and later improve their performance in the School of Medicine.

4.6.1.7: Governance and Administration

The last factor under the variable of institutional characteristics was Governance and Administration. Several characteristics were evaluated under this factor. These were:

- *The Dean's Office staff were appropriately qualified,*
- *The Heads of Department were appropriately qualified,*
- *The leaders in the School provided appropriate academic leadership,*
- *Support staff for educational activities were adequate in number,*
- *Management of educational affairs, such as, examinations and publication of results were satisfactory.*

Table 4.29 shows that most students (70%) stated that the Dean's Office staff were appropriately qualified. The student cited the Dean's staff as *highly organised* and we wished that the staff in all departments were as organised as the staff from the Dean's Office. The students stated that the staff in the office of the Dean welcomed students in a professional and respectful manner.

Concerning the characteristic of the qualification of the Heads of Department, most students (73%) agreed that the HODs were well qualified. In addition, 51% agreed that the leaders in the School provide appropriate academic leadership. Most of the students (62%) disagreed that the support staff for educational activities in the School of Medicine were adequate in number.

Table 4. 29 Governance and Administration

Governance and Administration	Strongly disagree %	Disagree %	Uncertain %	Agree %	Strongly agree %
Deans' office staff	04	12	14	54	16
HODs	09	14	04	51	22
Academic leadership provided by HODs	13	32	02	39	14
School support staff	11	51	09	26	03
Management of general affairs	08	22	15	39	16

(Source: Field data, 2018)

53% of the students stated that academic leadership provided by HODs was satisfactory while 32% disagreed. Students proposed that the *Deans' office needed to improve on the management of educational affairs,* such as examination *and suggested that publication of results should be posted on students' personal accounts before being put on the notice board*. Students stated that *some of our friends came from very far places and it would help them if the results were posted on personal accounts than putting them on the notice board.*

4.6.2 Management of Courses

The study evaluated the course management standards to determine whether the School of Medicine was offering an educational standard that was comparable to best practices of teaching and learning as recommended by Accreditation bodies like HPCZ. The characteristics evaluated were generally accepted as requirements for facilitating learning. Participants were given a questionnaire (Appendix II) containing four factors with different attributes under each factor. First, each characteristic was analysed separately and later the data for each characteristic were compared using different statistical analysis. The first to be analysed was course workload followed by pace of the course, then level of difficulty was analysed and finally time spent on courses. Under each characteristic, the respondents' comments were also included.

The results from this section and other sections were compared to the GPA and examination attrition rates of the results for 2014/2015 academic year. These results were used because it was during the same academic year data collection was done for this study. So relating these findings to these GPA and examination rates was very important. The following (Table 4.30) were the selected GPA and examination attrition rates for the courses and programmes; which had low GPA and high examination attrition rates and those with High GPA and low examination attrition rates (Table 4.31). These, and some other courses, were used to investigate the causes of low students' GPA and low examination attrition rates in the School of Medicine.

Table 4.30 Courses with Low GPA and High Attrition Rates

Courses with Low GPA and High Attrition Rates	**Programme**	**GPA**	**Examination attrition rates**
PGY 2040: Medical Physiology	BSc Biomed	0.80	37.6%
BMS 2110: General and Metabolic Biochemistry	BSc Biomed	1.20	6.20%
PGY 3010: Basic and Applied Physiology	BSc Human Biology	2.00	20.96%
PGY 4110: Neurosciences	BSc Human Biology	0.50	32.17
PTM 4210: Pathology	BSc Human Biology	1.00	19.35
PGY 2020: Human Physiology	B. Pharm	0.80	39.58
PGY 2030: Human Physiology	BSc Physio	0.40	40.00

(Source: Field Data, 2018)

Table 4.31 Courses with High GPA and Low Attrition Rates

Courses with High GPA and Low Attrition Rates	Programme	GPA	Examination attrition rates
EHS 2410: General Principles of Public Health and Environmental Health	BSc Env	3.20	0.00
EHS 3520: Planned Development and Building Services	BSc Env	3.40	0.00
PSY 6410: Psychiatry	MB ChB	3.70	0.00
PED 710: Paediatrics and Child Health	MB ChB	4.20	1.37
DME 4114: Clinical Methods and Skill	BSc Human Biology	4.40	0.00
PTM 3010: Pathology and Microbiology	BSc Physio	3.20	0.00
PMY 3410: Pharmacy Practice Foundation	B. Pharm	3.70	2.50

(Source: Field Data, 2018)

4. 6.2.1. Course Workload

One of the analysis done was to evaluate the perceptions of students from different programmes was using the bar charts. This variable was investigated in order to check how it contributed to the GPA and examination attrition rates in the School of Medicine. The Bar chart shows how students in each programme perceived the courses' workload in the School of Medicine. The bar chart (Figure 4.2) on the next page shows how the respondents from different programmes perceived the course workload.

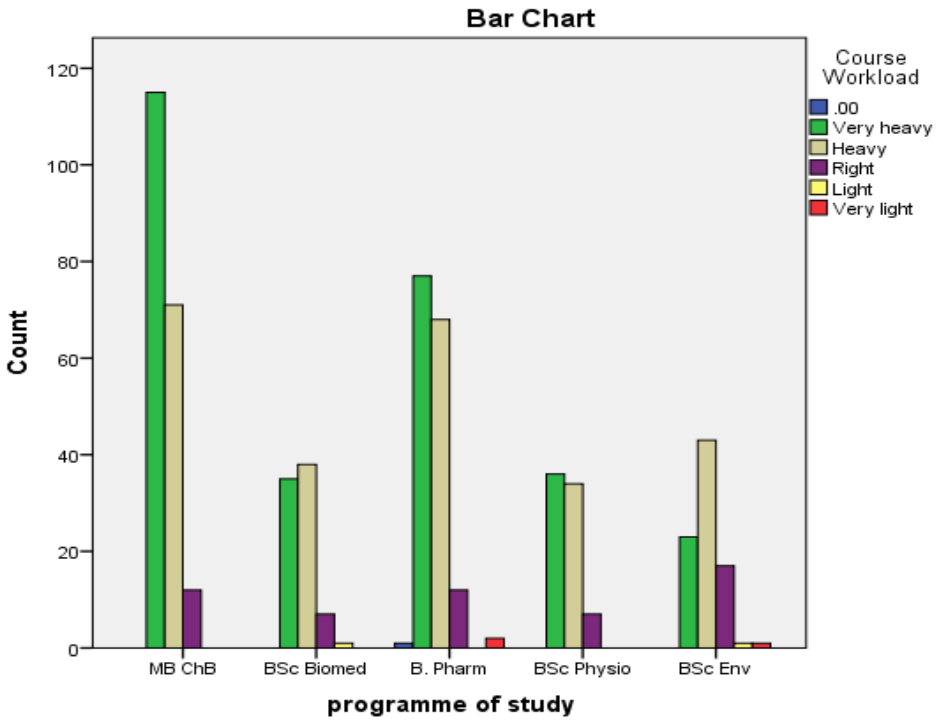


Figure 4.2: Student perception of Course Workload

(Source: Field data, 2018)

In the Figure 4.2, it shows that in all programmes the course workload was heavy. This meant that most lecturers could not finish teaching the course content in the programmes under study in the School of Medicine. This was evident even from the comments of the students from the data collected. The respondents in BSc Biomed cited that '*the programme has too many half courses at 4th year as compared to other programmes making it difficult for us to manage to study during the final examination*. The respondents added that the worst part was when all the examinations were written at the end of the academic year. The students had a challenge to master and understand many concepts in all the nine courses. Respondents proposed that courses be combined into full courses in order to come up with four and half courses which were to be manageable. However, when the researcher had an interview with the department, the department justified that many half courses are as a result of the different concepts dealt with in different courses.

They proposed that it was to be better if some of the half courses were combined to make them full courses to reduce the number of examination to be written and the assignments. There were nine (9) half courses during the time of study for the fourth years namely:

a) *Molecular Biology – BMS 4215*
b) *Clinical Biochemistry – BMS 4225*
c) *Cellular Biochemistry – BMS 4325*
d) *Research Methodology – BMS 4414*
e) *Public Health – BMS 4425*
f) *Medical Microbiology – BMS 4525*
g) *Medical Parasitology – BMS 4625*
h) *Laboratory Management – BMS 4919*
i) *Haematology – BMS 4325*

Medical Physiology (PGY 2040) in Bachelor of Biomedical Sciences and Basic and Applied Physiology (PGY 3010) in Bachelor of Science in Human Biology were too detailed and some concepts were unnecessary and have no application. The analysis from the GPA and examination attrition rates, the results showed that in Medical Physiotherapy (PGY 2040) there were 12 fail cases out of 32 students representing 37.5% examination attrition rates and in Basic and Applied Physiology (PGY 3010), 35 failed out of 167 candidates representing 20.9% examination attrition rates. The GPA for Medical Physiology and Basic and Applied Physiology were 0.80 and 2.00 respectively.

The other courses which respondents cited to be bulky included Medical Microbiology (PTM 4310) in Bachelor of Medicine and Bachelor of Surgery where respondents cited that it was '*too bulky and there was no effective teaching'*. This course had the examination attrition rate of 9.60% as GPA 2.00. This shows that workload contributes to poor course management and thereby results in high number of students to fail and to those who can pass, their grades are low.

The respondents also cited that *in some of the courses, the year comes to an end without finishing the content which is outlined in syllabus of the course.* The respondents did not specify which courses but from their responses in the course workload characteristic, it could

be noted that most of the students (82%) stated that the course workload in the School of Medicine was heavy.

In Human Physiology (PGY 2020), the respondents cited that *the course is too detailed failing to isolate things which are necessary from those which are not*. When the course were not clear and loaded with a lot of concepts students failed to understand and this contributed to high failure rates of students. In this course, 39.58% of Bachelor of Pharmacy second year students failed representing 19 out of 48 students.

During the Focus Group Discussion, the discussants highlighted that *'Basic and Applied Human Anatomy and Development (HAN 3010) has a lot of workload*. They stated that '*high workload in this course is attributed to some repeated topics which are taught in the fourth year'*. The GPA for this course was however higher at 3.20 and examination attrition rate was 5.39% which was not so bad in the year of study. To make matters worse the discussants bemoaned also the understaffing in the department such that '*in most cases students mostly teach themselves in most cases'.* They therefore proposed that *'the department needs more academic staff'*. They also cited that *'the lecturer in this course mostly comes an hour or more late for lectures'*. When a follow up was made by the researcher as to why the lecturer go to class an hour late, the department cited that '*they were understaffed and the lecturer moves from one class to another thereby failing to keep time'*.

Overall, the results showed that the Course loads were high in most MB ChB courses but the other courses in programmes like Environmental Health and Physiotherapy, most courses' loads were light. In courses with high course workload, students concerns were that they were told to study on their own despite not understanding the concepts.

4.6.2.2. Pace of the Course

Pace of the course referred to the time taken by the lecturers to explain concepts to students during classes. The same analysis using bar charts was used to differentiate the various programmes on the pace of the course. This variable was investigated in order to check how it contributed to the GPA and examination attrition rates in the School of Medicine. The bar chart (Figure 4.3) on the next page shows how the respondents from different programmes perceived the pace of the course.

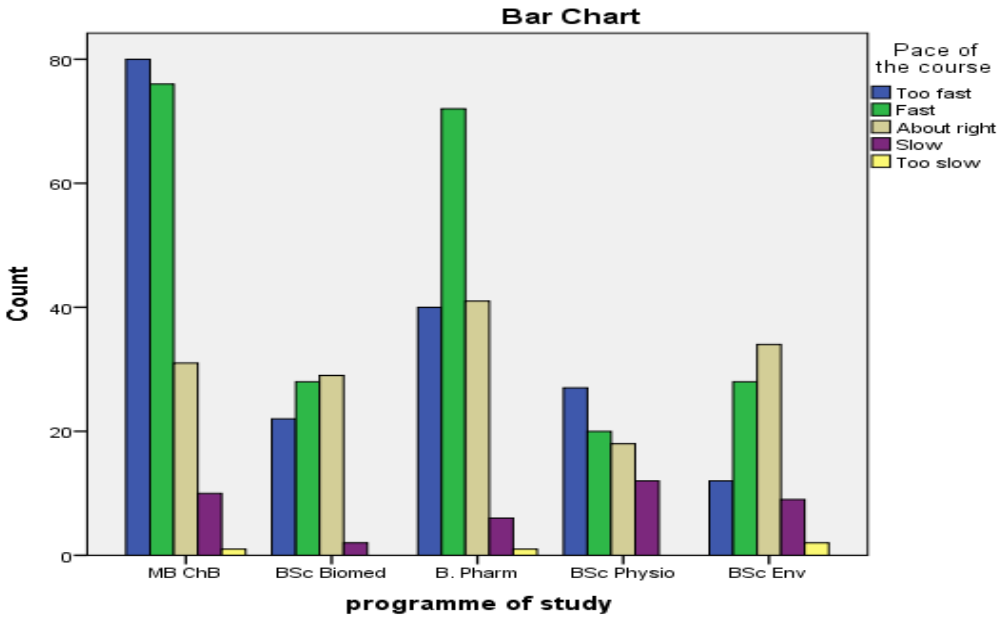


Figure 4.3: Student perception of Pace of the Courses

(Source: Field data, 2018)

Figure 4.3 showed that in MB ChB, BSc Physio and B. Pharm programmes, the respondents perceived that the pace in the teaching of the courses were fast as the curve is skewed toward fast. This meant that the lecturers in these programmes were fast in teaching and students could not match the pace of teaching of the lecturers. This left students with less understanding. This could have resulted into more students failing the courses and some who passed might have had low GPA. One of the courses in MB ChB which was cited as *too fast* was *Neurosciences (PGY 4110).* The GPA for this course in the 2014/2015 academic year was 0.5 and the examination attrition rate was 32.17%. This was the course with the highest examination attrition rates and lowest GPA in the programme in the academic year under study. 37 of 115 students failed the examination and for those who passed, most of them had an average of C+ grade.

In BSc Biomed and BSc Env programmes, the respondents perceived that the pace of the teaching of the courses was about right (engaged students while teaching). This meant that lecturers were on the average at the right pace in teaching and helped students with understanding in these programmes. This was evident from the examination attrition rates for most of the course these programmes. In most courses, there were no failures as compared to

other programmes. In BSc Env, only 6 courses out of 21 had some students who failed and the failure rates were on average less than 2 per course. The GPA for this programme on the overall was also higher (2.65) as compared to other programmes. The other course which respondents stated to be too fast also included Medical Microbiology (PTM 4310) which was another course in MB ChB programme. In this course, 12 out of 115 students failed the examination. The GPA in this course was 2.00 in the year 2014/2015 academic year.

In addition, respondents stated that the '*lecturers in Basic and Applied Physiology (PGY 3010) do not provide deeper understanding of the concepts in the course and do not answer questions for clarification purposes from the students'.* This course was in MB ChB programme. So apart from the course having heavy course workload as stated in the sub – section above, the same course was taught at a faster rate and students were left with little understanding.

On the other hand in Communicable and Non communicable Diseases (EHS 2420 and General Principles of Public Health and Environmental Health (EHS 2410) which were some courses in BSc Env programme, the respondents cited that '*the academic staff involved gave detailed explanation of concepts and the pace was about right'.* This was one of the programmes of which respondents said the pace was right. In both courses no student failed in the two courses and the GPA were 2.5 (EHS 2420; Communicable and Non-communicable Diseases and 3.2 (EHS 2410: General Principles of Public Health and Environmental Health).

4.6.2.3 Level of Difficulty

Level of difficulty is a concept that was used in this study to indicate the technical difficulty of a course. The respondents were asked how they perceived the level of difficulty of courses in the School of Medicine at the University of Zambia. This variable was investigated in order to check how it contributed to the GPA and examination attrition rates in the School of Medicine. The Chart below shows how the students responded. The Bar chart represents the count of the respondents in the Y- axis against level of difficulty in the X – axis. The Figure 4.4 on the next page shows how the respondents from different programmes perceived the degree of difficulty.

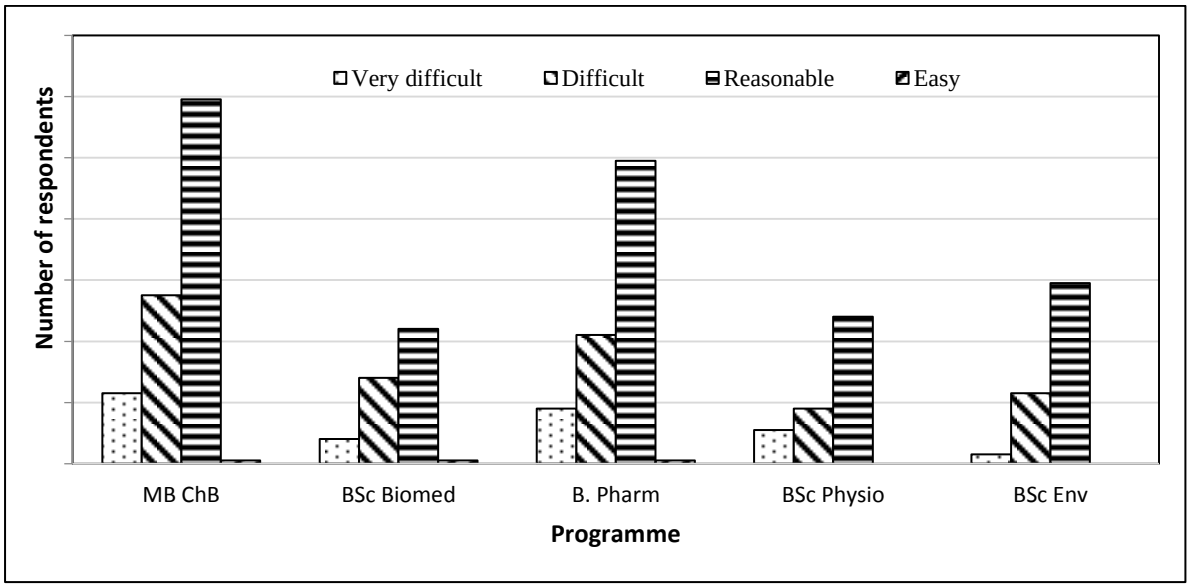


Figure 4.4: Student Perception of Degree of Difficulty

(Source: Field data, 2018)

Figure 4.3 shows that most respondents in all programmes in the School of Medicine perceived that the level of difficulty of the courses as more reasonable but with the histogram skewing to the very difficult side. The figure also shows that very minimal respondents stated that the courses in the Medical School were Easy.

Students in MB ChB stated that *Forensic Medicine and Medical Jurisprudence (PTM 6410)* course, *was not clear and recommended that the medical lawyer be engaged to teach it.* The students added that '*this course is not clear, there no proper lectures and there is no practical experience'.* 3 of the students failed in this course being the highest number of the students in the academic year under study who failed as compared to other courses where no one failed in other five courses in the same year of study.

The respondents in MB ChB (BSc Biology) also cited Basic and Applied Physiology (PGY 3010) as one of the course that was *'too hard to understand'*. This was evident as the number of failed students in this course was 35 representing 20.96% examination attrition rates. This showed that the level of difficulty of courses, contributed to students' GPA and the institutional' examination attrition rates.

4.6. 2. 4 Time Spent on the Course

The respondents were asked how they perceived the time spent on the course in the School of Medicine at the University of Zambia. This variable was investigated in order to check how it contributes to the GPA and examination attrition rates in the School of Medicine. The Chart below shows how the students responded. The Bar chart represents the count of the respondents in the Y- axis against time spent on the course in the X – axis. The Figure 4.5 below shows how the respondents from different programmes perceived the time spent on the course.

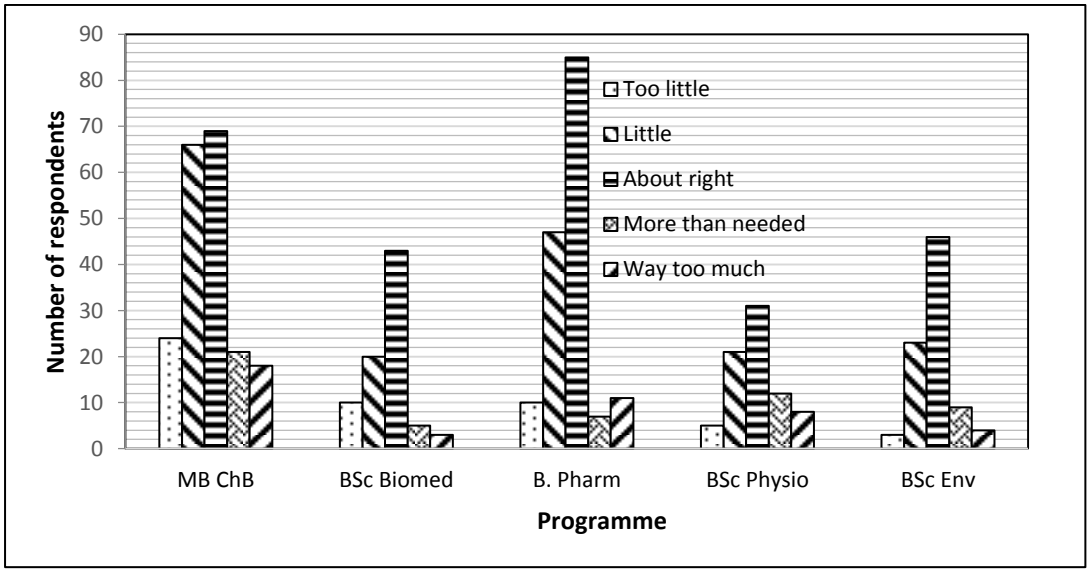


Figure 4.5: Student Perception of Time Spent On the Course

(Source: Field data, 2018)

Figure 4.5 shows that time spent on the courses in all programmes is on average about right. Almost in all programmes, there was a perception that enough time was spent on the courses. It could also be seen that BSc Physio and BSc Env programmes, very few respondents stated that the time spent on courses was little. For MB ChB and BSc Biomed programmes, the curve is skewed towards too little time spent on the courses. If little time was spent on the course then it was expected that students did not do well in the courses.

For courses which were considered to be light and where lecturers spent enough time, the students performed very well with high GPA and low examination attrition rates. One such course was Community Medicine (DPH 6024). In this course the GPA in the year of study was 3.00 and the examination attrition rate was 0.90%. It was considered to be to be very light in the load and a lot of time allocated to it. Some of the respondents' comments from the UG Survey questionnaire further stated that 'Community Medicine *(DPH 6024) Course requires revision and re-organisation because we spend much of the time doing nothing. Less time should be allocated to this course or let it be a half course'.* During Focus Group Discussions, one of the discussants also added that '*in Community Medicine (DPH 6024) course, projects are delayed unnecessarily by ethical approval requirements'.*

Some respondents stated that Internal Medicine Clerkship I (MED 5010) course *was less time is allocated to Radiology and Dermatology parts.* This means that during course development there was less consideration of the concepts to be covered in Radiology and Dermatology. As a result lecturers in these components do not have enough time to complete their parts leaving students with unclear understanding. This can affect the students' performance. During the academic year under study, 3 of the students failed in this course as compared to none and less than 3 in other courses of the same year of study as shown in Appendix VII. The examination attrition rate was 2.40% higher than the other courses in the same year of study. Some lecturers stated that *some courses were too bulk such that time management by some lecturers is a challenge.*

4.6.2.5 Percentages of Students' perception on Course Management

The responses under each variable were averaged and the mean and standard deviation were calculated using SPSS. On the overall, the descriptive statistics involving the frequencies and percentages of the respondents' perceptions on course workload, the pace of the, level of difficulty and time spent on the course were as shown on table 4. 32 on the next page:

Table 4.32 Characteristics of Course Management

Programme of Study	Course work load %	Pace of the course %	Level of difficulty %	Time spent on courses %
MB ChB	92	90	71	89
BSc Biomed	78	49	69	73
B. Pharm	80	86	72	53
BSc Physio	84	79	62	49
BSc Env	75	52	51	51
Average	**82**	**71**	**65**	**63**

(Source: Field data, 2018)

On average from Table 4.32 above, the results showed that the most students' perception of course workload was that the courses had high workload with a percentage of 82%. In all programmes, the number of students who indicated the course workload as very heavy and heavy were many as compared to those who indicated otherwise. The results of this factor are presented in the sections that follow. Table 4.12 also showed that most (92%) of those doing MB ChB programme were the ones who cited the course workload as very heavy as compared to those in BSc Env (75%). This is in agreement with Figure 4.3, the bar charts that show the distribution of course work load for all programmes

When asked about the paces of the courses in the School of Medicine, 71% of the students stated that the pace of the courses was faster than to the expectation of the students resulting to most learners not understanding the concepts. Only those students in the BSc Biomed programme (49%) were the least followed by BSc Env (52%) as compared to the rest of the programmes. Concerning the level of difficulty of the courses, 65% of the students on average stated that the courses were more difficult above reasonable. Only those doing BSc Env programme stated that the level of difficulty of courses was on average reasonable with only 51% saying that they are above reasonable.

Lastly, when the students were asked on the time spent on the course, 63% of the students stated that time allocate to the course was above right. Most of those doing MB ChB programme (89%) stated that the time allocated to courses was less than what is required. Those doing BSc Env and BSc Physio stated that the time allocated to the courses in the School of Medicine in the programmes was about right with only 51% and 49% said the time was less respectively. Now each of the characteristics shall be discussed independently. Coursework overload is the first one in the following section.

4.6.2.6 ANOVA and Measurement Associations of Students' perception on Course Management

In addition to the above percentage analysis, one way Analysis of Variance (ANOVA) was also used to compare the different programmes on the characteristics under study. Table 4.33 below shows the ANOVA values of course characteristics. One-way ANOVA tests were conducted to compare the students' responses on the course workload of the different programmes.

Table 4: 33: ANOVA values of Course Management

Characteristics	N	Mean Score	SD	Df	F	Sig.
Course workload	601	1.63	.71	4 596	8.83	.000
Pace of the course	601	2.10	.93	4 596	8.46	.000
Level of difficulty	601	2.52	.69	4 596	1.11	.349
Time spent on the course	601	2.77	.99	4 596	1.41	.228

*Significant at $\rho < .05$

(Source: Field data, 2018)

The mean score responses on course management as being acceptable was significantly lower for course workload (M = 1.63) as compared to other factors (Pace of the course = 2.10, level of difficulty = 2.52 and time spent on course = 2.77) as noticed from Appendix IX. This is in agreement with the percentage scores on Table 4. 32 where the overall course management scores are 82% (course workload), 78% (pace of the course), 65% (level of difficulty) and 63% (time spent on the course).

As shown in Table 4.34, Analysis of Variance (ANOVA) indicated that the four characteristics of the course management had two; course workload and pace of the course, which were statistically significant different among the course management with [F (4, 596) = 8.83, ρ = 0.000] and [F (4, 596) = 8.46, ρ = 0.000] respectively. These results show that the students differed significantly on how the course workload and the paces of the courses in the School of Medicine. This meant that the course workload in different courses and programmes differed and the pace of how the courses were managed also differed. The above values were in agreement with the Post hoc test results of Eta and Eta Squared values. Table 4.34 shows the Eta and Eta squared values for course workload were 0.228 and 5.20% respectively for course workload while for the pace of the course were 0.232 and 5.40% respectively.

Table 4. 34: Associations of Course Management

Characteristics	Eta	Eta Squared
Course workload	0.228	5.20%
Pace of the course	0.232	5.40%
Level of difficulty	0.086	0.70%
Time spent on the course	0.097	0.90%

(Source: Field data 2018)

The other two; level of difficulty and time spent on the course, the results showed that the groups did not significantly statistically differ on the course management, F (4, 596) = 1.11, p = .349 at p < 0.05 and F (4, 596) = 1.41, p = .228 at p < 0.05 respectively. The results suggested that in spite of the differences in the programmes and courses, their perception on level of difficulty and the time spent on the courses were not statistically different. The above values were in agreement with the Post hoc test results of Eta and Eta Squared values. The Table 4.30 of Eta and Eta Squared values show that the values were The Eta and Eta squared values for course workload were 0.086 and 0.70% respectively for course workload while

for the pace of the course were 0.097 and 0.90% respectively. These values are lower than those for the course workload and pace of the course.

4.6.2.7 Chi – Square Analysis of the Students' Perception on Course Management

The other analysis done was the use of Chi-Square statistic. This was used to establish the relationship between course management and the factors (GPA and examination attrition rates) under study. The analysis from the SPSS showed that for the course workload, the value of the test statistics was 42.1 with degrees of freedom (df) for the test at 20 and corresponding p-value at $p < .005$ of .003 as shown in Table 4.35. The results showed that there was no statistical significance difference of the course workload on course management. This meant that course workload affected course management. This is in agreement with the results from the ANOVA and Post hoc analysis.

The Chi-Square statistics on the relationship between pace of the course and course management showed that there was statistical significant difference at $\rho < 0.005$ for the pace of the course, the value of the test statistics was 61.6 with degrees of freedom (df) for the test at 16 and corresponding p-value at $\rho < .005$ of .000. The results showed that there was no statistical significance difference of the pace of the course which is in agreement with the results from the ANOVA and Post hoc analysis.

Table 4.35 Chi Square values for course management factors

Characteristics	N	Pearson Chi Square value	df	Sig
Course workload	601	42.1	20	.003
Pace of the course	601	61.6	16	.000
Level of difficulty	601	10.7	12	.551
Time spent on the course	601	33.0	16	.007

*Significant at ρ < .005

(Source: Field data 2018)

The Chi-Square statistic also was done to establish if there was any relationship between course management and the level of difficulty. The analysis from the SPSS showed that for the level of difficulty, the value of the test statistics was 10.740 with degrees of freedom (df) for the test at 12 and corresponding p-value at p < .005 of .551.

The other characteristic was time spent on the course in order to establish if there was any relationship between course management and the time spent on the course. The analysis from the SPSS showed that for the time spent on the course, the value of the test statistics was 33.029 with degrees of freedom (df) for the test at 16 and corresponding p-value at p < .005 of .007. The two characteristics showed there was statistical significance difference on course management which is in agreement with the results from the ANOVA and Post hoc analysis.

4.6. 2. 8 Courses which need to be Changed

These are some of the categories which came out form the responses in the Focus Group Discussions, interviews and students' survey questionnaires. One of the issues the students raised was the desire to have some of the courses changed. This information was collected from the Undergraduate Survey Questionnaire and Focus Group Discussions.

The respondents and discussants gave various reasons as to why some courses needed to be changed. The reasons were grouped into two themes. The first was that some courses were unnecessary for the programme while the other issue was that some courses needed to be changed in the year of study**.**

4.6.2.9. Courses which were unnecessary for the Programme

The respondents suggested that some of the courses in different programmes were not necessary and had no application to the field of study. In some cases students stated that the

whole course should be replaced while in some cases the students proposed that some contents in some courses needed to be replaced or totally removed in order to make some course less heavy. In Human Physiology (PGY 2020) under B. Pharm programme, the students cited that *this course has some details which are unnecessary for the degree programme.* The lecturers in the course confirmed this and *stated that they were in the process of reviewing the whole course.* As a result, the course had the lowest GPA (0.80) of the students in this course in 2014/2015 academic year and highest examination attrition rates of 39.58% representing 19 fails out of 48 students.

In Community Medicine (DPH 6024), the discussants stated that the course is a total waste of time and students proposed that the course be reviewed. The students added that the course is irrelevant to the students. One of the discussant said that *it is not realistic and there is just a lot of focus on money to sponsor it and travelling out.*

Some respondents commented also that *the pharmacology component in the Introduction to Biomedical Sciences (BMS 2015) course need to be reviewed as it is too detailed for this programme.* Students observed that that some concepts in this course could be removed and leave concepts which were applicable to the programme. One of the course might be the fact that in some cases new lecturers were not given the whole curriculum resulting into other teaching staff including things not in the syllabus. This was evident from some responses of lecturers saying, '*Some academic staff are not oriented by Heads of Department when they are employed. In addition, they are not availed with the whole curriculum of the department and the school so that staff is aware of what is offered in other departments'.*

In some cases, students stated that in some courses some concepts which were taught were outdated and had lost their relevance. One of the courses was Pharmaceutics I (PMY 2020) in the B. Pharm programme where students cited that *'some topics in these courses are out dated and there are too many non-scientific principles'.* This is evident from the number of students who failed in this course and the overall GPA. This course had high examination attrition rates of 27.08% and GPA of 2.00. It must be that the students lost interest in the course after realising that the information in the course was outdated. This affected their altitude towards this course during their studies.

The respondents from the programme of BSc Env cited that '*the pharmacology which is taught in Environmental Health does not relate to the field'*. It is important to include

concepts which are related to the field in order to raise the interest of the learners. Another course which students cited as not necessary to the programme was from Bachelor of Biomedical Sciences cited that '*General Introduction to Biomedical Sciences (BMS 2110) does not make sense and its importance is not known'*. They respondents proposed that '*it is better to remove it from the curriculum'*. This is the course with the lowest GPA (1.20) of the whole Bachelor of Biomedical Sciences programme in 2014/2015 academic year as seen from Appendix VIII.

4.6.2.10. Courses put in a wrong year

The other issue which came out of the students' responses apart from the issue of having unnecessary courses in a particular programme was the some courses or concepts in the some courses were wrongly put in a particular year. The respondents in their responses had an opinion that some courses were put in a wrong year thereby affecting the Course Management in the School of Medicine.

The students proposed that '*the clinical component in this course should be taken to 4th year' of the* in Community Medicine (DPH 6024). It was proposed that this component must be fused in DME 4114: Clinical Methods and Skill of BSc Human Biology. This would even reduce the content in this course and would justify turning it into a half course as in some sections above this course was referred as *a time waster*.

The respondents from Bachelor of Biomedical Sciences cited that *'the Research Methodology (BMS 4415) should be taught a year before the research project'*. During FGDs, the students proposed that when the methodology was taught in the 3rd year, students should be given enough time to prepare for BMS 4424 (Research Project). In BMS 4415, the examination attrition rate was 10% with GPA of 2.90 while in BMS 4424, there was no one who failed and the GPA was 3.40.

It was also proposed by respondents from Bachelor of Pharmacy who were in the 5th year that Pharmaceutics IV (PMY 5040) and Pharmacy Practice Professional (PMY 5430) should be removed from the 5th year to at 4th year and 3rd year respectively. The arguments were that PMY 5040 had similar concepts as with PMY 4030: Pharmaceutics III and that some topics were repeated. In addition, the students also argued that PMY 5430 had very close concepts as in PMY 3410: Pharmacy Practice Foundation. One discussant from the FGD said that, *in Pharmaceutics IV (PMY 5040) and Pharmacy Practice Professional (PMY 5430) the*

concepts and materials in these courses are repeated, it will be better merge the two courses and make one. In the same programme of Bachelor of Pharmacy and same 5th year of study, the respondents from the survey questionnaire stated that *Clinical Pharmacology (PMY 5230) and Clinical Pharmacy and Therapeutics (PMY 5710) have similar concepts and the two can be made into one course.*

From Bachelor of Science and Environmental Health Programmes, respondents stated that the topics in Inspection of Premises and Reporting (EHS 4535) are mostly a repetition of what was covered in the past years in other courses like Planned Development and Building Services (EHS 3520) and Principles of Building Design and Construction (EHS 2510).

4.4.2.10 Views on management

The following are the views from Focus Group Discussions, self-evaluation questionnaire from lecturers and also from the interviews done with the selected focal point persons in the school regarding course management. Table 4.36 below shows the misgivings and positives of the respondents about course management.

Table 4. 36: Positives and Misgiving views about Course Management

Positives	Misgivings
In our programme (Environmental Health), the course workload is manageable.	*In our programme (MB ChB), we mostly do not finish the content and we finish through self - study.*
In our programme (Environmental Health), the course workload is manageable.	*There is little open climate in the school.*
The school has lecturers are of good and high reputations	*They are concerns from the students that in some courses not all topics are covered but students are told to read on their own.*
Internet accessibility has improved in the school. Wi-fi is accessible around the Library, Student centre and near some hostels.	*They are concerns from the students that in some courses not all topics are covered but students are told to read on their own.*
	The Course loads are high in most MB ChB courses but the other programmes like Environmental Health, Public Health and Physiotherapy most courses' loads are light.
	The time allocated to some courses is not enough to finish all topics in the course outlines.

	With the introduction of new programmes and courses in some programmes and departments, teaching load has increased resulting to less enough time for private for lecturers to do research and be available for the students for consultation.
	Time management by some lecturers is a challenge.

(Source: Field data, 2018)

4.7 Perspectives on Teaching Approaches

The second research question, **"In the view of staff and students, how has the teaching of undergraduate medical students at the institution been conducted?"** was answered through the undergraduate questionnaire booklet from the Teaching and Learning activities table and the Teaching Characteristics of academic staff table and the Focus Group Discussion.

The study evaluated the teaching contribution standards evaluation to determine whether the School of Medicine was offering an educational standard that was comparable to best practices of teaching and learning Accreditation bodies. The attributes evaluated were generally accepted as requirements for facilitating learning. This variable was evaluated using the Teaching and Learning activities and the Teaching Characteristics of staff in the School of Medicine of the University of Zambia. In order to assess the Teaching and Learning activities characteristic participants were given a questionnaire (Appendix II) containing four factors with different attributes under each factor. In the same way in order to assess the Teaching Characteristics of staff, participants were given a questionnaire (Appendix II) containing four factors with different attributes. Teaching and Learning activities are discussed in the next section while the Teaching Characteristics of staff are discussed in the section that follows later.

4.7.1 Teaching and Learning Activities

The responses under each variable of Teaching and Learning activities were averaged and the mean and standard deviation were calculated using SPSS. All the results were analysed according to programmes under study. On the overall, the descriptive statistics involving the percentages on of the respondents' perceptions on access to curricula, access to handbooks,

access to teaching schedule and availability of qualified teaching staff were as shown on Table 4.37.

Table 4. 37 Perceptions of Management of Teaching and Learning Activities

Programme of Study	**Access to curricula %**	**Access to handbooks %**	**Access to teaching Schedule %**	**Available of qualified teaching staff %**
MB ChB	46	38	48	58
BSc Biomed	41	37	57	59
B. Pharm	50	39	53	60
BSc Physio	42	36	43	49
BSc Env	56	37	46	61
Average	**47**	**37.4**	**49.4**	**57.4**

(Source: Field data, 2018)

From the Table 4.37, it clearly shows from the percentages that on average there is available qualified staff (57.4%) in the Medical School but that these qualified staff rarely avail students with course curricula (47%), teaching schedules (49.4%) and handouts (Mean value= 37.4%) to guide students' deep understanding of content and skills. In addition, the results showed that access to handbooks and other materials had the average lowest percentage of 37.4% those who agreed as compared to the other. The results also showed that those doing BSc Physio had the lowest number of students agreeing in access to course curricula, access to teaching schedules and availability of qualified staff as compared with those in the other programmes.

In addition to the above analysis, ANOVA was calculated, as regard to management of teaching and learning activities by the five programmes under study (MB ChB, BSc Biomed, B. Pharm, BSc Physio and BSc Env) the results were as shown in the Table 4.38.

Table 4: 38: ANOVA values of Management of Teaching and Learning activities

Characteristics	df	F	Sig.
Access to curricula	4 595	2.41	.048
Access to handbooks	4 596	0.600	.663
Access to teaching Schedule	4 596	4.04	.003
Availability of qualified staff	4 593	3.34	.010

$\rho < 0.05$

(Source: Field data, 2018)

Using ANOVA as from the Table 4. 38, the results showed that there was statistically significant difference among the three variables used namely; access to curricula, access to teaching schedule and availability of qualified teaching staff with $p<0.05$ of [$F(4, 595) = 2.413$, $\rho = 0.048$], [$F (4, 596) = 4.043$, $\rho = 0.003$ and [$F (4, 593) = 3.342$, $\rho = 0.010$ respectively. This meant that within the different programmes in in these variables, students had different views on the issues raised. However, for the access to handbooks and other

materials the ANOVA results [F (4, 596) = 0.600, ρ = 0. 663] showed that there was no statistically significant difference. All the students in these programmes were in agreement that access to handbooks in the School of Medicine was a challenge.

This was in agreement with the Eta and Eta squared values where the results for access to curricula (.126, 1.60%), access to teaching schedule (.163, 2.60%) and availability of qualified teaching staff (.148, 2.20%) were higher but the results for access to the handbooks (.063, 0.40%) were lower as seen in Table 4.39 on the next page:

Table 4.39: Associations of Management of Teaching and Learning Activities

Activity	Eta	Eta Squared
Access to curricula	.126	1.60%
Access to handbooks	.063	0.40%
Access to teaching schedule	.163	2.60%
Available qualified teaching staff	.148	2.20%

(Source: Field data, 2018)

There were many other reasons which may have contributed to the management of teaching and learning activities. They contributed to students GPA and the School of Medicine high examination attrition rates. The variety in handling teaching even contributed to difference in the statistical difference in the above analysis in that there were differences in Eta and Eta Squared values.

From the study, students in Human Anatomy of Bachelor of Biomedical Sciences (HAN 2510) stated that the course was not well taught due to lack of time by the lecturer for the students. In this course, one respondent even said that *am not confident of answering any question in the final examination in HAN 2510.* Some of the respondents from the survey questionnaire stated that in Bachelor of Science in Human Biology, the Microbiology (PTM 3015) course was not well taught and lecture schedule were not given to students. In addition, the lecturer did not give career insights from and the explanation was not in – depth during teaching. The respondents from Bachelor of Science and Environmental Health Programmes in Research Methodology (BMS 4415) also stated that the lecturer did not seem to have known the course well and was uncomfortable to teach statistics analysis and tests. They even proposed that *'there is need to change the lecturer in this course'*.

In General Pharmacognosy (PMY 3310), the students cited that the content presented in this course was not in line with the course curriculum. In addition, the lecturers were disorganized and most of the times lecturers were not available. In this course, there was 25% examination attrition rates indicating that failure to manage teaching and learning activities can result into many students fail to perform well and thereby affect the quality of education. Some students stated that in some courses concepts learnt could easily be applied within University Teaching Hospital (UTH) though in some cases lecturers gave foreign examples which were difficulty to apply. This contributed in some cases that students failed.

Some course lecturers were said to be organised and their teaching contributed positively to performance of students. For example, in General Pharmacology (PGY 3220), it was cited by the respondents that the course was well managed because lecturers are on time for lectures and there is proper coordination of the whole course. This course had only 6.25% failure rate and the GPA was 2.5. It was also cited that by the respondents that lecturers were well organised and coordinated with each other very well in Psychiatry (PSY 6410). In addition, the respondents stated that the lecturers in this course created a good learning environment and were understanding. Lastly but not the least, the respondents in Medical Microbiology (PTM 4210) stated that the course had lecturers who were well organised and always provided guidance to students. The course had the GPA of students as 2.80 and the examination attrition rate was 5.7%.

4.7.2 Teaching Characteristics of Staff

The responses under each variable under Teaching Characteristics of staff were averaged and the mean and standard deviation were calculated using SPSS. All the results were analysed according to programmes under study. Focus Group Discussion was done in order to get more views on the subject and the findings were incorporated. On the overall, the descriptive statistics involving the mean and standard deviation of the respondents' perceptions showed lecturers' attendance to classes, their punctuality and availability to students. In addition to this, respondents were requested to give their perception on how lecturers used Information and Communication Technology (ICT) and whether they could pass the course without attending classes.

Firstly, the Mean and Standard deviations were calculated using SPSS and the results are as shown in Appendix XV and the percentages were also calculated as shown Table 4.39.

Table 4.40: Perceptions of Teaching

Programme of Study	Lecturers attended to all classes %	Lecturers were punctual %	Lecturers were available to students %	Lecturers used ICT in teaching %	Students coped without classes %
MB ChB	65	68	69	63	59
BSc Biomed	70	68	60	48	61
B. Pharm	57	75	75	68	48
BSc Physio	58	64	68	65	62
BSc Env	58	70	74	72	53
Average	**61.6**	**69**	**69.2**	**63.2**	**56.6**

(Source: Field data 2018)

In reference to lecturers attending to all classes in Table 4.40, the respondents' perception in BSc Env (58%), BSc Physio (58%) and B. Pharm (57%) showed lower percentages indicating that some lecturers used to miss classes as compared to the respondents in MB ChB (65%) and BSc Biomed (70%) whose percentages are higher as an indication that most lecturers never used to miss classes.

On punctuality of lecturers coming to class, the respondents' perception was that most lecturers (69%) were punctual for classes. Furthermore, most respondents in all programmes stated that most lecturers (69.1%) were available to students. In this characteristic, the BSc Biomed students' responses showed the lowest percentage. Few candidates (56.6%) indicated that they could cope without classes meaning that students relied on lecturers for understanding the concepts in the curriculum.

Concerning the use of ICT, the respondents in BSc Biomed (48%) stated that most lecturers did not use ICT during teaching while the remaining programmes most respondents agreed that lecturers used ICT in lectures (all were in agreement with the percentages above 60%).
The Standard deviation (SD) values as seen from Appendix XIII for the respondents doing MB ChB showed that the answers were more different from each other (the values were all above 1.00). This meant that respondents in different courses and different years gave different answers about the teaching characteristics of the lecturers.

ANOVA was also used to analyse the Teaching Characteristics of the staff and the following results were obtained as in Table 4.41.

Table 4.41: ANOVA values for Teaching

Teaching Characteristic	df	F	Sig.
Lecturers attended all classes	4 596	8.83	.000
Lecturers were punctual	4 596	4.41	.002
Lecturers were available to students	4 595	9.59	.000
Lecturers used ICT in teaching	4 595	15.72	.000
Students coped without classes	4 596	7.72	.000

ρ = .05

(Source: Field data, 2018)

This meant that students in these programmes had different views on the characteristics under study. The reason behind this might be due to differences in the year of study and that different lecturers were using different ways of teaching.

The other analysis done was using Chi-Square statistic to establish if there was any relationship between teaching characteristics and the Grade Point Average of the students in the School of Medicine of the University of Zambia. The analysis from the SPSS showed the following results (Table 4.42) on the different variables assessed.

Table 4.42: Chi-Square Values of Teaching Practices

Characteristic	**Value of test statistic**	**df**	**Sig.**
Lecturers attended to all classes	124.585	16	.000
Lecturers were punctual	41.062	16	.001
Lecturers were available to students	86.891	16	.000
Lecturers used ICT in teaching	95.978	16	.000
Students coped without classes	75.460	16	.000

*The ρ value < .005

(*Source: Field data, 2018)*

In all characteristics, the results showed that there were significantly statistically different as respondents in different programmes and courses had different experiences with the teaching practices of the students. Some of the experiences were positive while some were negative and these might have contributed to students' GPA and the school' examination attrition rates. In order to understand the cause of this statistical significant difference, the students' views on lecturers' teaching practices were reviewed. In this case pseudonyms using letters were used to protect the identity of the lecturers' involved.

The respondents and discussants gave various reasons of how lecturers contributed to their to students' performance. The reasons were grouped into different themes. Some characteristics

above were grouped while others were separated for the purpose of bringing more understanding on the subject matter.

4.7.3 Attended to all Classes and Available for Consultation

The study evaluated the lecturers' availability as one of the variables of teaching characteristics of staff. When staff were available, students were able to consult them and this helped students to understand how things they could not understand in classes. It was discovered that in courses where the lecturers were available for consultation, students did well in such courses as compared to courses where lecturers did not give time to students to consult them.

For instance, in the case of lecturer AA, a lecturer in the department of Anatomy, the students cited that he used to be always busy and missed many classes. The students stated that he was rarely found in the office for consultation. They even proposed that some other lecturers needed to help him. They also suggested that the department recruits other staff. Nevertheless, when a comparison was done to the GPA and examination attrition rates in the courses which he was teaching, both GPA and examination attrition rates were above average.

During the study from the survey questionnaires, some students from the Department of Pharmacy stated that *the lecturers in General Pharmacology (PGY 3220) rarely attend to classes.* In this course, the GPA during the year of study was 2.50 and an examination attrition rate was 6.25%. In addition, during the Focus Group Discussions, some discussants noted also that 'Lecturer AB in Physiotherapy mostly misses classes' while some mentioned that Lecturer AC seemed to have been always busy and did not mostly attend to lectures.

4.7. 4 Punctuality

In any curriculum, the number of hours are allocated to a particular course as contact hours so that lecturers are able to teach the content and finish and bring about understanding among learning. If the lecturers do not keep time, lecturers either can rush through leaving students with less understanding. In some cases, lecturers failed to finish teaching what was stipulated in the curriculum. In this study, the students cited punctuality as one factor that affected the lecturers not to complete the syllabus.

The study revealed that some lecturers were available for consultation and this improved the students understanding and made the students to perform well in such courses and managed to finish the syllabus. Such lecturers were punctual for classes. The lecturers in Psychiatric (PSY 6410) said to have been available to students and were friendly. As a result, the GPA in this course during the period under study was 3.7 and no one failed. Another team of lecturers who were cited to have been available also included those in Paediatrics and Child Health (PCH 5010). The students stated that lecturers in this course never used to miss classes and were available for consultation.

Other lecturers who were available and contributed to students' good performance were Lecturer BA whom the some students cited as *always available for consultation and even helped students on one to one basis*. Lecturer BB was also cited to have been available for consultation. Students acknowledged Lecturer BC for not only being available for consultation but always informed the students the office hours for consultation which he honoured by meeting them during the time tabled hours.

However, some lecturers could not finish the syllabus and were not punctual for classes. Some examples of the lecturers who had a challenge with finishing the syllabus included Lecturer AA, Lecturer AB and Lecturer AI. These lecturers were never punctual to class and students did not do well in their courses. Lecturer AI even used to leave class as early as one hour despite going late.

Despite having a lot of other responsibilities by some lecturers, some were still punctual for their classes and even used to have make up classes for the missed lessons. Such lecturers were cited by students to have contributed to their good performance. These lecturers included Lecturer BC who was always punctual for classes and motivated students to do the same. Lecturer BA was commended for ever being punctual while Lecturer BB was cited as always punctual for classes, never missed lectures and was always available for clarification.

The last two characteristics on the use of ICT in teaching and the concept of students coping without attending classes were split into three other namely; teaching skills, knowledge of the subject matter, stimulating students' interest and how concepts were explained in the course. This was done after consolidating the comments from the respondents.

4.7.5 Teaching Skills Used by Lecturers in Teaching

Apart from lecturers being punctual and available, students highlighted the teaching skills and stimulating students' interest as used by different lecturers as another contributing factor to their performance. Some lecturers in the School of Medicine were commended by respondents on teaching skills. Students recommended some lecturer who were perceived to have had good teaching skills which contributed to students' performance. For instance, Lecturer BD was cited by students that she communicated effectively and encouraged students' participation in during lessons. The same Lecturer was stated to have been enthusiastic about the course and explained things very well. Lecturer BB was recommended for providing hand outs and lecture notes to students. In addition to these lecturers, Lecturer BC was cited that he *'makes learning interesting and helps students think critically. He has the heart for teaching and knows what he is doing. He is a good role model who desires students to progress'.*

Some lecturers in addition, were there to stimulate students' interests and encouraged them to work hard and perform better. Such lecturers included Lecturer BA and Lecturer BG. The two were said they used to motivate the slow learners to work hard and even met the students on at their own free time. Students stated that they could always wait for these lecturers' classes.

Despite all the above lecturers whom the students stated that they had good teaching skills, some students stated that Lecturer AD just used text books in teaching and did not explain in depth the subject matter to the students. Some students also stated that the lecturers in General Pharmacology (PGY 3220) needed training in teaching methodology. The lecturers in this course were said to be missing classes most of the times.

Students also cited the use of traditional methods in teaching as another factor that contributed to their performance. Lecturer AB in Physiotherapy was cited as one that not only did not give out notes and but also used chalk board only without ICT and used to leave the students without notes to copy. In the same department of Physiotherapy, students stated that Lecturer AE's teaching was complex and did not bring about understanding. In addition, students complained that she never used to give notes.

Other lecturers whom the students proposed that they needed to improve on their teaching skills included; Lecturer AF whose approach to teaching was considered fast, some students stated that the lecturer was very impatient with students. Lecturer AC was cited *as one of the lecturers who did not know how to teach and took a class time telling stories not related to*

the course. They stated that this lecturer never used to give out the course outlines and objectives of the course. Lecturer AG did not give updated information on the subject matter and just read slides instead of explaining. Lecturer AH did not give notes to students when lecturing and Lecturer AI also never used audio visual aids to bring about understanding and but just read notes during the lessons without explaining.

Some students pointed out that some lecturers who never stimulated their interest and this contributed to students' low GPA in the courses they were teaching. Lecturer AF was cited to have been rude to students and always intimidated students. Lecturer AC showed no interest in teaching and therefore never motivated the learners too. Another lecturer who did not stimulate students also included Lecturer AO. Lecturer AO never allowed questions from students but instead intimidated them.

4.7.6 Students Coped Without Classes

The respondents stated that in some courses the concepts were clearly explained. In such courses (as shown below), students seem to have done well. The respondents stated that the content in such courses were applicable and thereby motivating students to relate what they learnt to every day practice.

The study showed that in some courses, students coped well in the courses. For example, respondents stated that the concepts taught in Pharmaceutics (PMY 4030) are very applicable. The information in this course was up to date. In addition, lecturers also provided much information to bring understanding to the students. *The lecturers in Pharmaceutics (PMY 4030) provide an excellent layout of lectures and concepts are well*, explained one of the discussants during the Focus Group Discussion. In the Survey Questionnaire, some respondents cited that '*the concepts in Psychiatric (PSY 6410) are well explained and all points are well presented in a systematic way'.* Respondents of Bachelor of Sciences in Human Biology stated that '*the lecturers in Biochemistry (PGY 3419) uses best methods of teaching and give adequate information for students to understand'. In this course the GPA was 3.30 indicating that most students understood the concepts in the course.*

In Pharmacy Practice Foundation (PMY 3410), students said that the lecturers in this course used to simplify concepts and they demonstrated that they understood the subject matter. In this course the GPA was 3.70 which was higher than many other courses. From the Bachelor of Science and Environmental Health Programmes, respondents cited that *in Communicable*

and Non communicable Diseases (EHS 2420) and General Principles of Public Health and Environmental Health (EHS 2410), the academic staff involved gave detailed explanation of concepts and this resulted into no failure in these two courses.

Other lecturers were observed by students to have demonstrated knowledge of subject matter in the courses they taught. Lecturer BA was cited to have been very resourceful and demonstrated understanding the course content. The same lecturer cited to be explaining things in detail. Other lecturer whom some respondents cited to have demonstrated understanding of the subject matter included Lecturer BE. This Lecturer was cited that *the lecturer used to give detailed notes and showed to understand what he taught from the way he articulated things very well.*

Lecturer AA was also cited by the students that *he knows knew anatomy in all aspects*. The lecturer made students understand and used to answer all questions. Some students commented that this lecturer *'almost makes all students to become anatomists'*. This is the same lecturer who was cited as not punctual and missed classes. Due to understanding of the course by the students, they still manage to perform well in his course.

The study also revealed some misgivings in teaching practices within the School of Medicine. One of them was the involved lecturers' understanding of the subject matter. Understanding the subject in teaching is also very important in quality of teaching. Someone cannot impart on others what he doesn't understand well. The study revealed from the students' respondent some lecturers lacked some subject matter and this contributed to students' high failure rates in their courses. Lecturer AC was cited as one of those who did not seem to have known the subject content. Students even proposed that this lecturer needed to be replaced by Lecturer AJ.

Some lecturers were noted to have been spending a lot of time talking of things which did not relate to the course as a way of wasting time but failure to explain concepts in the course. Such a lecturer was Lecturer AK. Lecturer AH was again cited not to have been confident when explaining concepts. Some lecturers were noted to over rely on the use of overhead projector but did not explain things. One such lecturer was AL. Lecturer AL seemed to have had shallow understanding of the course and her teaching did not promote critical thinking. Lecturer AM also could not follow the course schedule but opted to repeats lessons which bored the students.

4.7.7 Views on Teaching Approaches

The following are the views from Focus Group Discussions, self-evaluation questionnaire from lecturers and also from the interviews done with the selected focal point persons in the school regarding teaching approaches. The Table 4.43 shows the positives and misgivings of respondents' views about teaching approaches.

Table 4. 43: Positives and Misgivings about teaching approaches

Positives	**Misgivings**
The course outlines are given to students.	*Teaching is quite challenging with very limited support facilities to disseminate knowledge and more of practical skills to the students.*
Our confidence as students have been improved by the School of Medicine from the qualified lecturers the school employs.	*Some lecturers stated that they did not participate in the development of the courses they are teaching.*
In Pathology and microbiology, most lecturers never miss though there is one lecturer who ever gives excuses.	*Some academic staff indicated that they were in need of some training in teaching methodology while others stated that they are satisfied with the teaching skills they have.*
Most of the things we learn in class are applicable.	*Some instructions from lecturers are not clear for the laboratory work.*
	Lecturers who have not done teaching methodology should do so through the department of Medical Education and Development (DMED).
	In some courses concepts learnt can easily be applied within University Teaching Hospital (UTH) though in some cases lecturers give foreign examples which are difficulty to apply.

	Other lecturers go for classes late and even miss classes without notifying students.
	Some lectures use intimidating language.
	Some academic staff are not oriented by Heads of Department when they are employed. In addition, they are not availed with the whole curriculum of the department and the school so that staff is aware of what is offered in other departments.
	Some lecturers just read slides without explaining and it's not even beneficial to attend such lectures.
	In some courses, students complain of not being given course outlines and courses objectives.
	Inadequate furniture for the students in some classrooms.
	The Laboratories do not have enough space to occupy all students in some courses. In addition, the equipment and reagents spacemen has been a challenge in some cases.
	In some courses the lecturers do not give out course outlines to students.
	The classroom facilities are not satisfactory to support the good learning environment. In addition, the teaching space is not enough to fit all the students in some courses.
	There is need to review the content in some courses so that we learn things which are applicable.

(*Source: Field data, 2018)*

4.8 Views on Assessment Processes

The third research question, **"How is assessment of students at the UNZA Medical School conducted as understood by staff and students?"** was answered through the undergraduate questionnaire booklet from the assessment characteristics table, the Focus Group Discussion and the self- evaluation survey.

The goal of the examination system is to pass all candidates who demonstrate adequate knowledge, competence, and attitude espoused in the curriculum and to fail those who have not. The study therefore evaluated the assessment standard evaluation to determine whether the School of Medicine is offering an educational standard that is comparable to best practices of teaching and learning Accreditation bodies.

The assessment characteristics evaluated are generally accepted as requirements for a standard examination. In order to assess the assessment standards characteristics participants were given a questionnaire (Appendix II) containing different attributes.

The responses under assessment standards characteristics of examinations were averaged and the mean and standard deviation were calculated using SPSS. All the results were analysed according to programmes under study. Focus Group Discussion was done in order to get more views on the subject and the findings were incorporated.

The assessment standard characteristics used in this study included the following:

- *fair grading of assignments, tests and examinations,*
- *timely giving of feedback on student performance on assignments and tests,*
- *detailed and helpful feedback on student performance on assignments and tests,*
- *adequate matching the scope of the material covered with assignments, tests and examinations,*
- *whether assignments, tests and examination mostly promote memorizing*
- *reflecting the weighting the marks of assignments, tests and examination on importance of topics,*

- *reflecting the weighting the marks of assignments, tests and examination on the bulkiness topics and time spent on them and*
- *subjectivity in the grading of assignments, tests and examinations.*

On the overall, the descriptive statistics involving the mean and standard deviation of the respondents' perceptions on the characteristics of the assessment standards were as shown on Table 4.44.

Table 4. 44 Perceptions of Assessment Practices

Programme of Study	Fair grading %	Timely feedback	Detailed feedback	Matched the scope	Promoted memorising	Weighting (importance)	Weighting (bulkiness)	Subjective grading
MB ChB	61	42	44	60	76	61	57	65
BSc Biomed	72	60	59	80	68	70	60	62
B. Pharm	75	60	61	76	66	69	62	60
BSc Physio	61	46	47	67	73	67	60	68
BSc Env	70	53	49	73	64	66	63	62
Average	**67.8**	**52.2**	**52.0**	**71.2**	**69.4**	**66.6**	**60.4**	**63.4**

(Source: Field data, 2018)

From the table above, the results revealed the following:

Most respondents agreed on average that the grading in the School of Medicine was fair with the percentage of 67.8%. The highest programme on this characteristic was B. Pharm (75%) and the lowest Standard Deviation (SD = 0.82) as shown in Appendix XIV indicating that most of the students in this programme agreed. The average standard deviation for this characteristic was SD = 1.04 showing that some respondents in other programmes indicated otherwise.

On timely feedback, just above half (52.2%) of the respondents stated that the feedback was timely while the rest (47.8%) stated otherwise. There were a lot of variations in the responses to this as the Standard Deviation was SD = 1.13. This meant that some agreed in other

programmes while others disagreed. This was evident even from the differences in the percentages from 42% for MB ChB to 60% for BSc Biomed and B. Pharm.

In addition to feedback, the results showed that the feedback given was on average not detailed to provide guidance to the students with an average percentage of 52% demonstrating that the respondents were not satisfied with the feedback given. The average standard deviation under this characteristic was 1.11 which indicated that there were some respondents in some programmes where those who agreed were more (BSc Biomed had 59%) who agreed that the feedback was detailed.

Concerning the characteristic of assessment matching with the scope material covered, apart from the respondents in MB ChB programme where the percentage was 60%, all other programmes had the percentage above 65% indicating that most of the respondents agreed that the assessments marched with the scope. In reference to standard deviation, there was a lot of agreement among the respondents in these all programmes (with SD < 1.0 except for MB ChB which has the Standard Deviation value of 1.17.

The results from the table also showed that the assessment given in the School of Medicine promoted memorising. As indicated in the average students responding at 69.4%. In all study programmes, respondents were in affirmation with this as all had the students agreeing with the percentages above 60%. The highest percentages came from MB ChB (76%) followed by B. Physio (73%). Despite these high percentages the respondents were not all in agreement as the average standard Deviation was the highest among the variables under study (SD = 1.23).

Table 4. 43 on the previous page showed that most respondents (66.6%) agreed on average that the weighting reflected the importance of the material covered in the School of Medicine with BSc Biomed having the highest (70%) and among those with lowest Standard Deviation (SD = 0.82) showing that the respondents in this programme agree more that the weighting reflects the importance of the material covered.

In relation to weighting reflecting bulkiness, the results showed that apart from the respondents in MB ChB programme where the percentage was 52%, in all other programmes, more respondents agreed that the weighting reflected the bulkiness of the material covered as the ratio was more (had 60% and above). There was a lot of disagreement among the respondents in MB ChB programme as the Standard Deviation value was above 1.00 (SD = 1.16). Marking in the School of Medicine, the results showed that apart from respondents

from B. Pharm programme whom showed about 60% only, the rest had more than 60% with BSc Physio with the highest number of respondents agreeing (68%).

Another analysis used in in assessment standard was ANOVA. So using the one way ANOVA, as regard to variables under study at $p<0.05$ the results were as shown in Table 4.45.

Table 4.45: ANOVA Values for Assessment Processes

Characteristic	df	F	Sig.
Grading was fair	4 594	12.017	.000
Timely feedback	4	18.428	.000

	596		
Feedback detail helpful	4 595	16.037	.000
Assessment matched the scope	4 596	24.172	.000
Assessment promoted memorising	4 596	5.690	.000
Weighting reflected importance	4 595	5.469	.000
Weighting reflected bulkiness	4 596	2.227	.065
Grading was subjective	4 596	3.267	.012

(Source: Filed data, 2018)

The results show that apart from the characteristic that weighting reflects bulkiness as an assessment standard in the School of Medicine with p = 0.65, the rest of the results showed that there were statistically different as shown in the table above. This means that in all programmes, students were in agreement that the weighting reflected the bulkiness of the material covered in the course.

Then the Eta and Eta squared was calculated to verify if the above ANOVA values were in agreement and the following table show the results.

Table 4. 46: Associations of Assessment Processes

Programme of study	Eta	Eta Squared
Grading was fair	.274	.075
Timely feedback	.332	.110
Feedback detail helpful	.312	.097
Assessment matched the scope	.374	.140
Assessment promoted memorising	.192	.037
Weighting reflected importance	.188	.035
Weighting reflected bulkiness	.121	.015
Grading was subjective	.146	.021

(Source: Filed data, 2018)

The results of Table 4.46 shows that ANOVA was in agreement with the Eta and Eta squared values where the results for all the other variables were similar (higher) but the results for weighting reflecting bulkiness were different (lowest Eta = .015 and Eta Squared 1.50%) as seen in the table above.

The statistical differences observed in ANOVA, Post Hoc and Chi – Square analyses were as a result of many factors. The next section looks at some of the factors which might have contributed to the similarities and difference in the values above. In addition, the comments from the respondents provided the reasons for the causes of low or high GPA and examination attrition rates. The characteristics above and other emerging issues are discussed below.

4.8.1 Marking

The students observed some negative practices in marking while some respondents cited some lecturers who were objective in marking of both course work and final examination. There were evidences of good marking (fair and grading was objective). This contributed to students' high GPA and helped many to pass the examinations. Lecturer BH and BF were

commended by students in the way they marked the assessment items. Students stated that the two marked very fairly and few or no students complained of the marks awarded to them. In addition, Lecturer BI was cited to be objective in marking. Lastly, Lecturer BG was commended for fairness and clarity in marking.

Some of the assessment practices in some courses might have contributed to low students' GPA and examination attrition rates. There was evidence of Negative marking (where a wrong answer is given a negative mark) in pathology for wrong answer is discouraging. Students felt that negative marking needs to be revisited as it contributes to low marks scored by students. MB ChB students also observed that the marking of Lecturer AN in Community Medicine (DPH 6024) was so rigid. There was a practice in Surgery Clerkship II (SGY 6210) where students were failed just for failing one OSCE spot. The students proposed that this needed to be visited as it might have contributed to low GPA of the students' results. In 2014/2015 end of year examination, the GPA in this course was 2.00. Students also cited some subjectivity in the marking in Internal Medicine courses especially long cases where they researcher quoted them saying, *'the marking is very subjective as it was based on the examiner and how they looked at the candidates'.* Lecturer AQ was stated to have been very inconsistent and not clear in marking leaving students wondering where they went wrong.

4.8.2 Scope of Assessments

The assessment process can affect the overall learning process of the learners and their academic performance. If the scope of assessment does not match with what was covered, students might be disadvantaged. Students normally study all things and if the assessment prepared just covers a small part of the content of the course, some students stated that this led them not to do well in the examination. The assessment tools must measure what they are to measure. One of the qualities of good assessment tools is giving enough assessment items that cover all components of the curriculum. This was another characteristic that showed some statistical difference in all analyses done.

Some lecturers were commended for bringing assessments items which were in line with what is in the course curriculum and what they teach (PSY 6410: Psychiatry) and the examination and test items which were based on what was taught (PSY 4020). In both

courses there were no failures in the examination in 2014/2015 academic year and the students GPA was 3.70 in both.

Other courses and lecturers who were commended by students included: Lecturer BJ and Lecturer BK who were cited that they brought questions in the tests and examination which were content based. The assessments in Basic and Applied Human Anatomy and Development (HAN 3010) were cited as *inclusive of all topics taught* and the assessments Paediatrics and Child Health (PED 710) were content based. The results in both courses had examination attrition rates as 0.00% and 5.39% respectively. The courses which the lecturers were teaching had the GPA of the students above 2.50.

There were some misgivings in some courses in the way assessment practices were done. Some students in B. Pharm stated that lecturers in General Pharmacology (PGY 3220) gave poor assessments with no clear instructions and the assessments were given on short notice. In this case the questions did not relate to what was covered in the course. The course had students' GPA as 2.5 and the examination attrition rate was 15%.

Students in BSc Physio cited Lecturer AB that the lecturer used to give wrong assignments and even repeated questions in some cases. In the case of Lecturer AC, students stated that the assessments given were not practical while Lecturer AH used to give bulky examination. Some lecturers were cited to have been giving assessment questions which were not taught and in some cases things which were not in the syllabus. The students cited Lecturer AI as '*rarely gives assessment on what is covered',* Lecturer AP saying *'gives test items on what he did not cover in class'* and Lecturer AR in Biomedical Sciences who did not follow the guide in the course outline when preparing the assessment items.

4.8.3 Weighting

One of the qualities of good assessment tools is giving enough assessment items that cover all components of the curriculum. In this study, the respondents gave some views of some lecturers and courses of the assessment practices which did not provide adequate items in their courses and some which were in line with the assessment weighting guidelines.

Students stated that in some courses, lecturers did not allocate the marks according to the weight of the materials asked in the questions. Some students in MB ChB spotted out that the assessments given in Community Medicine (DPH 6024) were not enough. There was only one assignment given out instead of four as stipulated in the curriculum. Also in Pathology (PTM 4210), there was only one test given to them the whole year especially the Histopathology part.

In addition, students in B. Pharm said that there were too many assessments in Pharmaceutics which made students to concentrate on one course ignoring other courses. In BSc Human Biology, students stated that Clinical Methods and Skill (DME 4115) was too bulky and there were a lot of assignments resulting into students failing to do assignments in other courses. Students proposed that this course then needed to be changed into full courses from a half course. The respondents stated that the allocation of marks in some questions were not very fair as there was no marking guide. In one instance, '*the definition of Diarrhoea carried 10 marks'* and when the lecturer was interviewed about the marking guide to show allocation of marks, he stated that *he did not prepare it.* When the researcher probed further about how he marked that question, the lecturer responded saying that *he had the answers in his brain.*

4.8.4 Timely and Helpful Feedback

Some students stated that some lecturers in some courses provided feedback on time and others provided detailed and helpful feedback. Some of the lecturers who were commended by respondents were: Lecturer BA (feedback on time and was detailed. The lecturer even discussed with students on one to one basis on areas of improvement), Lecturer BJ and Lecturer BK who were also always on time in providing timely feedback.

Lecturer BD was highly commended by students for providing detailed feedback which guided students on where they went wrong. The other lecturers who were cited to have given detailed feedback on time were Lecturer BE, Lecturer BF, Lecturer BG and Lecturer BC. In all these lecturers' courses, the students GPA were high and very few students failed in their courses.

However, in some courses, the students complained of not getting the feedback from assignments and laboratory work. Students also added that the feedback given did not help them as it was not detailed enough to provide guidance. In addition, students stated that in

some courses students used to go for examination without knowing their Continuous Assessment grades. Most lecturers admitted that they had challenges with marking students' work on time due to large number of students in their courses.

Students also in BSc Physio cited Lecturer AB that the lecturer rarely gave feedback when he gave out assignments. Lecturer AC in Forensic Medicine and Medical Jurisprudence (PTM 6410) was cited not to have given adequate feedback to students. Also in internal Medicine, the tests papers were not given back to students on time. In Anatomy, the students stated that the courses taught by Lecturer AA had the Continuous Assessment ever released very late. Other lecturers who did not give the feedback on time included Lecturer AO and Lecturer AQ. The students said the delay affected their performance in the final examination as they could make similar mistakes in the final examination.

4.8.5 Assessment that Promote Memorising

The respondents in the study stated that type of items were not easy to be answered in the final examinations. They stated that the performance of the students were also affected by such type of questions. This was evaluated o as to investigate how it affected the students' GPA and the examination attrition rates.

Students cited Lecturer AO as one who examined students on questions which needed them to reproduce the notes from the lectures. The students also observed that the same lecturer had the tendency of repeating from the previous years. In this study, lecturers who prepared such type of questions had high pass rate in their courses. Such lecturers included: Lecturers BK, AA and BM whose assessment items were termed to have promoted critical intellectual thinking and required more application and practical in answering them.

4.8.6 Views on Assessment processes

The following are the views were generated from Focus Group Discussions, self-evaluation questionnaire from lecturers and also from the interviews done with the selected focal point

persons in the school regarding teaching approaches. The following table (Table 4.47) shows the positives and the misgivings of the respondents' views about assessment processes.

Table 4. 47: Positives and Misgivings about assessment processes

Positives	**Misgivings**
Most lecturers stated that they are confident with the mode of assessments they give to students.	*Lecturers complain of the knowledge levels of students as seen from their work.* *Some lecturers complained that some students do not hand in their work on time.*
In most cases, the assignments are given on time	*There are very few materials which are found on MOODLE and internet is only found in few places.*
	We rarely get the feedback and if given, with few or no comments.
	In some courses, the students have complained of not getting the feedback from assignments and laboratory work. Students also added that the feedback given does not help them as they are not detailed enough time provide guidance. In addition, students stated that in some courses they go for examination without knowing their Continuous Assessment grades.
	Some lecturers assess the content in the examination which was not covered during classes.
	Most lecturers admitted that they had challenges with marking students' work on time due to large number of students in their courses.

(*Source: Field data, 2018)*

4.9 Key Findings on Raising Students' GPA and Lowering Attrition Rates

4.9.1 Course Management

a) Institutional Characteristics

The Medical School of the University of Zambia during the study met most of the required score areas of the WFME international standards for Basic Medical Education. The only area of improvement which the school needed to work on was Educational Resources. The study revealed that the number of students enrolled did not match with the availability of learning space and library facility.

b) Managing Courses

Eighty-two (82%) of the students cited the course workload for most of the courses in the School of Medicine as heavy. The time spent on these heavy courses was perceived not to be enough by most students (63%). This made it difficult for the lecturers to complete the syllabi. The students were required to study on their own concepts, which had been perceived as difficult. This contributed to students' low performance in such courses. In some study programmes, there were too many half courses to be managed by the students during final examinations. Students stated that they did not have enough time to study for many half courses. More than half of the students (65%) stated that they perceived the courses in the School as difficulty as content was not understood by the students. In such courses, students stated lack of in-depth explanation, inadequate application of the content and poor management of the courses as contributing factors that made the courses difficult. However, in courses where there was good course management, in-depth explanation and relevant content, the study showed that there were low examination attrition rates and high GPA. From the results, this entailed that course management affected the outcome of students' performance

4.9.2 Teaching Approaches

In reference to teaching approaches, the study revealed from the students' perception that the School of Medicine had well qualified staff (57.4%) in the content of the courses they taught. The challenge was that almost half (49.4%) of them did not avail the students with teaching schedules and 47% did not avail the students with course curricula. The worst was that 62.6% did

not avail the students with handbooks. In addition, some lectures never stated the course objectives at the beginning of the lessons thereby making it difficult for students to follow.

Furthermore, some lecturers either used to miss lectures or went for lectures very late. Such lecturers never completed the course content but brought questions about concepts they did not cover in the final examination. On the other hand, some lecturers were cited as being resourceful, available, and helpful to the students. Most of the lecturers (63.2%) used ICT in their teaching. However, some who used power point presentations never explained but literally just read what was on the slides. Therefore, monitoring and evaluation of teaching and learning in order to come up with specific needs of training for professional development of the academic staff was recommended as a way of raising students' GPA and lowering examination attrition rates.

4.9.3 Assessment Practices

The study revealed that some of the assessments used were not relevant as some assessment items in some courses were not aligned to learning objectives and instructional strategies while others did not match the full range of cognitive levels. In such cases, the students' performance was low. It was also noted that some assessment items lacked validity. Candidates could not understand the questions in some cases while in other cases the items which were included in the examination were not covered in the lectures. All in all there was no timely feedback (47.8%) and, where it was done, it lacked guiding comments (48%). In some cases (28.8%) assessment tasks were misaligned with learning objectives.

The assessment practices were also said to somewhat be lacking in objectivity as some students complained that marking seemed to be depended on names of students. In the case of essay type of assessment, students stated that there were a lot of impression marking with only a tick on a page and a mark. The grading was perceived as fair with 67.8% of the respondents affirming that the

negative marking was not favoured. The major problem of assessment in the School included lack of helpful detailed feedback where 52% of the respondents cited that there was no detailed and helpful feedback. In some courses, students did not get feedback. All they got was a grade or percentage which did not advance any learning. Consequently, in some cases, students failed the similar questions both in the tests and examination due to lack of feedback.

However, in some courses lecturers gave timely, helpful and detailed feedback which enabled students to improve and perform well in their final examinations. There was high GPA in courses where lecturers prepared assessment items which were in line with objectives and instructional strategies.

4.10 Conclusion

This chapter presented the findings from the study. The researcher presented the primary and secondary data and later combined the data analysis in responding to the objectives. The primary data comprised of pilot – tested results, response rates and demographics of the respondents. The secondary data showed the Excel results of students' GPA and the examination attrition rates for the Medical School results from 2008 to 2014. In addition, the secondary results included the number of graduating students for 2015 and 2016 academic years. The chapter also presented the codes and categories that emerged from both the interviews and the FGDs.

The chapter further presented the descriptive statistical results from the SPSS and related them to qualitative data analysed. The key findings from interviews and FGDs seemed to affirm the findings from the two surveys from the students and the lecturers. The results showed that the School needs to improve on Educational Resources, that the course workload is high and time allocated to some courses is inadequate and that some lecturers do not give students handbooks. The next chapter, theoretical synthesis and interpretation of the findings as well as possible explanations and propositions are discussed, relating the findings to the initial objectives of the study as well as to key literature and theory that informed the study.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 Introduction

This chapter presents the discussion of findings of the study in line with the four research questions which the study sought to answer. The following are the research objectives which guided data collection for the study:-

(a) To establish how courses of undergraduate students were managed at the Medical School of the University of Zambia.
(b) To explore the teaching approaches used of undergraduate students at the same institution.
(c) To examine assessment processes and
(d) To suggest a conceptual framework to improve students' academic performance in the Medical School of the University of Zambia as a result of data from items (a) to (c).

Section 5.1 presents data on how undergraduate courses were managed at the Medical School of the University of Zambia. This has two subsections, namely, subsection 5.1.1 and 5.1.2. Subsection 4.1.1or 5.1.1 discusses the institutional characteristics which the accreditation body uses as standards in evaluation. In this subsection, an overview of accreditation standards evaluation is discussed. A comparison to the 2003 self-evaluation report findings with the findings in this study is discussed. Reference is made to World Federation for Medical Education (WFME) standards in order to rate the School of Medicine as by 2015. Subsection 5.1.2 presents the perceptions on course management by respondents as conducted by the Medical School of the University of Zambia.

Section 5.2 presents a discussion of findings that helped answer the second question of the study. The findings discussed are on how the Teaching and Learning activities are conducted and the Teaching Characteristics of staff in the School of Medicine of the University of Zambia. Section 5.3 presents a discussion of assessment processes currently being implemented at the medical school of the University of Zambia. Section 5.4, presents the theoretical implications of the study. Section 5.5 presents the discussion on the policy implications and the newly formulated Conceptual Framework. The final section (Section

5.6) presents the chapter summary. It should be mentioned that all sections make cross sectional reference to relevant concepts being discussed and the 2014/2015 Academic Year Examination Results.

5.2 Perspectives on Management of Undergraduate Courses at the Medical School

5.2.1 Institutional Characteristics

Institutional Characteristic is one of the things that the accreditation bodies evaluate before certifying any learning institution that can be allowed to provide the required type of services to the society. The accreditation mostly is dependent on access and learning environment. This is one of the five domains of the expected standards (Gardiner, 2016). Under this standard, there are four major themes which were under study and these are discussed in this section. They include:

1. Equal access to quality and educational opportunities.
2. Secure environment which is safe and able to promote the protection and psychosocial well-being.
3. Appropriate capacity for class size.
4. Adequate classroom furniture and fitting for the size of the class.

This study evaluated the accreditation standards to determine whether an external accreditation body such as the Health Professionals Council of Zambia (HPCZ) would vouch for the School of Medicine educational standards. The focus of the accreditation standards evaluation is on quality standards so that all partners to the institution can be assured that the objectives of the programmes and educational activities are adequately defined in order to be made fully achievable. The main educational standards in the School of Medicine, University of Zambia in relation with the external accreditation body Basic Standards revealed by the study are discussed in Sub-sections 5.2.1 to 5.2.8. The findings discussed below highlight whether the sub-themes mentioned above were under the standard of access and learning environment.

5.2.1.1: Mission and Objectives

One would expect an educational institution to have a mission statement that expresses a sense of its educational vision, particularly what it expects its students to learn and how that learning can be used to benefit the social order. (Gardiner, 2016) stated that educational vision should be deeply rooted in the institution's identity and practices. The School of Medicine mission statement states, "*To provide quality education in health sciences producing competent graduates who value lifelong learning and are well prepared to undertake specialist training programmes and able to provide patient care and leadership in medical research that addresses the priority needs of Zambia"* as stipulated in the School of Medicine (SoM) 2012 – 2016 Strategic Plan (SoM, 2012). The first objective in the same strategic plan (2012 – 2016) states, '*To provide quality training in health care in order to develop and enhance skills and competencies of students'*.

Sixty three percent (63%) of the students in the School of Medicine were aware of the Mission, Objectives and Competencies of the School but very few were able to state them. This shows that mission, objectives and competencies were not deeply rooted in them due to lack of engagement. Kuh *et al* (2005) who studied "student engagement" showed that if students are aware of the mission and objectives and understand them, the performance in their academic work is higher. The findings in the study showed that in courses (PSY 6410 had 0.00% examination attrition rates in 2014/2015 academic year) where lecturers explained the course objectives the performance of students was better than in courses where course objectives were not explained (PSY 4110 had 32.17% examination attrition rates). Therefore, it is important to engage students in institutional characteristics so as to help students make goals in line with the institutional vision for them to succeed academically.

There were four questions which students were asked to answer under this factor. When asked whether the School of Medicine had defined its mission and objectives, 63% of the respondents were in agreement. They stated that they had seen the vision and the mission statement in the Dean's Office and on some notice boards. When asked as to whether they were able as students to state the School's mission and objectives', only 49% stated that they were able to state it. In addition, the students were asked whether they were aware that the School of Medicine had defined the competencies which students must graduate with, 65% affirmed but when asked if they were able to state them, only 52% stated that they were able to do so.

From the results, it was observed that though the students were aware of the School Mission, Objectives and competencies, they failed to quote the School Mission statement, vision and competencies. The Post Hoc Turkey results showed that most students were not able to state the School mission and objectives (low Eta = 0.021) and they were not able to state all the School competencies (Low Eta = 0.022) as compared to being aware about the Mission, objectives and competencies with Eta of 0.14 and 0.12, respectively.

This showed that the students were not oriented on institutional characteristics. In order to solve this challenge, the School needed to organise an orientation period for all those who enrol at Ridgeway Campus where the School mission statement, vision and competencies should be explained. These mission statement, vision and competencies should be on all correspondence that the School makes with the students. This would serve as a reminder and later would become part of every student in the school.

After all students are oriented with institutional mission, goals and objectives, the Departments need to link the programme mission and objectives to the one for the School. Later, when the students start attending classes, the course lecturers need to explain the course objectives and educational objectives and link them to programme objectives and mission. When this is done the students in the School of Medicine would incorporate these in their studies and would work towards achieving the institutional goals. This can later contribute to raising the students' GPA and lowering the examination attrition rates as seen from Kuh *et al* (2005) study on student engagement.

5.2.1.2: Educational Programme (Curriculum)

In this study when students were asked whether the School of Medicine had clearly stated the curriculum model it had adopted (Traditional, Innovative, and Mixed), 45% of the students expressed uncertainty about the educational curriculum model being used by the School of Medicine and only 30% stated that they were aware while the other 25% disagreed. The percentage of students who were not aware added up to 70%. The higher percentage of students who were not aware was a clear indication that the School of Medicine did not have a clear guidelines on orienting the students on the curriculum model that it adopted. The

Assistant Dean (General)'s office affirmed this. The School of Medicine curricula insists on competence based training and innovation in its mode of delivery.

In addition, when students were asked whether the lecturers were availed with detailed curriculum of their programmes (including curriculum structure, courses, course content, pass/fail criterion, teaching methods and duration), 65% of the students agreed that they were availed with the detailed curriculum. Most of the students who agreed were from MB ChB (70%), BSc Biomed (67%) and B. Pharm (66%).

In this case, the study showed that the School of Medicine was doing well in most Departments in providing the educational programme materials to students. The Departments of BSc Env and BSc Physio had 45 % and 43%, respectively, of the students agreeing that they were provided with educational programme materials. The two departments should learn from the other three so that there is uniformity in helping students understand their courses well. This would help the students work hard and achieve the stipulated goals and reduce the examination attrition rates in the School of Medicine.

It is important to note that the curriculum and course outlines reflect the academic mission and philosophy. Wentzell (2006) defined curriculum as a structured document that delineates the philosophy, goals, objectives, competences, instructional resources and assessments that comprise a specific educational programme. Providing curriculum guidelines to students is very vital as the curriculum shows what an institution is and reflects the diversity of disciplines that make up a learning institution. Wentzell (2006) emphasized that the curriculum outlines normally form a basis for contract among students, faculty and a learning institution. The curriculum helps students identify the expectations which serve as a basis of their grade and fundamental requirement components of the course which every student is guaranteed to receive from the lecturers and institution. The curriculum also assists faculty in presenting their lessons in a format which is accurate and reflects the quality instruction provision. This helps students to be focused and work hard to reach the goals of the institution (Becker and Luthar, 2010. As students work hard, this would in turn reduce the examination attrition rates and raise the students' GPA.

It is therefore, important that all lecturers avail their students the course outlines and programme curricula so as to help students identify the course and programme expectations.

This might in turn help students to be focused and work towards the intended goals of the School.

5.2.1.3: Assessment of Students

In this study, most students (71%) stated that the School had clear criteria for pass/fail and when asked whether they were aware of this criterion, 80% of the students stated that they were aware of it. Despite these high percentages of being aware, (52%) of the students disagreed with the statement that the materials assessed corresponded to what was taught in the curriculum. This showed from the students' perspectives that the materials assessed during the examination and tests lacked validity. This was validated when the study looked at assessment practices by the lecturers in the sections that follow.

It was discovered that some lecturers assessed what was not taught but was in the content of the syllabus as they could not teach all topics in the syllabus given to them. This might have been due to heavy course workloads. It was also discovered that some lecturers gave assessments with no prior notification of due dates to the students and students questioned the motive behind the action.

This study also revealed during the Focus Group Discussions that the students were not in agreement with the idea of repeating all courses when one failed in one course. The students questioned the justification and preferred that students just repeat the failed course as this would reduce their workload and they could be able to complete within the stipulated number of years. When the researcher followed up the issue with the Assistant Dean (General)'s office, it was clarified that the issue was a standard norm in all medical schools.

The study further revealed that the students would prefer the examination results to be posted on personal accounts than putting them on the notice board. This would help students who come from far places to know their results without travelling but also to reduce the shame on those who failed in other courses. Respondents proposed that results be posted on their online student portals so that they could access the results on time than a system where they need to travel or ask colleagues to check for them which also undermines confidentiality.

Gardiner (2016) explained that assessment is essential not only to guide the development of individual students but also to monitor and continuously improve the quality of programmes, inform prospective students and their parents, and provide evidence of accountability to those who pay our way. Banda (2016) also added that we assess in order to see whether the educational goals and standards of the lessons are being met. From the above two scholars' reasons of assessment, it shows that lecturers needed to assess what was in the curriculum and what had been taught. In addition, learners needed to be made aware of the assessment criteria that institutions used. This could help the learners to work in line with the assessment criteria of the institution.

5.2.2.4: Students' Welfare

On student welfare, 58% of the students agreed that their welfare was of acceptable levels in general. On specific characteristics, 85% of the students agreed with the provision of adequate health care services. However, the students cited low academic students counselling (40%) and career guidance (48%). This implied that there was less guidance provided to students in career prospects. In addition, the students complained of no proper and defined channels of communication when there was an academic grievance.

The research showed that most lecturers were too busy to talk to students on their academic work. With this situation at hand, Becker and Luthar (2010) state that if students are not provided with career guidance, their social and emotional turmoil overcomes their academic potential. It is important, therefore, that every learning institution like the School of Medicine should develop a deliberate academic tutorship programme for all students.

Studies by Becker and Luthar (2010) show that academic achievement is highly correlated with students' sense of connection and a caring, stable school environment. The foundation for a positive school climate rests on the integration of academic and behaviour approaches that address the student as a whole person and respond to the needs of a diverse student population. Learning institutions are to provide counselling and academic guidance to students in order to help them achieve the institutional goals. This could improve the students' performance and reduce the failure rates (Moore and Shurock, 2006). Therefore, students' welfare is one of the most important areas to focus on as learning institutions.

5.2.1.5: Academic Staff

Academic staff quality is a key factor for higher GPA and low examination rates (Sarrico, 2016). Since most of the students were very happy and comfortable with the qualification of the academic staff in the school, it is important that the same UNZA lecturers get involved in teaching clinical courses also. This is in line with the issues raised by the students that lecturers from Ministry of Health lacked teaching methodology. It could also be proposed that the lecturers from the Ministry of Health should be trained in pedagogy.

When asked whether most of the academic staff in the school were adequately qualified, 56% of the students agreed that they were qualified. However, in the MB ChB Programme, only 40% agreed that the academic staff were adequately qualified who were involved in teaching in their programme. Furthermore, the study revealed that the School of Medicine did not have adequate numbers of academic staff to cope with the required schedules in most programmes except for the BSc Biomed programme where 56% of the students agreed that the numbers of academic staff were adequate as compared to 45% from the other programmes.

5.2.1.6: Educational Resources

Student learning and well-being are dependent upon adequate and appropriate support. The learning institution is responsible for providing an effective range of coordinated programmes and services. These resources enhance and improve student learning and well-being and support the school's core values. Lack of the stated resources can lead to high examination attrition rates and low GPA (Moody, 2004).

When asked about the educational resources in the school, most respondents (70%) stated that the educational resources in the School were not adequate. 25% of the students stated that the School enrolment numbers were not based on the infrastructure and facilities capacity. The study revealed that most students in the School of Medicine bemoaned inadequate teaching and learning spaces and inadequate information technology support. Students either stood or sat on the floors while in lectures. This type of learning whilst on the floor reduced concentration.

The study also showed that the number of students enrolled was not based on the infrastructure and facility capacities. Some respondents proposed that the school should enrol based on the capacity of the infrastructure. It was also discovered that the library sessions were always overcrowded. The study revealed that there was need to improve the information technology and improve the internet services. The third theme on accreditation focuses on an institution having an appropriate capacity for class size where the learning areas are suitable for the class size and learning activities are undertaken. Lack of access to quality learning environment contributes to low quality education outcomes.

5.2.1.7: Governance and Administration

A study by Ford (2013) done in the United States public schools in a district overseen by a democratically elected school board found that governance of any learning institution affects the academic performance of students. In this study, respondents commented that the staff in the office of the Dean welcomes students in a 'professional and respectful manner'. In reference to school governance and administration, most respondents (60%) were satisfied. Most of the students (70%) commended the Dean's staff as 'highly organised' and hoped the same should be applied to Departmental Offices. Most students (62%) however stated that the support staff for educational activities were not enough. Since the School of Medicine is an educational institution, it is expected that the number of support staff for educational activities should be adequate.

5.2.1.8: Comparing the 2003 with 2015 Accreditation Self-Evaluation

Comparing the 2003 self-evaluation report findings (Banda, 2004) with this study, revealed that the School of Medicine had made a lot of strides in meeting most requirements. Using the evaluation criteria which were based on World Federation for Medical Education (WFME), the results revealed from the table below from students in all programmes that the School of Medicine met most requirements. The only standard in which the School was still lagging behind was the area of educational resources where the enrolments did not match with the infrastructure and information technology.

Table 5.1 A comparison of 2003 and 2015 Self-Evaluation Findings

Standard	2003 findings	2015 findings	Score required to meet WFME International standards in Medical Education
1. Missions and Objectives	*	****	*****
2. Educational Programmes	**	***	*****
3. Assessments of Students	**	***	*****
4. Students	**	***	*****
5. Academic Staff	*	***	*****
6. Educational Resources	**	**	*****
7. Governance and Administration	*	***	*****

(Source: Field Data, 2018)

Key:

***** = Meets all requirements

**** = Meets most requirements

*** = Satisfactory meets requirements

** = Meets some requirements

* = Does not meet most of the requirements

The School of Medicine of the University of Zambia from this study findings meets most of the required score areas of the WFME International Standards for Basic Medical Education as in Table 5.1. The area which needs more effort is Educational Resources. There is need to balance enrolments with infrastructure and the availability of Information and

Communication Technology (ICT) equipment. The other issue is that the qualified academic staff need to be inducted into the School of Medicine course management, teaching approaches and assessment processes.

5.2.2 Course Characteristics

Course characteristics refer to how courses are rated in terms of workload, pace, level of difficulty and time spent on them. This is a very important variable that could affect students' GPA and make them either pass or fail the examination. Thus, the institution should come up with the course workload which should relate to the time spent on the course.

Liu *et al* (2014) explains that workload is an estimate of the amount of work needed for an average student to earn an average grade. Course grades are based on the quality of the work submitted. The course workload for every student at the University of Zambia is 12 Credits per year as minimum. This means that each course is allocated three lecture hours per week. Most of the School of Medicine courses have clinical experiences and laboratory work which add up to many more hours students are expected to be in contact with the lecturers. The situation becomes worse in cases where students take an overload of courses and where departments demand students to do more courses within a year or semester as a curriculum requirement.

Course management was the first research question to be answered in this study. As shown from the Conceptual Framework, it is the first activity an academic member of staff gets involved in ensuring quality teaching. In this study, when asked how the undergraduate courses were managed in the School of Medicine of the University of Zambia, most of the students 82% stated that the course workload was heavy while 71% students stated that the pace of the courses was very fast. The interpretation being that despite the course being heavy the time spent on it was less. This means that the perception of students over the course workload was that almost all courses required more time to cover the topics. This means more hours need to be allocated per week for the courses or reducing the content in order to have expected credit hours for each course. For example, in Internal Medicine Clerkship I

(MED 5010), there was need to increase time allocated to the Radiology component. In this course, the students had a challenge of assimilating the concepts (as seen from the GPA of 2.5 in 2014/2015 academic year) within the stipulated time.

The other courses cited as being too heavy in course workload had high examination attrition rates. In Human Physiology (PGY 2020) in Bachelor of Pharmacy with 39.5% examination attrition rates representing 19 failures with 0.80 GPA in this this course. Human Physiology (PGY 2030) in Bachelor of Sciences in Physiotherapy with 40% examination attrition rates representing 8 failures with 0.40 GPA in this course. Basic and Applied Physiology (PGY 3010) in Bachelor of Science in Human Biology with 20.9% examination attrition rates representing 35 failures with 2.0 GPA in this course. In Medical Physiotherapy (PGY 2040) there were 12 fail cases out of 32 students representing 37.5% examination attrition rates and 0.80 GPA.

In line with the conceptual framework used in this study, the management of courses was viewed from Tinto's Model (academic system) and Banda's M & E framework (course management) where the process of course management affect the students' GPA and the examination attrition. The study therefore showed that course characteristics affected the outcome of students' performance in the examination. This was because in most cases lecturers did not cover all topics in the syllabus as outlined in each course. This became a challenge when students were examined in the examination on what they were not guided.

In addition to high course workload, the study also revealed that in some study programmes there were too many half courses making it hard for students to effectively study well and manage to pass the examination with high grades. It could either be better for these half courses to be examined in the mid of the academic year while the other half course at the end of the year. This would reduce the load of studying many concepts at the same time. The Senate Special Meeting on Curriculum Review and Development of 10th November, 2016 also encouraged Schools and Departments to develop 80% full courses and 20% half courses and in addition encouraged periodic reviews of curricula for all programmes to consider merging similar half courses into full courses (SOM, 2010). In this case it is important that similar half courses should be put into one to make a full course.

Slotta and Linn (2009) explain that all curriculum designers should do more study to allocate enough time to courses designed. Slotta and Linn (2009) further state that new courses need a

three to five year time for review so that time allocated to the course is assessed and adjusted if need be. In this study one course (DPH 6024) was cited to be of very light load though much time was spent on it. Such courses needed to be made into half courses. In this case the School of Medicine needed to review the courses which were either light or heavy and allocate the right amount of time.

Marzano and Pickering (2016) also add that an effective educator is a good curriculum designer. This means identifying and articulating the proper sequence and pacing of the content in the course they are given to teach. This is in agreement with this study where in courses where there was good organisation of lectures, students did well (high GPA and low examination attrition rates). Lecturers with such skills add to the syllabus provided by the department the following:

(i) Needs of students collectively and individually
(ii) Determines the content that requires emphasis
(iii) Arranges learning activities that present new knowledge in different formats (store, explanation and demonstrations.)
(iv) Uses media differently (oral written video, web-based, simulations and hands-on activities) (Marzano and Pickering, 2016).

All such skills are to be provided during the induction process and the methodology training done by the Department of Medical Education and Development (DMED). If all academic staff underwent such and had been evaluating their teaching on an annual basis, the School of Medicine examination attrition rates could have reduced and the students' GPA raised. Therefore, there is need for a school policy to do a yearly evaluation of students' performance and to be reviewing school programmes and courses every five (5) years.

Weimer (2012) states that the content of any field could be difficult depending on the student belief. In addition, Michael (2007) proposes two major reasons as to why content of any course seem difficult to the students. These are:

(i) The nature of the discipline and how it relates to other fields
(ii) How it is studied and how experts think and communicate about it.

From lecturer's perspective, Cherif *et al* (2014) cite lack of motivation (35%), bad study habits (17%), no academic preparedness (12%) negative attitudes towards the course or lecturer (11%) and poor investment (11%) as the major perceived difficulties. The first four factors lie under the control of students while the last one lies in the power of faculty and administrators. This is in line with this study's findings from the self-evaluation assessment by lecturers which cited lack of students' seriousness evidenced from missing of classes, none submission of assignments on time and late coming for classes.

From the study, it was revealed that on average (65%) of the students stated that the courses were difficult or above reasonable. Thus it is vital at this point to discuss factors that led to why students viewed such courses as difficult. Some of the findings include lack of academic career guidance and counselling as observed from the institutional characteristics. The study also revealed that lecturers stated that they were too busy to have time for consultation. If the students were provided with academic counsellors then they could have been guided well and were going to pull through in their academic careers and get high grades. This was evident from the high student GPA in the courses where they were counselled e.g. (PSY 6410). According to Michael (2007) the second reason for low GPA and high examination attrition rates is the way the content is taught. This is discussed in the next section.

From the foregoing, we can state that motivation is the leading cause behind students' view of the course being difficult. Motivation influences students' attitude, study habits and academic readiness. This is another area as revealed in this study on accreditation where it was discovered that students rarely underwent career guidance and counselling.

Michael (2007) emphasises that students perceive courses to be difficult if they cannot understand the content in the course or if the concepts cannot easily be applied. In this study, there were various reasons as to why the stated courses were perceived as difficulty. In Forensic Medicine and Medical Jurisprudence (PTM 6410), the study revealed that the course was cited as 'not clear' and the recommendation was to 'engage a medical lawyer in teaching it'. Thus it is important that the Course Coordinator invites resource persons from medical lawyers to teach the components of law in this course. The right people with the right qualifications can be used to help teach the content in such courses.

In Basic and Applied Physiology (PGY 3010), students cited the course to be too hard to understand. This was evident in the year under which this study was carried out; there was

20.9% (35 candidates) failure rate in PGY 3010. This demonstrates poor management of courses as students stated that the course was poorly coordinated. Students also cited Pathology and Microbiology (PTM 3010) course that some conditions in Pathology had no application in Physiotherapy making this component more irrelevant and leading students to lose interest in it**.** PTM 3010 was the only course at 3rd year in the year the study was carried out where some students failed but all students passed in other 3rd year courses. During Curriculum review, it would be worth noting that the components which do not apply to some fields should be removed and be replaced with relevant concepts related to physiotherapy.

When the students have a good understanding of the content, they are able to have high GPA and the examination attrition rates can be reduced. This is in agreement with Cherif *et al* (2013) who states that if students have a good understanding of the content being taught they are generally motivated and have more positive attitude and have a greater chance of doing well in those courses. Therefore, faculty have a role in the management of the courses in order to motivate the students in the respective course.

In line with the motivation of students, the study again revealed that in some courses students were demotivated by the way lecturers were managing courses. In Immunology and General Microbiology (PTM 3015), the study revealed that there was lack of in-depth explanation with no lecture schedule provided to the students. In this course, students did not even have an idea of the course contents which were to be covered. In addition, in Research Methodology (BMS 4415), the study revealed that the lecturer did not demonstrate the understanding of the content especially statistics analysis and tests thereby discouraging students. In this course 10% of candidates failed the course and the GPA was as low as 2.90. In the academic year under study, this course recorded the highest examination attention rate and one of the lowest GPA.

The study also revealed that the examination attrition rates in other programmes were high due to lack of understanding of the concepts by the students in the courses. The study showed that students bemoaned lack of explanation and poor management of courses as factors leading to low GPA and high examination attrition rates. For example, in General Pharmacognosy (PMY 3310) which had 15% failure rate and GPA of 2.50 also had similar challenges of poor management of the course and lack detailed explanation by lecturers of the course content.

The study also revealed that some concepts taught in some courses did not relate to the field of the study. The pharmacology taught in Environmental Health did not relate to the field of Environment Health. It was also seen that some concepts in Pharmaceutics I (PMY 2110) were outdated and lacked scientific principles. Thus there was need to update the principles taught in this course. The worst was General Introduction to Biomedical Sciences (BMS 2110) which had the least GPA of 1.20 in the year under study for that cohort where the study revealed that students commented that the course did not make sense and its value or importance was not known to BSc Biomed programme.

Bain (2005) states that mostly students know their responsibility to do well if they receive support from lecturers and if courses are managed well. The study showed that in courses where students' GPA was high and low examination attrition rates, there was a lot of input from the lecturers. In General Pharmacology (PGY 3220), the GPA was 2.90 which was the highest among the courses taken in the 2014/2015 academic year and the course had the lowest failure rate of 6.25%. The study revealed high commitment from the lecturers and proper coordination in this course.

Other courses in which students stated good course management and this was evidenced with high students GPA and low examination attrition rates included Psychiatric (PSY 6410) which had the students GPA of 3.70 and no one failure. Other courses were Medical Biochemistry and Genetics (PGY 3419) with GPA of 3.0 and 5.97% examination attrition rates. In addition, Paediatrics and Child Health (PCH 5010) had GPA of 3.00 and 2.40% examination attrition rates and Psychiatric (PSY 4020) with GPA of 3.70 and no one failed.

In addition to good course management in the aforementioned courses, the study also discovered that clear assessments and examinations which were in line with what was taught and in the course curriculum were an added advantage. Other contributing factors were clear explanation of concepts and presentation of materials in a systematic way. In the courses cited above, the study revealed that lecturers were mostly available to help students and clarify points which were not clear in the lectures. The study further revealed that with an increase in the new programmes, the lecturers were overloaded and had little or no time to avail themselves to students and even private time for research.

From the findings above, it was confirmed that there was an association between course characteristics and the attrition rates among medical students of the University of Zambia. It

was clear that poor management of courses led to high attrition rates. Therefore, in order to address this challenge, the medical school needs to work on the course workload, level of difficulty of the courses, time allocated to teach the courses and the pace at which courses are taught.

5.3 Perspectives on Teaching Approaches

The study evaluated the teaching and learning activities and the teaching characteristics of staff in the School of Medicine of the University of Zambia. The four factors with different attributes are discussed under the Teaching and Learning activities evaluation while the other four different factors with different attributes are discussed under the teaching characteristics of staff in the School of Medicine. Therefore, there are two Sub-sections 5.3.1 and 5.3.2 which are used to discuss the second research question, 'How is teaching of undergraduate students done at the medical school of the University of Zambia?

5.3.1 Teaching and Learning Activities

Much discussion of educational quality has for many years centred on system inputs, such as infrastructure and pupil-teacher ratios, and on curricular content (Liu *et al*, 2014). In recent years, however, more attention has been paid to educational processes — how teachers use inputs to frame meaningful learning experiences for students in order to have an expected outcome (Massy, 2014). The highest quality lecturers, those most capable of helping their students learn, have deep mastery of both their subject matter and pedagogy (Biggs and Tang, 2007).

Lawrence-Brown (2004) proposes that the quality of lecturers that affect educational quality since student achievement, especially beyond basic skills, depends largely on teachers' command of subject matter and their ability to use that knowledge to help students learn. It has been stated that whether a lecturer uses traditional or more current methods of instruction, efficient use of institutional time has a significant impact on student learning. Many lecturers in medical schools hold part-time jobs, which may detract them from the time and energy

they need to expend in the classroom. Sampson and Karagiannidis (2010) also add that the quality of a medical school and the quality of teaching of the individual lecturer is higher in institutions that are able to make more efficient use of the available time of its teachers and its students.

Professional development can help overcome shortcomings that may have been part of lecturer' pre-service education and keep lecturers abreast with new knowledge and practices in the field. This ongoing training for lecturers can have a direct impact on student achievement. Teacher education, both pre-service and in-service, helps lecturers develop teaching methods and skills that take into account new understandings of how students learn. Just as curriculum should be child-centred and relevant, so should instructional methods. Teaching methods that facilitate active student learning rather than promote passivity and rote memorization represent a new and difficult paradigm for many lecturers, but one that needs to be understood and put into practice if learner outcomes are to improve. Good lecturers are skilled not only in instructional methods but also in evaluation and assessment practices that allow them to gauge individual student learning and adapt activities according to student needs.

Massy (2014) highlights the tenets involved in quality teaching and learning processes in order to come out with quality outcomes which in this case are high GPA and low examination attrition rates. Some of these tenets are:

- Curriculum design: This looks at the processes involved in curriculum design, review and implementation. It involves how the lecturer supplements design inputs from the academic disciplines with those from employers, current outcomes assessments, past students and professional bodies.

- Pedagogical design: This embraces the issues of how lecturers take into consideration pedagogical methods in teaching and learning with an integration of feedback about learning attainment with the delivery of academic content.

- Implementation quality: This focuses on the teaching characteristics of lecturers.

- Outcomes assessment: This tenet points to how medical schools monitor student outcomes and link the outcome assessments to the improvement of teaching and learning processes.

When lecturers are inducted into course management principles, it is assumed that such a lecturer might not have challenges in managing the teaching and learning activities (Goe, 2007). That is the primary thing an educator is trained to do. It is assumed from this study's conceptual framework that if teaching and learning is managed well then students' GPA can be raised and the examination attrition rates can also be reduced. These two outcome indicators can guide as to whether there is quality teaching and learning. It should be stated that other studies have criticised that focusing on student testing as a proxy for judging quality teaching and learning might be misleading (Ravitch, 2010). This is not the case with this study as many educational activities are involved in determining the passing or failure of a student in the School of Medicine. This study related quality education with the assessment outcomes.

Biggs and Tang (2007) suggest Outcomes-Based Teaching and Learning (OBTL) as a convenient and practical way of maintaining standards and of improving teaching. This is so because standards are state up front and teaching is tuned to best meet them, assessment being the means of checking how well they have been met. The content to be taught must be in line with what has been stated in the outcomes. Outcomes-Based Education (OBE) has been used in quite different ways but has been used mostly for enhancing teaching and learning.

It has further been argued by Biggs and Tang (2007) that in addition to OBTL, there is need to use Constructive alignment in teaching where teaching/learning activities are systematically aligned according to learning activities required in the outcomes. This is done by focusing on what and how students are to learn, rather than on what topics the teacher is to teach. Thus we need to phrase the learning outcomes that are intended by teaching those topics not only in terms of the topic itself but also in terms of the learning activity the student needs to engage to achieve those outcomes.

The study looked at quality teaching and learning in the context of whether students were availed with course curriculum, handbooks and teaching schedule and whether the teaching academic staff were qualified. Wayne and Young (2003), Rice (2003) and Goe (2007) indicate that lecturer qualification has a bearing on students' achievement and this is in line with the University of Zambia policy that only those with a minimum of Masters' Degree qualify to lecture undergraduate students. However, a study by Roza and Miller (2009) who

did a State by State Master's Degree separation analysis in the USA argues that there is largely no relationship on average between qualification of the lecturer and student achievement though evidence in the same research shows that for Mathematics and Science lecturers there was evidence of relationship. In this study, the conceptual framework agreed with these scholars (Wayne and Young, 2003; Rice, 2003 and Goe, 2007) that the qualification of the lecturers contribute to the performance of the students. The study also agreed with Roza and Miller (2009) in the sense that the School of Medicine teaches science concepts.

In this study it was revealed that on average there was available qualified staff as 57.4% of the students agreed with the statement. This was across all five programmes as shown from the eta value of 0.148. The challenge was that some of these qualified academic staff rarely availed students with teaching schedules. This was evident from the study that only 49.4 % of the students affirmed in agreement. In the case of course curricula, 47% of the respondents agreed that the lecturers availed the students with course curricular and only 37.4% agreed that lecturers availed the students with handbooks. This might have made it difficult for students to prepare in advance for the lessons or to have ideas of what was expected of them in the course.

The data which was obtained from in-depth interviews and self-evaluation questionnaires revealed that some of the academic staff were not oriented by Heads of Department in the courses they were to teach. In short there was no induction at all. In some cases, the lecturers were not availed with the whole curriculum making it difficult to know the limits and extents of coverage especially in relation to other topics in other departments. The study by Levine (2006) went further to state that most academic staff after their academic study were not given the tools needed to succeed in bringing about student achievement. Thus Zeichner and Conklin (2005) propose that after initial training, the academic staff need to undergo a programme to connect the content covered in training to the actual teaching needs through identification of specific types of training needs for improving student achievement. This study emphasises lecturer induction before the actual teaching as a way of improving quality education.

Moving further to teacher characteristics, the research by Levine (2006) indicates that having qualified academic staff on paper is not enough but the concern has been on practice. This study did not only focus on qualification of the academic staff but also on how the qualified

staff were able to teach in order to bring about quality learning thereby reducing the examination attrition rates in the school and raising the students' GPAs. Harris and Sass (2007) also add that all lecturers to be should be equipped with skills in pedagogical content aimed at student achievement. Pianta and Hadden (2008) further streamed the importance of not relying on credentials but training all educators to become quality teachers. Kane *et al* (2006) added that preparing educators in a more selective programme contributes to greater achievement for students. In the case of medical schools, this can be achieved through Medical Education Departments.

This could be done through Continuous Professional Development (CPD) programmes which studies (Harris and Sass, 2007) have shown that they increase student achievement (high GPA and low examination attrition rates). Wilson (2015) highlights on professional development of academic staff that it impacts positively on student achievement. It is stated that such specified professional developments increase lecturer knowledge and meet the desired professional teacher practice. In other institutions, this is referred to as induction for new academicians. In such programmes, mentoring orientation sessions and classroom observations are used to help any new faculty members who have an idea of the institution they are joining. Iserberg *et al* (2009) adds that such lead to quality teaching and learning thereby reducing the examination attrition rates and raising students' GPA.

The researcher agrees with Cohen *et al* (2007), Hiebert and Crolws (2007) and Yoon *et al* (2007) that having credentials to teach does not directly relate to actual practice. Baratz-snowden (2009) argues that for the improvement of teaching and learning, lecturer evaluation should be carried out based on student achievement. Johnson (2004) also proposes that monitoring and evaluation of teaching and learning of teaching characteristics of faculty needs to be done to come up with specific needs of training for professional development of the academic staff. Some of the variables to base the evaluation on include what has been used in this study known as teacher characteristics. It was revealed in this study that despite having well qualified faculty in the School of Medicine, their performance differed as some qualified staff did not perform well in bringing about students' good performance in examinations.

5.3.2 Teaching Characteristics of Staff

Teaching characteristics refers to how the academic staff show their commitment to teaching and how they use the teaching aids to bring about learning. Johnson (2004) emphasises that teachers need to show commitment to teaching through being punctual to class and attending to all classes. He states that when this is done, students are motivated and also show commitment. In this study, it was revealed that 56.6% students valued the lectures they attended and would not have managed the courses without classes. This means that most students depended on lecturers' guidance in explaining the concepts for them to understand. Therefore, with high expectation from students, lecturers are expected to deliver to students' expectation by attending to all classes and being available for them through consultation.

Yoon *et al* (2007) states that it is not just attending to classes that matters but what the lecturer does and says to students would determine whether the students perform well or not. In this study, students observed that 54% of the lecturers did not state the objectives clearly at the beginning of each lesson and this made it difficult for students to follow. Some lecturers used to start the lesson by telling stories which were not related to the course and confused students more when they started teaching without clear objectives. The situations were worse in cases where students were given laboratory work without clear instructions. Motivation from the lecturer can lead students to perform well. There are two major types of motivation namely intrinsic and extrinsic motivation. Intrinsic motivation focuses on the subject. The lecturers are able to encourage students to love the subject and work hard. The extrinsic motivation includes expectation from others and the rewards or punishment of outcome.

The effects of motivation on learning styles are huge. For different type of learners, the lecturers were able to use a mixed motivation style to help learners learn more. In the case of deeper learners, mastering a difficult and complex subject motivates them intrinsically while strategic learners are primarily motivated by rewards. Surface learners are often motivated by the desire to avoid failure. Bain (2005) advises that lecturers need to have interest in students' academic affairs so as to help students improve academically. In order to achieve this, Bain (2005) proposes that lecturers should: (a) become a role model for students' interest, (b) get to know their students, (c) use examples freely, (d) use a variety of student-active teaching activities and (e) give students as much control over their own education as possible. In other words, lecturers should use posters, models etc.

Visual Aid refers to use of pictures, maps charts or other objects to make important points of instruction more vivid. It makes a clearer or a more lasting impression on the mind of a

learner than a spoken word so that when examined in the future the learner can recall and apply. The visual aid gives reinforcement to ideas that deserve special emphasis and clarifies the spoken word to make it easier to understand. The proper used visual aid and the point of instruction make deep impression that learners can recall the concepts for many years to come (Zhao and Cziko, 2011). Yusuf (2005) suggests the effective visual aids users to do the following: (a) highlight things that deserve special emphasis, (b) have instruction as their primary objective and (c) make things clearly visible to the entire audience if used on the platform. These things were some of the gaps which the study showed as lacking in the way some lecturers used visual aid presentations.

Currently, curriculum emphasize competency, performance and how the information is used than what information is. Oliver (2000) states that ICT has strong support for these three items while Zhao and Cziko (2011) highlight that ICT helps improve and develop the quality of teaching especially in perceived difficult subjects and abstract concepts. Information and Communication Technologies (ICTs) have become commonplace entities in all aspects of life. The use of ICT in education leads itself to more student-centred learning settings. ICTs have the potential to innovate, accelerate, enrich, deepen skills, to motivate and engage students, to help relate school experience to work practices as well as strengthening teaching (Yusuf, 2005).

In addition, the study considered teaching characteristics of academic staff in terms of attending to classes, punctuality, and use of ICT in teaching and whether students could cope without attending classes. The study further showed that some lecturers did not give updated information on the subject matter and normally just read slides without explaining the concepts. One lecturer was cited as, "He is seen to have shallow understanding of the course and does not promote critical thinking" while one was cited not to follow the course schedule and would repeat the lesson on the use of ICT. The study also revealed that most of the lecturers (63.2%) used ICT in the teaching while few others still used the "ancient methods of teaching using chalk board" and never gave chance to students to copy.

However, even some of those who used ICT just read the slides without explaining. ICT provides many opportunities for constructivist learning through the provision and support for resource-based student centred and enable learning to be related to context and practice. Valasidou and Bousiou (2005) state that the use of ICT in teaching promotes academic performance thereby raising the GPA and reducing examination rates. Slide presentation

software has become an ingrained part of many instructional settings particularly in large classes. It is a highly effective tool but if not carefully used, may instead disengage students and actually hinder learning (Smith, 2016). Power Point can be able to engage multiple learning styles, increase visual impact, improve audience focus, provide annotations and highlights and increase spontaneity and interactivity.

Lamon (2012) highlights instructional strategies as a major contributor to students' good academic performance. It is stipulated in their study that an effective educator would have a wide array of instructional strategies at their disposal and know when specific strategies are to be used for specific students and specific content. Management of teaching and learning activities also involves time management and motivation (Chickening and Gamson's, 1987).

Many researches done have shown that quality teaching is consistently identified as the most important school-based factor in student achievement (McCaffrey *et al* , 2003; Rivkin *et al*, 2005; Rowan *et al*, 2002) and teacher effects on student learning have been found to be cumulative and long-lashing (Moir, 2010). However, research is still continuing to untangle these relationships including the specific ways in which quality teaching operates and the degree it drives lecturing. This study tried to untangle some of the relationships.

From the findings above, it was confirmed that there was an association between teaching practices of academic staff and the graduation rates of undergraduate students at the Medical School of the University of Zambia. It was clear that management of teaching and learning and the teaching characteristics of staff contributed to the graduation rates of undergraduate students. In order to mitigate this challenge, the medical school needed to train all its academic staff in pedagogy and make sure that all newly employed staff underwent induction before they commenced actual teaching.

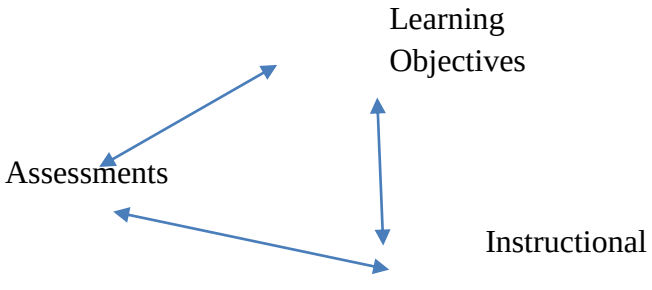
5.4 Views on Assessment Processes

The study evaluated the Assessment Standards Evaluation in the School of Medicine of the University of Zambia. Thus eight factors with different attributes will be discussed under the Assessment Standards Evaluation. The discussion in this section is based on the third and last research question, 'How were the assessment processes done at the medical school of the University of Zambia?'

In all aspects of assessments, it is important to note that there is need to come up with some practices which can make the process of assessments bring about effective learning. This was one of the components which were investigated in this study. It was also highlighted in the conceptual framework as one of the variables that could contribute to quality education. One of the best practices which had worked as stated by Black *et al* (2004) was providing feedback early and often. It has been stated that feedback is the breakfast of champions. It is important to note that feedback must be of quality (informative and guiding). Feedback must also be timely, specific, understandable to the receiver, and formed to allow for self-adjustment on the student's part. The feedback on strengths and weaknesses will help the learner to improve more. The grade or percentage indicated on the paper does not advance any learning or inform the learner on the corrections which need to be made.

In order to assess more material in the course it is important that assessments are adequate. In any curricula, the numbers of assessment items are stipulated to guide the lecturers. In this study, it was revealed that in some course, there were inadequate assessments items while in others there were too many consequently making students to concentrate on one course and failing to balance with other courses. If lecturers follow the guide in the approved syllabi of the courses, the students would benefit and be helped to perform better. It was also revealed that some lecturers gave tests or assignments at will without prior notification.

In the study, it was revealed that some of the items in the tests, assignments and examinations were never covered in class and others brought questions which just required memorising and never included thinking. In such courses the GPAs were very low. This was contrary to what Black and William (2009) emphasise, that assessments are supposed to be valid and must assess the appropriate material. Assessments should reveal how well students have learned what lecturers desired them to learn. In this case, assessments, learning objectives and instructional strategies need to be closely aligned so that they reinforce one another as shown in Chart 5.2.



Activities

Chart 5.1: Relationship between Learning Objectives and Assessment

Source: Adapted from Metzler (2017)

Therefore, assessments should include tasks which can reveal that students have achieved the learning objectives identified by the lecturer. If assessments are misaligned with learning objectives then students learning and motivation is undermined. In order to align effectively, the following need to be taken into consideration by the lecturer so as purposed by Metzler (2017).

(i) Tasks should cover all key subject content standards.
(ii) No items on the test should cover what the syllabus does not address.
(iii) Number of test items should mirror the distribution of teaching time.
(iv) The tasks should match the full range of cognitive thinking required during the course where it should even challenge the highest performing students as well as elevating the low-achieving students to also demonstrate their knowledge.

The research revealed that some lecturers in some courses gave enough assessments of different cognitive levels. In some courses, the study revealed that all topics in the courses were examined making it easy for the students to have a choice in answering questions. In such courses, there were low examination attrition rates. In addition, the study revealed that in some courses the weighing of marks was well distributed according to the depth of the required answer.

It should be noted that the lecturers also had their own views on assessments. The study revealed that lecturers were concerned with the low levels of knowledge observed from students' work. The other concern was the late submission of work by students. In response to lack of guiding comments, lecturers admitted that they had challenges with marking students' work due to the large number of students in their courses. This also affected the length of time they took to give students feedback.

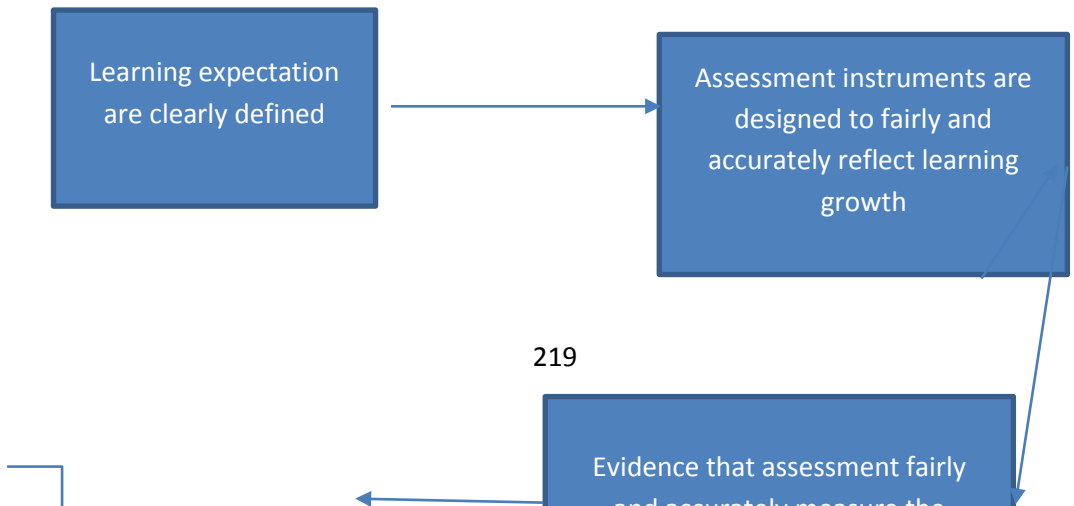
The study revealed that 67.8% of the students stated that the grading in most programmes was fair. The Focus Group Discussions revealed that students did not favour the negative marking. Students demonstrated ignorance on the justification for negative marking. The

findings from the assessment practices potion of the Questionnaire Booklet revealed that some lecturers were so rigid in marking and in some long cases marking was very subjective (*based on the examiner and how they look out at the candidate).* In addition, some cited some inconsistences and luck of clarity in the grading process. All these issues if not checked could have been leading to low GPA and high examination attrition rates. Some respondents even proposed that the system of students being failed just by failing one OSCE spot needed to be revisited.

The major challenges revealed on assessment in the study included not providing timely feedback. Only 52.2% of the respondents stated that the feedback was timely while only 52.0% acknowledged that the feedback was helpful and detailed. This implied that students took long to get feedback and the feedback provided was not helpful and detailed. In some cases, the respondents stated that they never got the feedback in some courses. In this case, students even wondered whether or not the lecturer marked the assignments. The study also revealed that some lecturers gave feedback on time with comprehensive detail. The guiding comments provided in the feedback helped the students to improve on the weak areas.

The two major types of assessments were formative and summative. The formative assessment is also known as assessment for learning. Research has shown that students who receive formative assessment perform better and have high GPA (Chappis and Stiggins, 2002). The two authors further define formative assessments as assessments designed to monitor student progress during the learning process. Thus questions in these forms of assessments should be aligned with the course objectives so that they bring about learning thereby increasing the academic performance of the learners.

Railey and Heritage (2014) conclude by using Chart 5:2 below that if the correct assessment method is used then it determines teacher effectiveness and improves students' performance.



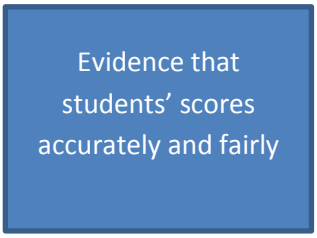


Chart 5.2: Propositions that Justify Teacher Effectiveness

(Adapted from: Railey and Heritage, 2014)

The chart above, if used in the assessment process by lecturers in the School of Medicine would help in fair assessment of students. Each lecturer would prepare assessment items which would be aligned with the learning objectives. The academic staff would prepare items which need to be assessed and not what is interesting to the examiner. The students would not be assessed on things not taught. This would result in improvement in students' academic performance.

From the findings above, it was confirmed that there was an association between assessment processes and the Grade Point Average among students of the University of Zambia. It was clear that fair and objective grading, detailed and timely feedback contributed to high Grade Point Average. The findings showed that the above stated variables were statistically different. In addition, the findings showed that lecturers needed to have marking guides to help them mark objectively and fairly and that the assessment items ought to have covered a wide range of topics.

5.5 Theoretical Implications of the Study

The findings in this study are consistent with the conceptual framework which points to the fact that quality education is a major contributing factor to the students' GPA and institutional attrition rates. The model suggests lecturers' induction into course management affects students' academic performance. It emphasises that course workload, pace, level difficulty and time spent on the courses have a bearing on students' GPA and examination attrition rates.

The conceptual framework also indicates that the students' low GPA and examination attrition rates are caused by various variables. In other words, the results of the study indicate that the School of Medicine institutional characteristics, course management, the teaching practices and the assessment processes contribute to the GPA of the students and the examination attrition rates. The study findings were also consistent with Banda's M and E framework (2013) on management of teaching and learning activities.

It can therefore, be asserted that good assessment processes as stipulated by Chickering and Gamson's (1987) seven principles could contribute to the School of Medicine's high examination pass rates. However, the enrolments of students in different programmes need to be monitored so that lecturers have time to mark students' work on time and provide helpful detailed feedback.

The following framework can act as a conclusion from this study's findings:

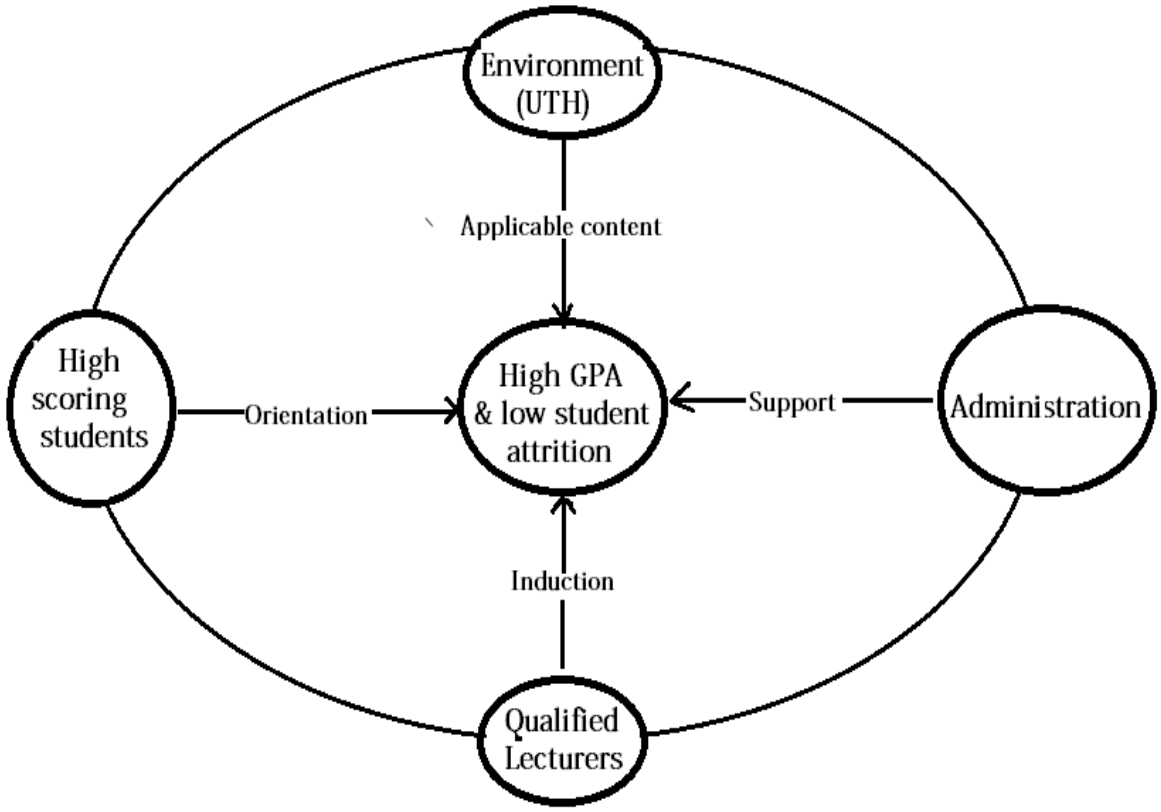


Chart 5.3: Process of Educational Quality

The chart shows that at the Medical School of the University of Zambia, if students who are enrolled with high scoring grades are oriented into school' mission statement, vision and goals, and are taught by qualified lecturers (in content and pedagogy), then the outcome will be low examination attrition rates and high GPA. In addition, if these students receive academic support from the school administration as they learn content which might easily be applied with the University Teaching Hospital, then the outcome can be that the School can record low examination attrition rates with students having high GPA.

5.6 Implication of the Current Study for Policy and Practice

The findings in this study have quality of teaching implications related to course management, teaching practices and assessment processes and how these variables affect the assessment outcomes. It is evident from the findings that students were not oriented in institutional missions and objectives. Lecturers did not go through induction into the School of Medicine's curriculum model and course management guidelines. Furthermore, the School of Medicine did not have enough educational resources and lecturers did not manage the

teaching and learning activities well. Lastly, the findings showed that lecturers did not exhibit good assessment practices.

As a result of the findings in this study, the School of Medicine needs to work on areas which could raise the students' GPA and lower the examination attrition rates. The following are some of the action points which the School of Medicine can improve upon.

a) The University of Zambia, School of Medicine Strategic Plan (2013-2017) looks at restoring excellence in teaching, research and public service. In order to fulfil this, the School came up with the objective, "To develop the monitoring and evaluation mechanism in order facilitate appropriate intervention and attainment of objectives". This study therefore provided a basis on the need that each Department should on yearly basis do a self-evaluation of teaching and learning in order to improve the quality of teaching and monitor how learning takes place in Departments.

b) This study used empirical findings to show that quality of teaching and learning could translate in students achieving the curriculum objectives and therefore achieving better scores in all assessments. The study therefore provided the determinants of attrition and academic success in the Medical School.

c) Students with low GPA were not mostly accepted when they applied for further studies as they were considered weak candidates. In addition, the society viewed high attrition as a result of the institution providing low quality education.

5.7 Proposed Conceptual Framework

Considering the previous evaluation of the factors that predict retention and the unique characteristics of the School of Medicine of the University of Zambia, a new conceptual model was developed. Firstly, a fairly simple is presented which includes only a few

variables and another one which includes input from students and lecturers. Figure 5.1 is the simple one which later leads to a Figure 5.2 Conceptual Framework for this study.

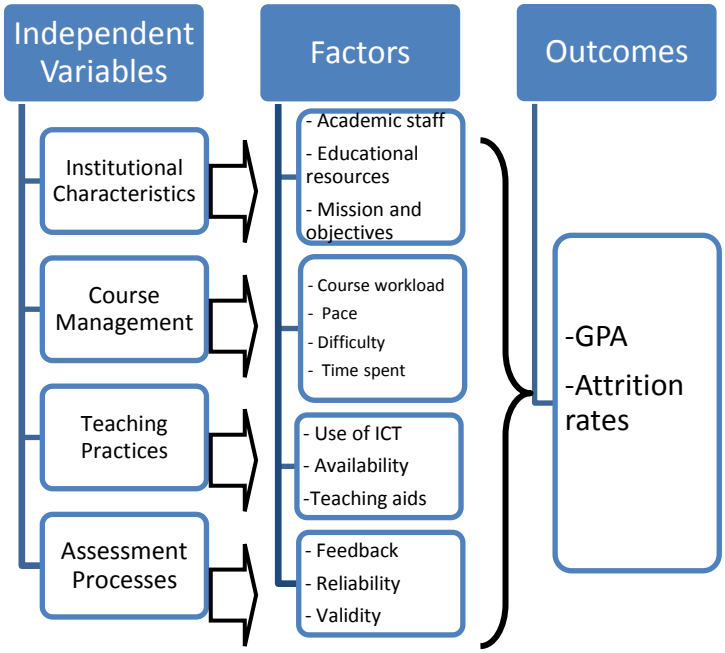


Figure 5.1: Model of Variables Predicting GPA and Attrition Rates.

(Source: Field Data, 2018)

Figure 5.1 is a model of variables predicting the attrition rates and GPA of the School of Medicine, UNZA according to the findings from the current study. The first is institutional characteristics which has three factors, namely; academic staff, educational resources and mission and objectives. In addition, four factors make up course management; course workload, pace of the course, level of difficulty and time spent on the course. Teaching practices include; use of ICT in teaching, punctuality, availability and consistency in attending to lectures. Others are availing of curricula, handbooks and teaching schedule to students.

The third is assessment processes which include; objectivity in marking, timely and detailed feedback, reliability, validity and weighting of the assessment tools. Institutional characteristics, Course management, teaching characteristics and assessment processes affect GPA and attrition rates. It should be noted that all the four variables should be attained in order for a learning institution to have a meaningful outcome. Lack of any variable might

affect the expected outcomes of high students GPA and low examination attrition rates. In addition, all the factors under each variable need also to be put in place.

In summary, the study sought to investigate the relationship between quality of education offered in the School of Medicine of the University of Zambia with the assessment outcomes. The tools used to assess quality of education were the WFME accreditation standards, course management, teaching practices and the assessment practices. In order to measure the relationship between the quality of education with the assessment outcomes (GPA and examination attrition rates), association, correlation and causation were used as possible measures. This understanding led us to this study's Conceptual Framework (Figure 5.2).

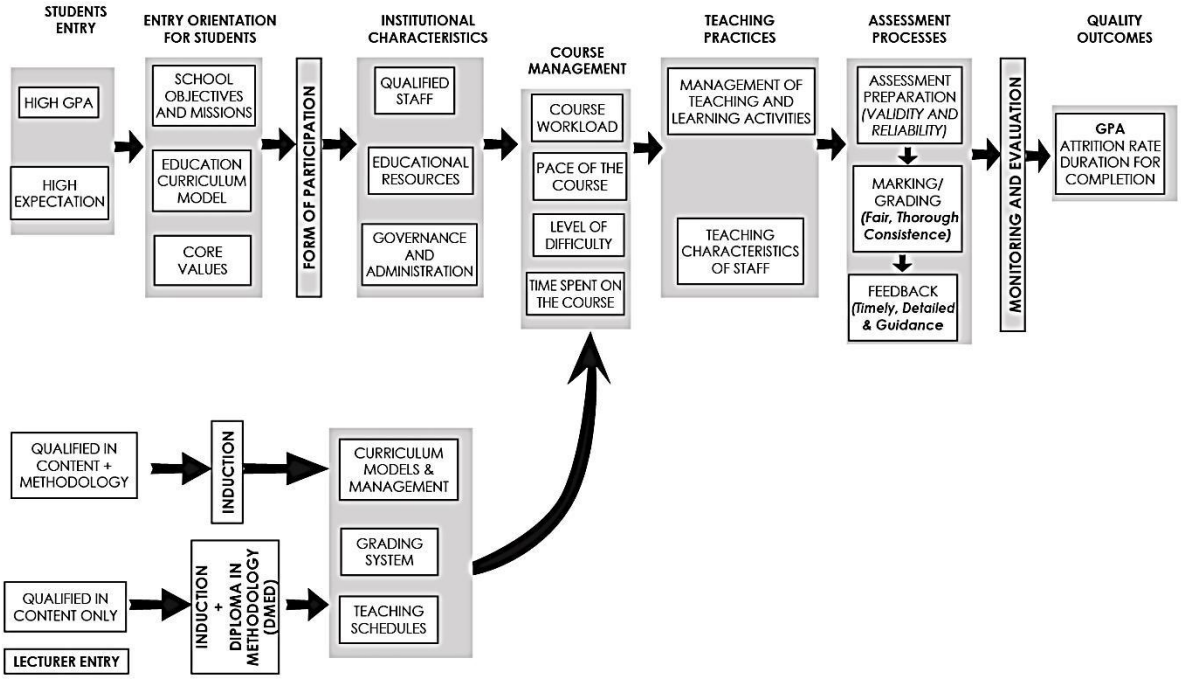


Figure 5.2: Educational Quality for Undergraduate Programme

(SOURCE: Field Data, 2018)

The Conceptual Framework above shows how the quality of teaching in the School of Medicine could be improved. The following sub–sections explain how the findings of the study can use this framework to contribute to quality outcomes.

5.7.1 Entry Points for Students and Academic Staff

It starts with the entry points of both students and the lecturers. It is assumed that as students are selected from the School of Natural Sciences and any other learning institution, the students are chosen on merit with high GPA. In addition, students come into the medical school with high expectations that they would complete within the stipulated time.

The Grade Point indicates how well or how high someone scored in the courses on average. It shows whether the grades have been high or low overall. This number is then used to assess whether you meet the standards and expectations set by the degree programme or university. Each grade that a student is given corresponds to a quality point. A quality point is almost always on a scale. Studies have shown that students with high GPA have high expectations and always desire to work harder to maintain the good results (De Remer, 2002).

So, in many ways, the GPA is the key used to unlock other exciting things during study. When organizations want to know what kind of student you are – whether hard-working, ambitious student, – they rely on your GPA. Universities want high-achieving, hard-working students; and so they want someone with a high GPA. This is what the School of Medicine has employed.

The findings from this study showed that most lecturers in the School of Medicine were for the idea that the School continues getting the best students from the School of Natural Sciences as opposed to enrolling their own (Barba, *et al*., 2016). Some lecturers added that the students from the School of Natural Sciences should first be given aptitude tests before being enrolled in the Medical School. Therefore, this model proposes that the School of Medicine continues to enrol the students with high GPA and high expectations but these must be oriented into the school objectives, mission and expectations.

Additionally, the Conceptual framework proposes that the school should continue employing lecturers who are qualified in content and pedagogy. From the findings in this study, most of the respondents affirmed that the academic staff in the school were adequately qualified. In cases where a lecturer is qualified just in content, the framework proposes that such a lecturer must be trained by the Department of Medical Education and Development in Pedagogy. This is in line with the findings where some lecturers had challenges with time management

during lectures. The framework proposes that all recruited lecturers should undergo induction.

5.7.2 Orientation and Induction

The framework shows then that all students as they enter into the Medical School should be oriented in the School missions, objectives, core values and the educational curriculum model. These variables would help students understand what is expected of them as they progress in the new learning institution. The missions and objectives can help students set goals for their study and work hard to achieve them and make them participate fully in the learning processes. Studies have also shown in other studies that students' connection to the institution academically and socially contribute positively to their GPA and retention (Tinto, 2006 - 2007 and Retention Study Group, 2004). Understanding the institutional objectives and mission and interaction with the institutional facilities and resources help students achieve more.

On the part of lecturers, the findings in this study indicated that some lecturers who had challenges with course management and teaching and learning activities were those who were not guided by the department in curriculum issues and the teaching and learning culture of the School. The study revealed that there was no formal induction process in the School. An induction programme is the process used within many institutions to welcome new employees and prepare them for their new role. It helps in the effective integration of the employee into the organisation (Bradt and Vonnegut, 2009). Induction processes should meet interaction needs that exist among the new employees (Alvenfors, 2010). An induction programme is an important process for bringing staff into an organisation. It provides an introduction to the working environment for the employee within the organisation. The process covers the employer's and employee's rights and the terms and conditions of employment. As a priority the induction programme must cover any legal and compliance requirements for working at the institution. In this study, findings revealed that lecturers were just given course outlines and allocated classes.

The Conceptual Framework also proposes that the entry of the academic staff contributes to the quality teaching in the learning institution. The framework considered two (2) types of academic staff employed by the University of Zambia. The two in consideration were those

who were employed with qualifications in the content area and the methodology as well as those who were employed with qualification in content only. Both types were supposed to undergo induction before starting teaching in order to be acquainted with the curriculum and culture of the School. During this period, the academic staff could observe some lessons and learn the administrative structure of the institution. In the Ministry of General Education, a newly posted teacher is given two weeks induction. In addition to induction, the framework proposes that those without pedagogy training should undergo some training in pedagogy from the Department of Medical Education and Development (DMED). The framework also proposes that academic staff should have access to all documents concerning the grading system, curriculum models and curriculum content, and the teaching schedules for the courses given to them. When this is done, the Conceptual Framework shows that the academic staff would be ready to manage the courses given.

The framework proposes this component to be included as this process can increase productivity and reduce short-term turnover of staff. These programmes can also play a critical role under the socialization to the organization in terms of performance, attitudes and organizational commitment (Alvenfors, 2010). In addition well designed induction programmes can significantly increase the speed and competency of new employees thus making them more productive in a shorter period of time. This would in turn contribute to raising students' GPAs and reducing the institution examination attrition rates. DMED should prepare the induction guidelines according to the needs and requirements of different school and department.

5.7.3 Institutional Characteristics

The institutional characteristics also play a role in contributing to students' performance. In this study framework, the institutional characteristics considered were to identify if the academic staff in the School of Medicine were qualified. When students know that the academic staff are qualified, the students' confidence levels in learning are raised. In addition, the availability of educational resources aids students' performance if they have access to them and utilise them well. None availability of educational resources hinders students' access to more information to verify the content learnt in class. The other characteristic is the way the school is governed as this provides a conducive environment for learning.

The study investigated how the School of Medicine provides an environment for learning. These were analysed using the WFME educational standards as how they related to each other and the findings. The findings and internationally acceptable standards agreed. This lay a foundation for both staff and students to work in an environment that was motivating. The findings revealed that lack of academic counsellors contributes to low performance. Therefore, the framework recommends that the school continues recruiting qualified staff, provides adequate educational resources and provides good governance and administration. The school should also consider enrolling numbers of students in accordance to the space in lecture rooms and laboratories.

5.7.4 Course Management (Curriculum Development)

The model used in this study (Figure 2.2) was in agreement with this study where it was noted that courses with heavy workload had high examination attrition rates and the students' GPAs were on the level side. The situation was worsened as time allocated to the courses was not enough. In addition, the courses with high level of difficulty and faster pace of teaching had high number of failures. This was in agreement with Kane's (2006) assertion that the level of understanding of the course content contributes to student GPA. It was however noted by the study that some courses seemed to have difficult concepts which were not related to the programme and no applicability to the close environment. This is in agreement with what Triola (2006) also proposed that course materials which have no applicability to the close environment contribute to low students GPA. Therefore, this framework could be applied to the improvement of the School of Medicine quality of education thereby reducing examination attrition rates and raising students' GPA.

5.7.5 Teaching Approaches

In this framework, it is proposed that quality of teaching contributes to high students' GPA and low examination attrition rates. The framework highlights effective teaching strategies as a major factor to quality teaching. The findings agreed with the framework in the sense that lecturers who availed course curriculum, handbooks and teaching schedules to students were recommended by students as outstanding performers. These attributes were the same

with academic staff who provided objectives, were punctual, used usual aid effectively and explained difficult concepts. The study's findings also agreed with the framework that good management of teaching and learning activities raises students' GPAs and lowers the institutional examination attrition rates. This was so, as the final examination results courses of the stated outstanding lecturers had few or no failures and the overall GPA in the courses were high.

However, the study noted that the lecturers' academic qualification did not translate into an outstanding performance in teaching and learning. Therefore, it was proposed that all lecturers in the school should undergo CPD and the new lecturers should always go through induction before commencing teaching. The study revealed that all lecturers employed needed specific pedagogical training induction by Medical Education Development Department in areas as required by the School. It also came out in the study that the use of power point software disengaged the students in some cases. For effective use of ICT, the study however proposed that faculty needed special training in the use of ICT in teaching in order to reinforce understanding in the learners.

5.7.6 Assessment Processes

The Chickering and Gamson's (1987) seven principles were also in agreement with the study's findings. The study agreed with these principles that timely and detailed feedback contribute to students' high academic achievement. The lecturers who provided timely feedback and helpful-detailed feedback were regarded as among those with outstanding assessment practices. Courses taught by such lecturers had low failure rates. In addition, Chickering and Gamson's principles framework proposes contact between students and teachers and high expectations as good attributes to students' high performance. The study's findings agreed with these principles in the sense that in courses or cases where lecturers were available for consultation or provided guidance to the students, the students did well. This was the same in courses where lecturers motivated their students through words and encouraged critical thinking.

Assessments are no longer a tool for controlling students' behaviour but for checking if they demonstrate the competences established in the courses. Thus, students' assessment results

guide teachers to help them toward academic success. This shift of educational assumptions can reduce the examination attrition rates and increase the students' GPA.

5.7.7 Outcomes

Dropping out and low GPA usually have negative consequences on social, personal, financial and educational aspects of students' lives, constituting a reason of great concern in medical schools (Maher, *et al*., 2013). Since dropping out and low GPA represent a significant educational problem, plenty of information on calculating the percentage of admitted students that drop out of medical school without completing their studies exists in the available literature (Yates, 2012 and Fortin, *et al*., 2016). The insights derived from this research may lead to future interventions for students at risk of dropping out, thus increasing graduation rates.

Educational principles now include the premise that learners are the centre of the learning process. Learning activities are designed based on learning outcomes, and the role of the teacher is to guide the student to achieve those outcomes. This change of paradigm includes new assumptions. For example, the teacher has the responsibility to help students who are not achieving the learning outcomes. Learners can now be rescued when they are failing academically because the power relationships with their teachers became horizontal.

Organizations, scholarship committees, clubs, and universities want high-achieving, hard-working students, and so they want someone with a high GPA. Aware of the need to better understand medical school examination attrition rates and students' GPA, this study examined how coursework management, teaching and assessment processes contribute to this phenomenon.

5.8 Reflections on the Research Process

5.8.1 Limitation of the Study

Limitation is defined as some aspect of the study that the researcher knows may negatively affect the results or generalizability of the results but over which he or she has no control (Bickel and Lehmann, 2012). In other words, something is not good but the researcher could not do anything about it.

The study offers a framework that could be used to help the School of Medicine achieve the goal of coming up with a monitoring and evaluation mechanism that can help improve learning in the School. As a direct consequence of this methodology, the study encountered a number of limitations, which need to be considered. These include:

- The data collection was done when some courses had their codes changed while other courses half courses were combined and made into full courses. Some respondents in the senior level (5^{th} year to 7^{th} year) used the old courses codes while those in the lower level (2^{nd} to 4^{th} year) used the current course codes of the same courses and this made the investigator to take a lot of time to compare the information. In some cases, some information had to be thrown out for it did not match with any other codes. However, all the information analysed matched with each other from the Focus Group Discussions and the Questionnaires.

- During the time of data collection, most of the 6^{th} year students in MB ChB were on projects. It was not easy to get most of them together in order to collect information from them as they were doing the projects out of Lusaka. Only 9 out of 45 distributed questionnaires were collected back. The total number of students was 119. Therefore, the information collected was analysed in comparison with the 7^{th} year students. Most of the information collected correlated with the information from the 7^{th} year respondents especially the information related to 6^{th} year courses.

- The data collected from Pre–clinical and Clinical settings were combined during analysis. This needed to be separated so as to come up with strategies which could address the challenges in the two (2) different learning environments. Despite this limitation, the findings from the two settings were similar.

- The information collected from those in the first year study at the Medical school was not detailed enough. Most of them gave brief information as they had little idea of the content and administration of the School. Nevertheless, their input added value as they compared most of the teaching activities and content with the School of Natural Sciences.

- Only 605 students responded to the questionnaire as these were the only ones the researcher could get following the challenges that were faced. In some cases, students were not available while others refused to participate stating some fears of lecturers failing them in the courses. This might have affected the generalizability of the study. With regards to lecturers' participation, only 10 participated in the survey as many stated that they had busy schedules.

- The use of Likert scale limited participants' responses only to choices they were given. Therefore, it was difficult for the researcher to be sure that individuals were expressing their true attitudes rather than 'socially acceptable' attitudes.

- Searching for a suitable theory that could constitute the theoretical framework was problematic due to the current debate of what really causes attrition rates and students' low GPA. This made it difficult to arrive at the best research design for the study. Thus, explanatory research design was used and it helped answer most gaps.

- The study would have been a comparative study with other schools within the University of Zambia or other medical schools in the country but from the reviewed literature, no such studies were done. Regarding comparison with some medical schools within the sub-region, financial resources and required duration of study did not permit. Therefore, the study compared the findings with a study that was done by one department. Hence future studies can do the comparison.

- The analysis of data combined both from the Pre – clinical setting and the Clinical setting. Due to different expected learning outcomes and different

learning environment, the findings from the two (2) settings needed to be analysed separately.

5.8.2 Delimitation of the Study

Delimitation addresses how the study is narrowed in scope. Its factors affect the study over which the research generally does have some degree of control (Creswell, 2012). Delimitation differs from limitation (over which the researcher has little or no control) in the sense that in delimitation, the researcher has control. In this study, though there were many other factors which were to be evaluated under each variable (institutional characteristics, course management, teaching characteristics and assessment practices); the study was restricted to the ones stated in the conceptual framework as these were more applicable to the Medical school of the University of Zambia.

5.9 Conclusion

Results of this study revealed several factors leading to low students GPA and high examination attrition rates in the School of Medicine. These bordered around the school's educational standards where the School was lagging behind in the area of educational resources and enrolments did not match with the infrastructure and information technology.

Secondly, nearly in all programmes, the students felt that the workload of the courses was very heavy to cope with the limited time allocated to the courses. The situation was worse in programmes where there were too many half courses. In such courses the GPA of the students was very low. The lecturers tried to give students topics to study on their own which proved a challenge in courses that were perceived as difficult. In such courses students expected lecturers to explain concepts in detail. Most students stated that they could not manage to pass the courses without attending classes.

One other way of solving this issue was to train lecturers to help them understand curriculum design. This was because some lecturers affirmed that they were not involved in curriculum development or oriented in the courses they taught. The School administration therefore ought to train such lecturers with skills in curriculum design. The training would help lecturers know content that requires emphasis. Good organisation in all courses, would enable

students easily understand the concepts and this would raise the students' GPA and even reduce the School's examination attrition rates.

Another factor that was stated in the study on course characteristics was the degree of difficulty of some courses. It was revealed from the study that some lecturers threatened the students in some courses that students would fail. Such actions as stated by Lamon (2012) reinforce students' belief that some courses, whatever effort students put in, they would either fail or have a low grade. This might also have had an impact on the low GPA and increase in examination attrition rates for students in the School of Medicine.

In addition, in some courses the students stated that the content covered did not relate to the field of study. This meant that the concepts covered could not be related to either real life experiences or other concepts in other courses. This again as pointed but by Michael (2007) makes the content of the course difficult to the students. Therefore, it would be important to review the courses offered so that the concepts are related to the programme and to other courses within the programme. With the formation of different schools, this might be another way of solving such a problem where the courses offered in the newly formed schools should be related to the programmes under study. The study also discovered that the way lecturers communicated the concepts to the students was a factor in perceiving some courses as being difficult. Courses where lecturers could not explain concepts properly and never motivated students with critical thinking resulted into low GPA and high failure rates.

Lecturers cited students' failure to study hard in some courses as a factor leading to low GPA and high failure rates. Students' submission of assignments, poor writing skills and lack of articulation of issues also contributed to their failure.

Lack of knowledge in course management by lecturers was a major contributor to low GPAs and high examination attrition rates. It is expected that when the Medical School works on this area, the students' GPAs shall be raised and the number of failures shall be reduced. The findings from the study showed that good management of teaching and learning activities at the School of Medicine positively contributed to students' high GPA and lowering the School's examination attrition rates. In courses where the lecturers did not avail students with teaching schedules and course curricula, the GPAs were low. The students were not guided on the courses and this made it difficult for students to follow.

Teacher characteristics were found to be one of the contributing variables in the management of teaching. Some lecturers had challenges to prove their qualification on practice. Lack of Continuous Professional Development on the lecturers contributed to low performance of the students in their courses. The study revealed that relying on credentials of lecturers without training them in specific pedagogical content resulted in low academic student achievement. The lecturers who were not inducted in the departments had more challenges in managing teaching thereby affecting students' performance.

Not stating course objectives at the beginning of the lessons made it difficult for students to follow the course. Courses in which lecturers were not focused and never gave clear instructions resulted in poor academic performance by students. On the other hand, there was high students GPA in courses where lecturers provided guidance on lesson progression. The low GPA and high examination attrition rates were also a result of lecturers missing lessons, reporting for lectures late and not being available for consultation. In such courses, students were demotivated and applied low effort thereby failing or only getting low grades.

The way concepts were explained to students contributed to their grades too. Courses where lecturers teaching was complex and never brought about understanding had more failures. On the other hand, courses where lecturers encouraged critical thinking and encouraged student participation had high pass rate and high GPA. Lecturers who used power point slides without explanation bored the students and the students' performance was low. The lecturers who gave updated information and provided detailed explanation motivated students to work hard in their courses and resulted into higher GPA.

The use of visual aid in teaching was another factor that affected students' GPA in the School. The study revealed that lecturers who used pictures, charts and objects made the points of instruction more vivid and made a lasting impression on the students. This resulted in the students recalling and applying the concepts in the examination. In addition, students acknowledged that lecturers who effectively used visual aids reinforced the concepts with special emphasis such that they could remember even in the examination. In such courses, most students passed the examination.

The effective use of slide presentation was a solution in large classes. It was seen in this study that lecturers who used this tool and engaged multiple learning styles increased visual impact and increased interactivity with students thereby motivating students to pay attention. The students worked hard in such courses and had their academic performance raised.

Therefore, it can be concluded that management of teaching and learning activates affect students' academic performance as a whole. The poor teaching characteristics negatively affect the students' GPA and the examination attrition rates.

Lastly, the process of assessment evaluation in the School of Medicine showed that it affected the GPA of the students and the School's examination attrition rates. A part from few courses, in most courses the grading of students work was perceived fair though the students' concern was the use of negative marking. Another concern that contributed to low GPA of students was based on the perceived rigidity in marking and the over reliance on subjectivity in marking long cases. Another factor contributing to failure in the School was cited as the system of failing students who failed in one OSCE spot.

Lack of timely feedback and lack of helpful detail were also seen as a major contributing factors toward students' low GPA and high examination attrition rates. In courses where students' GPAs were low, most lecturers did not give timely feedback or never gave any feedback at all. In such courses, the students did not have an idea on where they went wrong and no corrective measures were put in place. In cases where similar tasks were brought in the final examination, the students failed the same tasks. In addition, lack of detailed guiding comments on the feedback did not help students to improve and do better in the other tasks. The idea of just putting grades and percentages on assignments, laboratory work and tests papers did not help students to raise their pass mark in other tasks.

Another factor that affected students' academic performance was the adequate number of assessment items given out. Courses where the scope of assessed content in the examination was inadequate resulted in students who never studied the few assessed areas failing or getting low grades. On the other hand, courses where the lecturers gave more than the stipulated assessment items, in their courses negatively affected students' performance in other courses. It is important therefore for lecturers to stick to the laid down number of assessment items in each course according to the approved curriculum. It is also important to note that the structure of the final examination had an impact on the students' academic performance in the School. In courses where the examination did not include most of the content of the syllabus but just few or one topic, resulted in poor student performance, failure or low GPA.

Assessing appropriate materials covered in the course in the final examination was another factor which affected students' academic performance. In courses where students were assessed based on stated learning objectives and instructional strategies, there was high GPA and low or no failure. In courses where assessments were misaligned with learning objectives, students either failed or got low marks resulting into low GPA. The courses where items brought in the examination were not covered in the lessons had high failure rates. Those courses which had their tasks cover all cognitive levels reduced the number of failures.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 Introduction

The study set out to explore why the examination attrition rates at the School of Medicine were the highest in the University of Zambia despite admitting the highest performers from the School of Natural Sciences. The study identified course management, teaching practices and assessment processes as the major factors that contributed to low students' GPA and high examination attrition rates. The study also evaluated the institutional characteristics as to whether the School of Medicine met the requirements set by the World Federation for Medical Education (WFME) using the standards stipulated in the study. The study revealed that the school had met six out of seven standards. The study sought to answer four important questions, as follows:

(i) How does the School of Medicine, University of Zambia institutional characteristics relate with the external accreditation body Basic standards?

(ii) How are the undergraduate courses managed at the Medical School of the University of Zambia?

(iii) How is teaching of undergraduate students done at the Medical School of the University of Zambia?

(iv) How are the assessment processes done at the Medical School of the University of Zambia?

Data related to all questions was collected using the UNZA School of Medicine Undergraduate Booklet Questionnaire as the main tool. The other instruments used were the In-Depth Interviews and the Lecturers' Self-Evaluation Questionnaire. In addition, Focus Group Discussions were carried out. Section 6.1 presents the conclusions, Section 6.2 shows the recommendations and the last Section, 6.3 suggests areas for further research.

6.2 Conclusions

The study revealed that the low GPA and high examination attrition rates in the School of Medicine were a result of many variables, the most prevalent ones being that; there was inadequate teaching and learning space and inadequate educational resources in the School of Medicine. The number of students enrolled was not based on the infrastructure and facility capacities.

With regard to correlation between course management and the students' GPA and School of Medicine' examination rate, the conclusion made was that most courses' workload was heavy with little time allocated to them. The students perceived courses to be difficult because lecturers did not explain concepts in depth. Therefore, the more the students perceived some courses to be difficult, the lower their GPA in those courses and the higher the failure rates.

In terms of teaching and learning activities coupled with teaching characteristics of academic staff, the study revealed that despite having qualified lecturers in the School of Medicine, about 50.6% of them did not avail students with teaching schedules and 53% of the lecturers did not avail students with course curriculum. In addition, more than 63.2% of the lecturers used power point slides in their teaching though some of them did not explain the concepts on the slides. This contributed to students' failure to understand the concepts thereby affecting their confidence in passing such courses.

Finally, the study concluded that some lecturers did not provide timely feedback and if they did, the feedback was not helpful and detailed with only either percentages and or grades. This affected the students' performance in the final examinations as they were not sure of where they went wrong and this contributed to higher failure rates. Furthermore, the major

contributing factor was that some assessment tasks were misaligned with learning objectives affecting the validity and reliability of the assessment items in the tests and examination.

Therefore the phenomena of having high examinations' attrition rates in the School and low students GPAs among the School of Medicine of students who were selected as highest performers from the School of Natural Sciences was due to poor teaching and learning environment, poor course management, inappropriate teaching approaches and improper assessment processes. Continuous Professional Development in Pedagogical training for already employed lecturers and induction training for all newly employed lecturers by the Department of Medical Education Development could contribute positively to the reduction of failure rates in the School and consequently raise the students GPAs.

This is the new knowledge which the study contributed on the causes of the quality of teaching and the Grade Point Average attainment of the undergraduate medical students.

6.3 Recommendations

Following the conclusions aforementioned, the following recommendations were made:

i. In programmes where there are a lot of half courses, it would be better if some of these are combined into one full course in order to reduce the examination load for the students and the number of assessments to be done during the year. This would be in line with the current UNZA Senate recommendation to combine half courses to reduce the mid-year examinations as the University of Zambia moves away from Semester System to Term System. This comes from the finding that programmes with many half courses contribute to high examination attrition rates and low GPA of students.

ii. There is need to review some course contents. In some courses there is need to either make them full courses or remove some topics from some which are not applicable to Sub-Saharan settings. This recommendation arises from the finding that some topics in some courses had little or no application and this led to low students' academic performance.

iii. Schools and departments should assign academic counsellors to all students especially first years in order to guide them academically. The role of mentorship in the School of Medicine needs to be reinforced. This is in view of the finding that in courses where students had less or no consultation time with lecturers, there was low GPA among students.

iv. There is need to invite resource persons ~~as resource persons~~ in topics which need specialized staff from other fields so that students get the correct information. This is based on the finding that in a course where respondents proposed that the School of Medicine needed to engage a lecturer who was a Law Forensic expert.

v. Courses should be rearranged in order to fit well in the curriculum. Some of the courses that require repackaging include;

- Merge Pharmaceutics (PMY 5040) and Pharmacy Practice Professional (PMY 5430) as they have similar concepts and materials are repeated.
- Merge Clinical Pharmacology (PMY 5230) and Clinical Pharmacy and Therapeutics (PMY 5710) as they also have similar concepts.
- Review Inspection of Premises and Reporting (EHS 4535) as topics in this course are a preparation of topics in Planned Development and Building Services (EHS 3520) and Principles of Building Design and Construction (EHS 2510).
- Community Medicine (DPH 6024) should to be reviewed and be made a half course and reduce the delays of projects ethical approval processes should be reduced.
- Some of the concepts in Human Anatomy which are taught in other programmes are irrelevant thus there is need to focus on concepts which are applicable in specific programmes.

The above recommendation relates to the findings that courses which were arranged in the order of concepts brought about more understanding to students and contributed to high students GPA.

vi. The development of new schools from existing departments should encourage the new schools to review existing courses and programmes so that content of application in specific schools become a focus but not underscoring the need of interdisciplinary in the things covered. This is in view of the finding that courses and topics which were not relevant in a particular specialty led to low academic performance by students.

6.4 Recommendations for Further Research

Research on such a topic in education is never exhaustive and thus should encourage researchers, scholars and evaluators to look for possibilities of improving the situation before the situation deteriorates. Therefore, the following are being suggested as areas for further research:

i. The scale of this debate is extensive and multifaceted in most Schools. Therefore, to generate achievable policy strategies and developments targets with regard to quality teaching in specific departments, there is need for more case studies in departments to allow further assessment of local dimension of the subject.

ii. A comparative study on quality of teaching and learning with other schools within the University of Zambia or other medical schools in the country.

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APPENDIX I

TIME FRAME MAY2013-JUN, 2014

Task to be performed	Responsible person	JULY, 2013	AUG	SEPT	OCT	NOV	DEC	JAN, 2014	FEB	MAR	APR	MAY	JUNE
Research Proposal development	Researcher												
Finalizing Research Proposal	Researcher												
Graduate Presentation Forum	Researcher												
Ethical clearance	Researcher												

TIME FRAME JULY2014-JUN, 2015

Task to be performed	Responsible person	JULY	AUG	SEPT	OCT	NOV	DEC	JAN' 2015	FEB	MAR	APRIL	MAY	JUN
Pilot Study	Researcher												
Analysis of Pilot study data	Researcher												
Field work (Data Collection)	Researcher and research assistants												
Data analysis	Researcher												
Report writing	Researcher												
Submission of Draft Report	Researcher												

APPENDIX II

Teaching & Learning
UG Evaluation Booklet

University of Zambia

School of Medicine

Period of Evaluation
Year (2014), Term(s) (1,2)

DEPARTMENT OF MEDICAL EDUCATION DEVELOPMENT

Promoting Excellence in Teaching & Learning

Table of Contents

The Purpose and Benefit of Monitoring & Evaluation

The purpose of this evaluation exercise is to help the School of Medicine serve you better. Please give us your objective views/opinions by answering all the questions in this evaluation booklet. The information to be collected will be treated in the strictest confidence, and will solely be used for purposes of enhancing our service levels and the quality of education we provide. This exercise shall be done at the end of each academic year.

What is being evaluated?

The evaluation comprises three complementary Standards:

Three Standards of the M & E Module

Standard A	Standard B	Standard C
Institutional Accreditation on the World Federation for Medical Education (WFME) Basic Standards	Evaluation of Educational Standards (Teaching Contribution and Course Management)	Assessment Standards

1. Assessing the Institutions Performance against the WFME Basic Standards for Quality Medical Education.

   This standard looks at the institutions' accreditation worthiness when assessed using the WFME Standards.

2. Assessing the quality of educational standards (teaching contribution and course management).

   This standard assesses the quality of teaching contribution and course management by measuring student perceptions on various educational indicators.

3. Assessing the quality of assessment methods and student performance in examinations of the institutions.

This standard assesses the fitness for purpose of the assessment methods used including reliability and validity, quality of and administration of assessments.

1. Respondents' Particulars (Tick in the corresponding box)

1.1	**Sex**	1 – Male ☐	2. Female ☐		
1.2	**Age in Years**	1. Less than 20	2. 21- 25	3. 26 - 30	4. Over 30
		☐	☐	☐	☐
1.3	**Programme of Study**	1. Medicine (MB ChB)	2. Nursing (Bsc N)	3. Pharmacy (B. Pharm)	4. Biomedical Sciences (BSc Biomed)
		☐	☐	☐	☐
		5. Physiotherapy (BSc Physio)	6. Environmental Health (BSc Env)	7. Medical Licentiate (BSc Cs)	
		☐	☐	☐	
1.4	**Years completed at UNZA**	1. Less than 1	2. 2-3 yrs	3. 4-5 yrs	4. Over 5 years
		☐	☐	☐	☐
1.5	**Current Year of Study**	1. Year 1 ☐	2. Year 2 ☐	3. Year 3 ☐	4. Year 4 ☐
		5. Year 5 ☐	6. Year 6 ☐	7. Year 7 ☐	
1.6	**Accommodation Status**	1. University on campus	2. University on campus but in someone's room	3. Outside campus - rented	4. Outside campus - own/self
		☐	☐	☐	☐
1.7	**Sponsorship**	1. GRZ Bursary Sponsored	2. GRZ Other	3. Sponsor Other	4. Self Sponsored
		☐	☐	☐	☐
1.	**Admission**	1. School	2. Non-School	3. Non School Leaver	

☐ ☐ ☐

8	**Type**	Leaver Direct Entry	Leaver	(Health Professional)

2. Accreditation Standards Evaluation

Accreditation standards determine whether an external accreditation body such as the Health Professions Council of Zambia (HPCZ) would vouch for our educational standards. The evaluation criteria used are based on World Federation for Medical Education (WFME) Basic Standards (expressed as 'must' be met). **Indicate, by ticking in the corresponding box, the extent of your agreement to the statements in the table below**:

2.1 MISSION & OBJECTIVES					
	Strongly Disagree (1)	**Disagree (2)**	**Uncertain (3)**	**Agree (4)**	**Strongly Agree (5)**
1. The School of Medicine has defined its mission & objectives					
2. As a student am able to state the School's mission & objectives.					
3. The School of Medicine has defined the competences which a student must graduate with.					
4. As a student am able to state all the competences defined.					
2.2 EDUCATIONAL PROGRAMME					
	Strongly Disagree (1)	**Disagree (2)**	**Uncertain (3)**	**Agree (4)**	**Strongly Agree (5)**
1. The School of Medicine has clearly stated the curriculum model it has adopted.(e.g. Traditional, Innovative, Mixed)					
2. We have been availed and/or have access to a detailed curriculum of their programmes (including curriculum structure, courses, course content, pass/fail criterion, teaching methods & duration).					
2.3 ASSESSMENT OF STUDENTS					
	Strongly Disagree (1)	**Disagree (2)**	**Uncertain (3)**	**Agree (4)**	**Strongly Agree (5)**
1. The School of Medicine has clear criteria for pass/fail criteria.					

2. As a student am aware of the pass/fail criteria.					
3. Most of the time materials assessed correspond to what is in the curriculum/ has been taught.					
2.4 STUDENTS					
	Strongly Disagree (1)	**Disagree (2)**	**Uncertain (3)**	**Agree (4)**	**Strongly Agree (5)**
1. Students are well represented on many School committees such that their views are adequately taken.					
2. The School provides adequate academic counselling to students..					
3. The School provides adequate career guidance to students.					
4. The School provides adequate health care services for students.					
2.5 ACADEMIC STAFF					
	Strongly Disagree (1)	**Disagree (2)**	**Uncertain (3)**	**Agree (4)**	**Strongly Agree (5)**
1. Most of the academic staff in the School are adequately qualified.					
2. The School has adequate numbers of academic staff to cope with the required schedules.					
3. Most of the academic staff of the School participate in scholarly research in their specialization.					
2.6 EDUCATIONAL RESOURCES					
	Strongly Disagree (1)	**Disagree (2)**	**Uncertain (3)**	**Agree (4)**	**Strongly Agree (5)**
1. The School enrolment numbers are based on the infrastructure and facilities capacity.					
2. The School has adequate teaching and learning spaces (lecture halls, tutorial rooms, laboratories, wards).					

3. The School has adequate library facilities to support learning.					
4. The School has adequate information technology (ICT) to support learning.					
2.7 GOVERNANCE & ADMINISTRATION					
	Strongly Disagree (1)	**Disagree (2)**	**Uncertain (3)**	**Agree (4)**	**Strongly Agree (5)**
1. The Dean's Office staff are appropriately qualified.					
2. The Heads of Department are appropriately qualified.					
3. The leaders in the School provide appropriate academic leadership.					
4. Support staff for educational activities are appropriately qualified.					
5. Support staff for educational activities are adequate in number.					
6. Management of educational affairs, such as, examinations and publication of results is satisfactory.					

Other Comments on Accreditation Standards:

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3. Course Management & Teaching Contribution Standards Evaluation

Course management and teaching contribution standards determine whether the School of Medicine is offering an educational standard that are comparable to best practices of teaching and learning Accreditation bodies. The attributes evaluated are generally accepted as requirements for facilitating learning by students. **Indicate, by ticking in the corresponding box, the response that represents your views.**

3.1 OVERALL RATINGS (How would you rate the following attributes)					
	Excellent (1)	**Good (2)**	**Uncertain (3)**	**Poor (4)**	**Very Poor (5)**
1. The standing of School as a reputable centre of excellence in teaching and learning.					
2. Quality of lecturers.					
3. Quality of students.					
4. Quality of learning environment (classrooms, accommodation, library, laboratories, wards).					
5. Quality of learning materials (books, handouts, notes, equipment).					
6. Quality of academic and administrative support.					
7. Quality of scholarly outputs (research, academic publications).					
8. Opportunities for personal growth of the students.					
3.2 LEARNING ENVIRONMENT					
	Strongly Disagree (1)	**Disagree (2)**	**Uncertain (3)**	**Agree (4)**	**Strongly Agree (5)**
1. The learning & teaching areas at the School are suitable for the class sizes and learning activities.					
2. The classroom furniture and fittings are in acceptable state of condition.					
3. The learning & teaching areas at the School are safe.					
4. Recreation facilities are available and are of acceptable standard.					

3.3 MANAGEMENT OF TEACHING & LEARNING ACTIVITIES					
	Never (1)	**Rarely (2)**	**Sometime (3)**	**Most times (4)**	**Always (5)**
1. Students are availed or have access to course curricula.					
2. Students are availed or have access to course handbooks.					
3. Students are availed or have access to teaching schedules.					
4. Students are availed or have access to class timetables.					
5. Handouts and other materials are availed to guide students' deep understanding of content and skills.					
6. Educational resources (equipment, stationery, supplies, specimen) are available to support learning..					
7. Appropriately qualified staff are available to teach courses.					
8. The responsibilities and accountabilities for organising learning & teaching activities are clear and responsive to students.					

3.4 COURSE CHARACTERISTICS					
	Very Light (1)	**Light (2)**	**Right (3)**	**Heavy (4)**	**Very Heavy (5)**
1. How would you describe the workload of most courses?					
	Too Fast (1)	**Fast(2)**	**About right (3)**	**Slow (4)**	**Too Slow (5)**
2. How would you describe the pace at which most courses are presented?					
	Very Easy (1)	**Easy (2)**	**Reason able (3)**	**Difficult (4)**	**Very Difficult (5)**
3. How would you describe the degree of difficulty of most courses?					
	Too	**Little (2)**	**About**	**More**	**Way too**

	Little (1)		right (3)	than needed (4)	much (5)
4. How would you describe the time spent on most courses?					

3.6 COURSES THAT MUST BE CHANGED (Give feedback on courses that you think did not meet the expectations and standards befitting of a university aspiring for excellence. Give reasons.)

3.7 OUTSTANDING COURSES (Give feedback on courses that you think have been outstanding performers and give reasons)

3.5 TEACHING CHARACTERISTICS OF ACADEMIC STAFF					
	Strongly Disagree (1)	**Disagree (2)**	**Uncertain (3)**	**Agree (4)**	**Strongly Agree (5)**
1. Objectives for each class are stated clearly at beginning of each class.					
2. Lecturers attend all scheduled classes.					
3. Lecturers are punctual.					
4. Lecturers are well organised.					
5. Lecturers promote critical thinking.					
6. Lecturers communicate effectively.					
7. Lecturers encourage student participation.					
8. Lecturers demonstrate deep understanding of subject matter.					
9. Lecturers explain difficult concepts.					
10. Lecturers are enthusiastic about their courses.					
11. Lecturers stimulate my interest in their subject matter.					
12. Lecturers are available to students outside classes.					
13. Lecturers use audio-visual aids effectively.					
14. Lecturers use information communication technology (ICT) effectively.					
15. I understand and benefit from the classes run by most lecturers.					
16. As a student, I can cope without attending classes by relying on textbooks, internet sources and other resources because most lectures and lecturers are not very beneficial.					

3.6 LECTURERS WHOSE FUTURE PARTICIPATION IN TEACHING MUST BE REVIEWED (feedback and names of lecturers who you think they do not meet expectations and standards befitting of a university aspiring for excellence. Give reasons?)
3.7 OUTSTANDING PERFORMERS (Give feedback and names of lecturers who you think have been outstanding performers and give reasons)

4. Assessment Standards Evaluation

The goal of the examination system is to pass all candidates who demonstrated adequate knowledge, competence, and attitude espoused in the curriculum and to fail those who have not. Assessment standards evaluation measures whether the School of Medicine examination practices and procedures are comparable to international best practices. **Indicate, by ticking in the corresponding box, the response that represents your views.**

4.1ASSESSMENT CHARACTERISTICS					
	Strongly Disagree (1)	**Disagree (2)**	**Uncertain (3)**	**Agree (4)**	**Strongly Agree (5)**
1. Assignments, tests and examinations are graded fairly.					
2. Assignments and tests are adequate in number to promote learning.					
3. Feedback on student performance on assignment and tests is given timely.					
4. Feedback on student performance on assignment and tests is given in enough detail in a way that is helpful to the students.					
5. The marks given in assignments, tests and examinations of most courses are a true reflection of my achievements.					
6. The assignments, tests and examinations used are appropriate for what they aim to measure i.e. knowledge, skills and attitudes.					
7. The assignments, tests and examinations match adequately the scope of the material covered.					
8. The assignments, tests and examinations are of sufficient quality and mostly error free.					
9. Assignment, test, and examination malpractices (leaks, and student cheating) are common.					
10. Assignment, tests, and examinations promote higher intellectual activity (such as problem solving and synthesis).					

11. Assignments, tests and examinations mostly promote memorising.					
	Strongly Disagree (1)	**Disagree (2)**	**Uncertain (3)**	**Agree (4)**	**Strongly Agree (5)**
12. The weightings of marks on assignments, tests and examinations reflect the importance of topics.					
13. . The weightings of marks on assignments, tests and examinations reflect the bulk of topics and time spent on them.					
14. .There is a lot of subjectivity (inconsistence practices) in the way assignments, tests, and examinations are graded.					
15. .The methods used for assessment are reliable (they measure what they intend to measure and accurately measure what they are meant to measure consistently).					
16. I have full confidence in the assignment, tests and examination systems of the School of Medicine.					

4.2 ASSESMENT PRACTICES THAT MUST BE CHANGED (Give feedback and lecturers/names of courses that you think have not met the assessment expectations and standards befitting of a university aspiring for excellence. Give reasons)

4.3 OUTSTANDING ASSESSMENT PRACTICES (Give feedback and names of lecturers/courses that you think have been outstanding performers in assessment. Give reasons)

Thank you for taking time to think through the items carefully and writing down your thoughts honest.

APPENDIX III

THE UNIVERSITY OF ZAMBIA

SCHOOL OF MEDICINE

LECTURER SELF EVALUATION FORM FOR ACADEMIC STAFF

DEPARTMENT: ……

DURATION AS UNZA ACADEMIC STAFF: …….

SEX: MALE ☐ FEMALE ☐

INTRODUCTION:

In order to improve the service delivery in the School of Medicine to the academic staff, the school is carrying out the job satisfaction evaluation exercise. Please complete this form by placing an X in the column that corresponds to your choice. Do not put your name this evaluation form.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. SURPORTING STAFF AND RESOURCES **I am satisfied with ----------**	1	2	3	4	5
Secretarial services					
Office equipment					
Library resources					
Teaching materials					
Internet services					
Training provided to improve my teaching					
Office space					
Laboratory research space					
Classrooms facilities					
Physical upkeep of campus surrounding					
Safety and security on campus					
2. **PERSONAL EMOLUMENTS** **I am satisfied with -------**					
My salary					
My gratuity / retirement benefits					
My housing allowance					
My transport allowance					
3. **ADMINISTRATION AND MANAGEMENT**					
There is an open climate in the school in which I speak freely without fear of negative consequences					
Am valued for my teaching skills					
Am valued for my research skills					
Am valued for my clinical skills					

	The administration recognizes my accomplishment					
	Am not discriminated against because of my gender					
	Am not discriminated against because of my race / ethic group					
	Am not discriminated against because of my age					
4.	**CONTRACT AND PROMOTION PROCESSES**					
	I have been well oriented for the job am doing					
	Criteria used for renewal of contract are appropriate					
	I support the idea of being on contract					
	Criteria used for promotion decision are appropriate					
	Research expectations are appropriate for my position					
	Publication expectations are appropriate for my position					
5.	**WORKLOAD**					
	My teaching load is appropriate for my position					
	My clinical load is appropriate for my position					
	I have "protected time" in my schedule to conduct research					
	My teaching load has increased in recent years					
	The number of students in my class is manageable					
6.	**SELF ASSESSEMENT**					
	I have challenges with marking students' work on time					
	Am confident with the mode of assessments I give					
	Am satisfied with the teaching skills I have					
	I participated in developing the course I teach					
	I have challenges with time management when teaching					
	Knowledge I gained through course development training is adequate for me to develop new courses					
7.	**Students assessment**					
	Students do not miss class any how					
	Students hand in their work on time for marking					
	Am happy with the knowledge levels of students					
	The students are committed to school work					
8.	**OVERALL**					
	I am satisfied with my position in the School of Medicine					

Any other comments:

……
……
……

THANKS FOR YOUR PARTICIPATION

APPENDIX IV

GRADE POINT AVERAGE (GPA)

Grading is the process of applying standardised measurement of varying levels of achievement in a course. All grades from the courses a student takes can be averaged to create a Grade Point Average (GPA) for a particular period. Thus, a grade point average is the way a student's overall academic achievement is quantified. GPA can be calculated in the following way:

A. Simple GPA Calculation

Using the grading scale for point value for each course, add up all the values based on the grade earned for each course then divide the final number by the number of courses taken, e.g.:

NO	GRADE	VALUE
1	A	5
2	B+	3.7
3	B	3
4	C+	2
5	C	1

A third year student doing Bachelor of Sciences in Human Biology

NO	COURSE	GRADE EARNED	GRADE POINT	GRADE POINT AVERAGE
1	AN 310	B	3	
2	PGY 310	C+	2	
3	COM 319	B+	3.7	
4	MB 315	B	3	
	TOTAL		**11.7**	GPA=11.7/4**= 2.93**

B. GPA Weighted by credit hours

Using the credit hours formula, the GPA will be calculated as follows:

NO	COURSE	CREDIT HOURS (WEIGHTINGS)	GRADE EARNED	GRADE POINT (GP)	SCALED GP	GPA
1	AN 310	4	B	3	12	
2	PGY 310	3	C+	2	6	
3	COM 319	3	B+	3.7	11.1	
4	MB 315	4	B	3	12	
	TOTAL	**14**			**41.1**	41.1/14= **2.92**

The GPA in this case is calculated by taking the number of grade points earned in a given period of time divided by the total number of credits taken. The GPA is usually calculated from the range of 0 to 4. The cumulative GPA is a calculation of all of a student's grades for all courses completed in a particular period.

For the purpose of this study, the GPAs calculated below are for a particular programme in a particular year of all students in that year. It should be mentioned that a simple GPA calculation was used and not a GPA Weighted formula.

The background to the selection of medical students is that the best students from the School of Natural Sciences are selected with the minimum grade of **B+ = 3.0.** This means that selected students have the minimum **GPA of 2.0 and above**.

YEAR: 2008

PROGRAMME	**2ND YEAR**	**3RD YEAR**	**4TH YEAR**	**AVERAGE**
BSc NURSING	1.88	1.72	2.80	**2.13**
BSc ENV. HEALTH	2.10	1.45	2.90	**2.15**
BSc PHYSIOTHERAPY	1.40	1.90	NIL	**1.65**
BSc BIO SCIENCES	2.85	1.93	3.10	**2.63**
BSc PHARMARCY	2.12	1.72	NIL	**1.92**
BSc HUMAN BIOLOGY	NIL	1.95	1.94	**1.95**
AVERAGE				**2.07**

YEAR: 2009

PROGRAMME	**2ND YEAR**	**3RD YEAR**	**4TH YEAR**	**5TH YEAR**	**AVERAGE**
BSc NURSING	1.95	2.98	1.96	NIL	**2.30**
BSc ENV. HEALTH	3.40	3.32	3.42	2.94	**3.27**
BSc PHYSIOTHERAPY	2.22	1.56	3.24	2.66	**2.42**
BSc BIO SCIENCES	2.18	3.46	2.24	NIL	**2.63**
BSc PHARMARCY	1.98	1.86	3.12	2.23	**2.30**
BSc HUMAN BIOLOGY	NIL	1.82	1.51	NIL	**1.67**
AVERAGE					**2.43**

YEAR: 2010

PROGRAMME	**2ND YEAR**	**3RD YEAR**	**4TH YEAR**	**5TH YEAR**	**AVERAGE**
BSc NURSING	2.68	2.12	2.66	N/A	**2.58**
BSc ENV. HEALTH	3.20	3.26	1.98	2.98	**2.85**
BSc PHYSIOTHERAPY	1.88	3.34	NIL	NIL	**2.61**
BSc BIO SCIENCES	1.45	1.52	2.22	NIL	**1.73**
BSc PHARMARCY	1.98	2.12	NIL	NIL	**2.05**
BSc HUMAN BIOLOGY	NIL	1.99	1.46	NIL	**1.73**
AVERAGE					**2.59**

YEAR: 2011

PROGRAMME	2ND YEAR	3RD YEAR	4TH YEAR	5TH YEAR	AVERAGE
BSc NURSING	NIL	NIL	2.12	N/A	**2.12**
BSc ENV. HEALTH	2.24	2.14	2.34	3.12	**2.53**
BSc PHYSIOTHERAPY	1.78	2.46	NIL	NIL	**2.12**
BSc HUMAN BIOLOGY	NIL	1.92	1.80	NIL	**1.86**
BSc BIOMED	2.68	3.12	3.42	NIL	**3.07**
AVERAGE					**2.34**

YEAR: 2013

PROGRAMME	2ND YEAR	3RD YEAR	4TH YEAR	AVERAGE
BSc NURSING	1.46			**1.46**
BSc ENV. HEALTH	1.97			**1.97**
BSc PHYSIOTHERAPY	2.24			**2.24**
BSc BIO SCIENCES	2.10			**2.10**
BSc PHARMARCY	2.47			**2.47**
BSc HUMAN BIOLOGY		2.21	1.97	**2.09**
AVERAGE				**2.05**

PROGRAMME	2ND YEAR	3RD YEAR	4TH YEAR	AVERAGE
BSc NURSING	1.34	2.12	2.98	**2.15**
BSc ENV. HEALTH	3.12	3.21	3.32	**3.22**
BSc PHYSIOTHERAPY	2.21	3.40	3.68	**3.10**
BSc BIO SCIENCES	2.89	2.56		**2.73**
BSc PHARMARCY	2.10	2.65	3.12	**2.62**
AVERAGE				**2.76**

APPENDIX V

EXAMINATION ATTRITION RATES

The results analysed below were the only ones available from the archives. The years and programmes missing were not available and have been indicated as NIL. The results were calculated from the two semesters' results and the average was found the stated year.

YEAR: 2008

PROGRAMME	**2ND YEAR**	**3RD YEAR**	**4TH YEAR**	**AVERAGE**
BSc NURSING	0/35= **0%**	3/29**= 10%**	0/17**= 0%**	**3.33%**
BSc ENV. HEALTH	0/6= **0%**	4/20= **20%**	0/22**= 0%**	**6.67%**
BSc PHYSIOTHERAPY	1/17= **6%**	3/33= **9%**	**NIL**	**7.50%**
BSc BIO SCIENCES	0/45**= 0%**	0/35**= 0%**	0/36= **0%**	**0.00%**
BSc PHARMARCY	0/28= **0%**	0/43= **0%**	**NIL**	**0.00%**
BSc HUMAN BIOLOGY	**NIL**	1/78= **1%**	1/67= **1%**	**1.00%**

YEAR: 2009

PROGRAMME	**2ND YEAR**	**3RD YEAR**	**4TH YEAR**	**5TH YEAR**	**AVERAGE**
BSc NURSING	1/35= **3%**	0/33**= 0%**	0/29= **0%**	**N/A**	**1.00%**
BSc ENV. HEALTH	0/27= **0%**	0/24= **0%**	0/20= **0%**	0/20= **0%**	**0.00%**
BSc PHYSIOTHERAPY	3/11= **27%**	10/23= **43%**	0/29= **0%**	2/20= **10%**	**20.00%**
BSc BIO SCIENCES	4/42= **10%**	1/38= **3%**	0/31= **0%**	**N/A**	**4.33%**
BSc PHARMARCY	5/32= **16%**	13/36= **36%**	4/42=**10%**	0/42= **0%**	**15.50%**
BSc HUMAN BIOLOGY	**NIL**	25/87= **29%**	20/65**= 31%**	**N/A**	**30.00%**

YEAR: 2010

PROGRAMME	**2ND YEAR**	**3RD YEAR**	**4TH YEAR**	**5TH YEAR**	**AVERAGE**
BSc NURSING	**NIL**	**2**/34= **6%**	0/32= **0%**	**N/A**	**3.00%**
BSc ENV. HEALTH	1/21**= 5%**	0/36= **0%**	5/25= **20%**	0/20= **0%**	**6.25%**
BSc PHYSIOTHERAPY	7/23= **30%**	3/24= **13%**	**NIL**	**NIL**	**21.50%**
BSc BIO SCIENCES	7/46= **15%**	10/ 51**= 20%**	1/42= **2%**	**NIL**	**12.33%**
BSc PHARMARCY	5/30= **17%**	4/54 = **7%**	**NIL**	**NIL**	**12.00%**
BSc HUMAN BIOLOGY	**NIL**	11/102= **11%**	12/72= **17%**	**N/A**	**14.00%**

YEAR: 2011

PROGRAMME	**2ND**	**3RD YEAR**	**4TH YEAR**	**5TH YEAR**	**AVERAGE**

	YEAR				
BSc NURSING	**NIL**	**NIL**	1/56= **2%**	**N/A**	**2.00%**
BSc ENV. HEALTH	3/15= **20%**	2/46= **04%**	4/36= **11%**	0/ 24= **0%**	**8.75%**
BSc PHYSIOTHERAPY	1/24= **4%**	4/51= **9%**	**NIL**	**NIL**	**6.50%**
BSc HUMAN BIOLOGY	**NIL**	**NIL**	18/108= **17%**	**NIL**	**17.00%**
BSc BIOMED	4/47= **9%**	1/39= **3%**	**NIL**	**NIL**	**6.00%**

YEAR: 2013

PROGRAMME	2ND YEAR	3RD YEAR	4TH YEAR	AVERAGE
BSc NURSING	36/130=**28%**			**28.00%**
BSc ENV. HEALTH	1/24= **4%**			**4.00%**
BSc PHYSIOTHERAPY	3/12= **25%**			**25.00%**
BSc BIO SCIENCES	10/54= **19%**			**19.00%**
BSc PHARMARCY	9/51= **18%**			**18.00%**
BSc HUMAN BIOLOGY	**NIL**	32/132= **24%**	0/12 = **0%**	**12.00%**
BSc BIOMED	11/58= **19%**			**19.00%**

YEAR: 2014

PROGRAMME	2ND YEAR	3RD YEAR	4TH YEAR	AVERAGE
BSc NURSING	20/32=**62%**	13/31=**42%**	41/170=**24%**	**42.7%**
BSc ENV. HEALTH	6/28= **21%**	7/42=**17%**	2/32=**06%**	**14.67%**
BSc PHYSIOTHERAPY	7/23=**30%**	3/36=**08%**	0/36=**0.0%**	**10%**
BSc BIO SCIENCES	18/52=**35%**	22/47=**47%**		**41%**
BSc PHARMARCY	19/48=**40%**	33/114=**29%**	13/71=**18%**	**29%**

APPENDIX VI

FOCUS GROUP DISCUSSION

INTRODUCTION

In order to improve the quality of teaching and learning, the School of Medicine is carrying out the evaluation exercise. This is a structured exercise which takes place at the end of each academic year.

- To what extent, if any, do you feel that SOM has improved your confidence as a student?
- How organised are the courses been? Probe on syllabi, curricula and courses outlines if given?
- How did you find the load in the courses you were doing? Did you manage to cover all topics in the courses you were taking?
- How did you find the assessments and the feedback from the lecturers? Were they helpful?
- Did you have any challenges in the way lectures were conducted? What about the classroom environment?
- Do you have any idea of some of the partners the SOM has? What projects do you know that has contributed to the provision of quality teaching? **Prompt on MEPI projects.**
- Have you heard about MOODLE/ use it/ how accessible is it? Have lecturers used it?
- How accessible were the materials from the e-Granary/ MOODLE? Did you have easy access to internet? Which places were you able to access it?
- How confident are you to apply the concepts learnt in the course?
- Do you think the skills learned from the courses are valuable to a future employer?
- What advice would you give to a student getting ready to take these courses?
- Is there anything else you would like to add about the courses and lecturers?

Thanks for your time. Your input has been very valuable, and is greatly appreciated

APPENDIX VII

KEY INFORMANT INTERVIEWS FOR ASSISTANT DEAN (GENERAL) OF THE SCHOOL OF MEDICINE

Name of Department:.....

Date of interview:.....

- How long have you been head of this department?
- How is the staffing in your department?
- What assistance do you give to a new academic staff in your department? Probe on providing syllabi, curricula etc.
- How available are the educational materials to the teaching staff? Probe on use of MOODLE.
- How would you describe the use of MOODLE/ eGranary by your faculty? How would you describe the use of MOODLE/ eGranary by students? Refer to the course they teach.
- How is access to internet in the school? Which places are both staff and students able to access it?
- Do you receive concerns from the students and lecturers on failure to cover all topics in the syllabus? What has been your advice?
- Do you lecturers have a challenge in giving feedback to students on their assessments? Probe on guiding comments and having Continuous Assessment ready before examination.
- Has your office been receiving some concerns from students on how teaching has been taking place? What are some of the common issues? What steps have taken in addressing them?
- How are the staffing levels in your department? What is the staff establishment in your department?
- What are the major challenges in teaching and learning does your department have?
- Is there anything else you would like to add about the courses and lecturers?

Thanks for your time. Your input has been very valuable, and is greatly appreciated

APPENDIX VIII

KEY INFORMANT INTERVIEWS HEADS OF DEPARTMENT

Date of interview:.....

Duration on this position:.....

INTRODUCTION

- Who are the major partners in the SOM in proving quality of education?
- Which partners provide with external lecturers? How many lecturers does each partner support?
- Are you aware of any change for undergraduate courses in the area of curricula, syllabi and course outlines?
- How has the above activity helped in improving learning of students in the SOM?
- How would you describe the use of MOODLE/ eGranary by your faculty? How would you describe the use of MOODLE/ eGranary by students? Refer to her course which she teaches.
- How is access to internet in the school? Which places are both staff and students able to access it?
- Do you receive concerns from the students and lecturers on failure to cover all topics in the syllabus? What has been your advice?
- Do you lecturers have a challenge in giving feedback to students on their assessments? Probe on guiding comments and having Continuous Assessment ready before examination.
- Has your office been receiving some concerns from students on how teaching has been taking place? What are some of the common issues? What steps have taken in addressing them?
- How is clinical placement done? How many students find clinical placement in the year?
- How is clinical audit done by the trainee students? Probe on Log books.
- How is the retention of graduating students monitored? Percentage of those working in the Government institutions.
- At what level do the medical students subscribe to the Health Professional Council?
- What are the major challenges in teaching and learning does the school have?
- Is there anything else you would like to add about the courses and lecturers?

Thanks for your time. Your input has been very valuable, and is greatly appreciated

APPENDIX IX

KEY INFORMANT INTERVIEWS FOR LECTURERS OF THE SCHOOL OF MEDICINE

Department:.....

Duration on this position: .....

Date of interview: .....

- Are you aware of the main activities which have been done in the school in improving quality of teaching? Give examples.
- What feedback from students have you received concerning related activities?
- Are you aware of any change for undergraduate courses in the area of curricula, syllabi and course outlines? Probe on their participation.
- How available are the educational materials for teaching?
- How would you describe the use of MOODLE/eGranary by yourself?
- How would you describe the use of MOODLE/eGranary by students? Refer to the course they teach.
- How is access to internet in the school? Which places are both staff and students able to access it?
- What are the major challenges in teaching do face?
- How do you find the load in the courses you teach? Did you manage to cover all topics/ give feedback to students on assessment? Probe on promptness.
- Did you have any challenges in teaching course? What about the classroom environment?
- How are the commitment levels of your students? What challenges do have with them?
- Is there anything else you would like to add about the environment of teaching in the SOM?

Thanks for your time. Your input has been very valuable, and is greatly appreciated

APPENDIX X

KEY INFORMANT INTERVIEWS FOR LABORATORY TECHNICIANS OF THE SCHOOL OF MEDICINE

Name of department:.....

Duration on this position:.....

- To what extent, if any, do you feel that SOM has benefitted from the different partners in the provision of quality education?
- Who are the major partners in the SOM who have contributed in providing quality education in the Laboratory?
- Did you receive training on how to operate the equipment? Include lab supplies.
- How accessible is the equipment to students? With regard to power lab/ skills lab; extent to the use of it.
- Do you experience some challenges during lab sessions with students? What are these challenges and how do you handle them?
- Has the lab sessions/environment have been improved upon?
- How often are the labs used by students?
- Do you feel students are benefiting from these laboratory activities?
- Have you been receiving complaints from the students concerning the laboratory work they do? What has been your help? Probe on level of difficulty and relation to what they learn?

Thanks for your time. Your input has been very valuable, and is greatly appreciated

Appendix XI

2014/2015 Grade Point Average and Examination attrition rates.

Bachelor of Sciences in Biomedical Sciences (BSc Biomed)

Course	**Number of failures**	**% of failures**	**GPA**
BMS 2015: Introduction to Biomedical Sciences	01	3.10%	2.80
BMS 2110: General and Metabolic Biochemistry	02	6.20%	1.20
BMS 2115: Analytical Biochemistry	00	0.00%	3.70
HAN 2510: Human Anatomy	02	6.20%	3.00
PGY 2040: Medical Physiology	05	37.60%	0.80
BMS 3135: Toxicology	01	1.60%	3.0
BMS 3145: Pharmacology	00	0.00%	2.50
BMS 3215: Medical Genetics	04	7.30%	3.00
BMS 3225: Molecular Biology	08	13.10%	2.00
BMS 3310: General and System Pathology	06	9.24%	2.00
BMS 3325: Immunology	09	14.00%	2.00
BMS 3330: Cellular Pathology	01	1.50%	2.90
BMS 4215: Molecular Biology	03	7.50%	2.00
BMS 4225: Clinical Biochemistry	00	0.00%	3.00
BMS 4325: Cellular Pathology	00	0.00%	3.20
BMS 4415: Research Methodology	04	10.00%	2.90
BMS 4424: Research Project	00	0.00%	3.40
BMS 4425: Public Health	02	5.00%	2.50
BMS 4525: Medical Microbiology	01	2.50%	3.00
BMS 4625: Medical Parasitology	01	2.50%	3.40
BMS 4915: Laboratory Management	00	0.00%	3.00
BMS 4325: Haematology	00	0.00%	3.00

NOTE: There are many Half Courses in the Final year for this programme.

Bachelor of Sciences in Environmental Health (BSc Env)

Course	Number of failures	% of failures	GPA
EHS 2110: Human Anatomy, Physiology and Microbiology	02	10.53%	2.90
EHS 2410: General Principles of Public Health and Environmental Health	00	0.00%	3.20
EHS 2420: Communicable and Non communicable Diseases	00	0.00%	2.50
EHS 2510: Principles of Building Design and Construction	00	0.00%	3.00
EHS 3210: Principles of Occupational Health, Hygiene and Ergonomics	00	0.00%	3.00
EHS 3310: Pollution and Waste Management	03	8.10%	3.00
EHS 3430: Pestology	01	2.70%	2.90
EHS 3520: Planned Development and Building Services	00	0.00%	3.40
EHS 3620: Food Animals and Slaughter Houses	03	8.10%	3.00
EHS 4120: Research Methodology Biostatistics	00	0.00%	3.00
EHS 4234: Industrial Training	00	0.00%	3.70
EHS 4220: Occupational Hazards and Risk Analysis	00	0.00%	3.70
EHS 4535: Inspection of Premises and Reporting	01	2.50%	3.00
EHS 4635: Pathology and Practical Meat Inspection	00	0.00%	2.00
EHS 4640: Food Safety and Hygiene	05	12.50%	1.20
EHS 5145: Environmental	00	0.00%	3.00

Epidemiology			
EHS 5150: Environmental Health Management Law and Ethics	00	0.00%	3.00
EHS 5164: Research Project and Practical Training	00	0.00%	3.30
EHS 5320: Environmental Monitoring	00	0.00%	3.50
EHS 5440: Health Promotion and Education	00	0.00%	4.0
EHS 5655: Inspection of Meat and other Foods	00	0.00%	3.50

Bachelor of Sciences in Physiotherapy (BSc Physio)

Course	**Number of failures**	**% of failures**	**GPA**
HAN 2410: Human Anatomy	01	5.00%	2.80
PGY 2030: Human Physiology	08	40.00%	0.40
PSY 2035: Social Sciences	00	0.00%	2.90
PTY 2110: Fundamental of Movement Science	00	0.00%	3.40
PTY Fundamentals of Professional Practice	00	0.00%	3.90
PMY 3250: Pharmacology	00	0.00%	3.00
PTM 3010: Pathology and Microbiology	00	0.00%	3.20
PTY 3120: Principles of Movement Sciences	00	0.00%	3.00
PTY 3220: Principles of Professional Practice	00	0.00%	2.90

PTY 3310: Fundamentals of Physiotherapy Sciences	0.00	0.00%	3.50
PSY 4020: Psychiatry	00	0.00%	3.70
PSY 4230: Applied Professional Practice I	01	3.20%	2.90
PTY 4324: Applied Physiotherapy Science I	00	0.00%	3.20
PTY 4410: Clinical Practice I	00	0.00%	3.20
PTY 4510: Research Methods, Epidemiology and Biostatistics	00	0.00%	3.30
PTY 5140: Applied Professional Practice II	00	0.00%	3.60
PTY 5330: Applied Physiotherapy Science II	00	0.00%	3.40
PTY 5420: Clinical Practice II	05	14.30%	3.00
PTY 5524: Research Project	01	2.90%	3.00

Bachelor of Pharmacy (B. Pharm)

Course	**Number of failures**	**% of failures**	**GPA**
HAN 2600: Human Anatomy	01	2.08%	3.00
PGY 2020: Human Physiology	19	39.58%	0.80
PGY 2420: General and Metabolic Biochemistry	01	2.08%	2.80
PMY 2020: Pharmaceutics I	13	27.08%	2.00
PMY 2110: Pharmaceutical Chemistry I	05	10.40%	1.10
PGY 3220: General Pharmacology	05	6.25%	2.50
PMY 3020: Pharmaceutics II	14	17.50%	2.00
PMY 3120: Pharmaceutical Chemistry II	17	20.99%	2.20

PMY 3250:	00	0.00%	3.00
PMY 3310: General Pharmacognosy	12	15.00%	2.50
PMY 3410: Pharmacy Practice Foundation	02	2.50%	3.70
PTM 3010: Pathology and Microbiology	03	8.82%	2.50
PTY 4030: Pharmaceutics III	06	6.67%	2.00
PMY 4130: Medicinal Chemistry	10	11.11%	3.00
PMY 4220: Pharmacology and Toxicology	02	2.22%	2.90
PMY 4329: Clinical Pharmacognosy	00	0.00%	3.70
PMY 4429: Pharmacy Practice Intermediate	02	2.17%	3.00
PMY 4510: Biopharmacy	03	3.33%	3.00
PMY 4619: Research Methods, Biostatistics and Epidemiology	03	3.26%	3.20
PMY 5040: Pharmaceutics IV	01	1.40%	2.90
PMY 5230: Clinical Pharmacology	03	4.29%	2.90
PMY 5430: Pharmacy Practice-Professional	05	7.14%	3.00
PMY 5710: Clinical Pharmacy and Therapeutics	03	4.29%	2.50
PMY 5624: Research Project	00	0.00%	3.00

Bachelor of Science in Human Biology (BSc Human Biology)

Course	**Number of failures**	**% of failures**	**GPA**
HAN 3010: Basic and Applied Human Anatomy and Development	09	5.39%	3.20
PGY 3010: Basic and Applied Physiology	35	20.96	2.00
PGY 3419: Medical Biochemistry and Genetics	10	5.95	3.00

PTM 3015: Immunology and General Microbiology	00	0.00%	3.20
PSY 3015: Behavioural Sciences and Communication Skills in Medical Practice	01	0.60%	3.30
DME 4114: Clinical Methods and Skill	00	0.00%	4.40
PGY 4110: Neurosciences	37	32.17%	0.50
PGY 4210: Pharmacology and Therapeutics	02	5.70%	2.80
PTM 4210: Pathology	24	19.35%	1.00
PTM 4310: Medical Microbiology	12	9.60%	2.00

Bachelor of Medicine and Bachelor of Surgery (MB ChB)

Course	**Number of failures**	**% of failures**	**GPA**
MED 5010: Internal Medicine Clerkship I	03	2.40%	2.50
OBG 5010: Obstetrics and Gynaecology	01	1.20%	2.50
PCH 5010: Paediatrics and Child Health	02	2.40%	3.00
SGY 5010: Surgery Clerkship I	02	2.30%	2.90
PSY 5215: Communication Skills, Professionalism and Health Care Ethics	00	0.00%	3.50
DPH 6024: Community Medicine	01	0.90%	3.00
MED 6210: Internal Medicine	00	0.00%	3.50
PTM 6410: Forensic Medicine and Medical Jurisprudence	03	2.48%	3.00
PSY 6410: Psychiatry	00	0.00%	3.70
SGY 6210: Surgery Clerkship II	00	0.00%	2.00
MED 710: Medicine	00	0.00%	3.00

OBS 710: Obstetrics and Gynaecology	00	0.00%	3.00
PED 710: Paediatrics and Child Health	01	1.37%	4.20
SGY 710: Surgery	02	2.70%	2.00

APPENDIX XII

Institutional Characteristics

Programme of study		Mission and Objectives	Educational Programmes	Assessment of Students	Students' welfare	Academic Staff	Educational Resources	Governance and Administration
MB ChB	Mean	3.41	2.68	3.39	2.82	2.94	1.79	3.10
	SD	1.11	1.06	1.04	1.03	1.11	1.09	1.26
BSc Biomed	Mean	3.64	3.16	3.83	3.22	3.25	1.62	3.53
	SD	0.91	1.02	0.82	0.94	0.98	0.91	1.18
B. Pharm	Mean	3.87	3.25	3.91	3.31	3.59	2.02	3.83
	SD	0.85	1.05	0.91	0.95	1.01	1.14	1.06
BSc Physio	Mean	3.53	2.87	3.62	2.94	3.16	2.30	3.63
	SD	0.97	1.02	0.85	1.00	1.08	1.21	1.08
BSc Env	Mean	3.49	2.96	3.72	3.26	3.31	1.60	3.54
	SD	1.02	0.96	0.98	0.94	1.02	0.92	1.19
Total	Mean	3.59	2.98	3.69	3.11	3.25	1.87	3.53
	SD	1.00	1.06	0.97	1.00	1.08	1.05	1.18

Appendix XIII

Management of courses

Programme	Course Workload	Pace of the course	Level of difficulty	Time spent on courses
MB ChB	1.48	1.87	2.49	2.71
BSc Biomed	1.68	2.13	2.47	2.64
B. Pharm	1.62	2.10	2.52	2.76
BSc Physio	1.62	2.19	2.48	2.96
BSc Env	1.99	2.54	2.66	2.86
TOTAL	**1.63**	**2.10**	**2.52**	**2.77**

Appendix XIV

Management of Teaching and Learning activities

Programme of study		Access to curricula	Access to handbooks	Access to teaching schedule	Available qualified teaching staff
MB ChB	Mean	2.23	1.86	2.35	2.85
	S D	1.21	1.25	1.22	1.02
BSc Biomed	Mean	2.18	1.86	2.72	2.81
	S D	1.00	1.20	1.03	0.90
B. Pharm	Mean	2.44	1.86	2.55	2.87
	SD	1.08	1.18	1.14	1.03
BSc Physio	Mean	2.07	1.63	2.05	2.42
	S D	1.31	1.30	1.52	1.27
BSc Env	Mean	2.54	1.77	2.21	2.98
	S D	1.42	1.34	1.41	1.10
Total	Mean	2.30	1.82	2.40	2.81
	S D	1.20	1.24	1.26	1.06

Appendix XV

Teaching Characteristics

Programme of study		Lecturers attend to all classes	Lecturers are punctual	Lecturers are available to students	Lecturers use ICT in teaching	I can cope without classes
MB ChB	Mean	3.27	3.34	3.40	3.14	2.76
	S D	1.29	1.02	1.03	1.11	1.38
BSc Biomed	Mean	3.46	3.32	2.99	2.39	3.02
	S D	1.05	1.13	0.90	1.34	0.97
B. Pharm	Mean	2.74	3.73	3.73	3.36	2.35
	SD	0.95	0.85	0.85	0.99	1.15
BSc Physio	Mean	2.93	3.18	3.44	3.22	3.18
	S D	1.04	1.07	0.91	1.11	1.37
BSc Env	Mean	2.83	3.49	3.71	3.66	2.51
	S D	1.00	1.05	1.09	0.93	1.34
Total	Mean	3.05	3.43	3.48	3.18	2.71
	S D	1.13	1.04	0.99	1.14	1.29

Appendix XVI

Assessment Practices

Programme of study		Grading is fair	Timely feedback	Feedback detail helpful	Match the scope	Promote memorising	Weighting importance	Weighting (bulkiness)	Grading is subjective
MB ChB	Mean	3.08	2.11	2.21	2.90	3.77	3.00	2.82	3.23
	SD	1.07	1.06	1.02	1.17	1.08	1.13	1.16	1.06
BSc Biomed	Mean	3.61	2.99	2.96	3.91	3.38	3.45	3.01	3.12
	SD	0.96	1.13	1.10	0.94	1.38	0.82	0.92	0.87
B. Pharm	Mean	3.72	2.94	3.01	3.75	3.27	3.42	3.08	2.95
	SD	0.82	1.06	1.05	0.83	1.27	0.96	0.98	0.94
BSc Physio	Mean	3.06	2.29	2.34	3.32	3.69	3.28	3.00	3.40
	SD	1.23	1.02	1.02	0.99	1.17	0.81	0.87	0.96
BSc Env	Mean	3.48	2.58	2.64	3.63	3.21	3.29	3.15	3.06
	SD	0.98	1.11	1.16	0.88	1.27	1.01	1.01	1.07
Total	Mean	3.37	2.54	2.60	3.42	3.49	3.25	2.98	3.14
	S D	1.04	1.13	1.11	1.06	1.23	1.01	1.03	1.00

APPENDIX XVII: PSEUDO NAMES OF LECTURERS AND THEIR DEPARTMENTS

NO.	PSEUDO NAME LECTURER	DEPARTMENT
1	AAB	DEPARTMENT OF ANATOMY
2	AB	DEPARTMENT OF PHYSIOTHERAPY
3	AC	DEPARTMENT OF MEDICAL EDUCATION AND DEVELOPMENT
4	AD	DEPARTMENT OF PUBLIC HEALTH
5	AE	DEPARTMENT OF BIOMEDICAL SCIENCES
6	AF	DEPARTMENT OF SURGERY
7	AG	DEPARTMENT OF PHYSIOLOGICAL SCIENCES
8	AH	DEPARTMENT OF BIOMEDICAL SCIENCES
9	AI	DEPARTMENT OF BIOMEDICAL SCIENCES
10	AJ	DEPARTMENT OF OBSTERIC AND GYNAECOLOGY
11	AK	DEPARTMENT OF BIOMEDICAL SCIENCES
12	AL	DEPARTMENT OF BIOMEDICAL SCIENCES
13	AM	DEPARTMENT OF PHYSIOTHERAPY
14	AO	DEPARTMENT OF PATHOLOGY AND MICROBIOLOGY
15	AN	DEPARTMENT OF PHYSIOLOGICAL SCIENCES
16	AQ	DEPARTMENT OF PHARMACY
17	AP	DEPARTMENT OF PHYSIOTHERAPY
18	AR	DEPARTMENT OF BIOMEDICAL SCIENCES
19	BA	DEPARTMENT OF MEDICAL EDUCATION AND DEVELOPMENT
20	BB	DEPARTMENT OF PHARMACY
21	BC	DEPARTMENT OF PATHOLOGY AND MICROBIOLOGY
22	BD	DEPARTMENT OF PHYSIOTHERAPY
23	BE	DEPARTMENT OF BIOMEDICAL SCIENCES
24	BF	DEPARTMENT OF PHYSIOLOGICAL SCIENCES
25	BG	DEPARTMENT OF PHARMACY
26	BH	DEPARTMENT OF PAEDIATRICS AND CHILD HEALTH
27	BI	DEPARTMENT OF SURGERY
28	BJ	DEPARTMENT OF PSYCHIATRY
29	BK	DEPARTMENT OF PHYSIOLOGICAL SCIENCES
30	BL	DEPARTMENT OF PATHOLOGY AND MICROBIOLOGY
31	BM	DEPARTMENT OF BIOMEDICAL SCIENCES