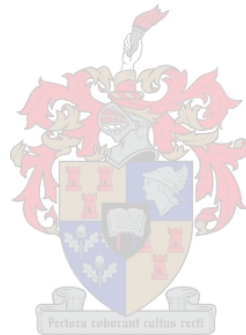# IMPLEMENTATION EVALUATION AS A DIMENSION OF THE QUALITY ASSURANCE OF A NEW PROGRAMME FOR MEDICAL EDUCATION AND TRAINING

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Dissertation presented for the Degree of Doctor of Philosophy at the University of Stellenbosch.

Promoter: Professor Jan Botha
Co-promoter: Professor Johann Mouton

December 2004

I, the undersigned, hereby declare that the work contained in this dissertation is my own original work and that I have not previously in its entirety or in part submitted it at any university for a degree.

Signature: …………………………………………………   Date: ……………………

ABSTRACT

In this thesis, an 'alignment approach' to the quality assurance of medical curricula is developed and practically illustrated in the evaluation of a section of a new curriculum in undergraduate medical education and training instituted at the Faculty of Health Sciences of the University of Stellenbosch in 1999.

The background of curriculum innovation at this institution during the 1990s is described, and the literature on the concepts of quality assurance is explored in higher education in general and in medical education and training in particular. The current focus on socially responsive curriculum renewal and accountability illustrates the need for this study.

The empirical part of the study was conducted in two phases. The first phase consisted of a 'clarification evaluation'. The planning of the new curriculum introduced in 1999 was analysed retrospectively through a study of the planning documents and interviews with leaders of the planning process. The results of this clarification evaluation are presented in the form of a 'Logic Model'. The implicit theory of the curriculum, as represented by the Logic Model, was then evaluated regarding its consistency with trends in medical education. These trends were determined through a study of the literature on the subject published during the time of the planning of the curriculum. It was found that the planning of the curriculum was in line with most of the identified trends, but that it lacked detailed information on how the basic sciences and clinical skills training were to be addressed. This compromised the evaluability of phase I of the curriculum and of the clinical rotations[1] by the method use in this study. Because of this, and also considering the time frame of this evaluation, phase I of the curriculum and the late clinical rotations were excluded from the second phase of the study.

The aims identified for the curriculum during the process of clarification evaluation were also aligned with the document, The Profile of the Stellenbosch Doctor[2]. This indicates that the planning process of the curriculum was in line with its intended outcome.

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[1] See Addendum A for a diagrammatic overview of the curriculum. The curriculum was structured into three theoretical phases (phases I, II and III) and three clinical rotations (early, middle and late).

[2] This document was drawn up during the initial phases of the planning process of the curriculum and regarded by the Faculty as a blueprint for the intended outcomes of the curriculum.

The second phase of the study consisted of an 'implementation evaluation' of phases II and III of the theoretical components and of the early and middle clinical rotations of the curriculum. Data for this implementation evaluation were collected from April 2002 to June 2003. Module chairpersons[3], lecturers and students were used as sources of data for the evaluation of the theoretical phases. The perceptions of these groups regarding the implementation of phases II and III of the theoretical part of the curriculum were collected by means of questionnaires designed specifically for this study. For the evaluation of the clinical rotations, the results of the standard student feedback obtained by the Faculty of Health Sciences were used as a source of data for a secondary analysis. The study guides provided for each of the theoretical modules and the clinical rotations were also used as a secondary source for the analysis of data.

The data obtained were then analysed by using the framework provided by the Logic Model. Following this, a judgment of the quality of the implementation of the curriculum was made. The planned curriculum was aligned with the practised curriculum by drawing up a 'curriculum scoreboard'. It was found that alignment was adequately achieved for six of the identified aims, while the implementation of four of the aims was not aligned to the planning according to the criteria used in this study.

The study illustrates that the methods of programme evaluation can be validly applied in the evaluation of a curriculum in medical education and training. The Logic Model enables an alignment between the planned and the practised curriculum, which can be used as a measure of the quality of a curriculum in terms of 'fitness of purpose'.

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[3] A **module chairperson** in the context of the Faculty of Health Sciences of the University of Stellenbosch is a senior faculty member responsible for the organisation and management of the modules presented as part of the curriculum in medical education and training.

ABSTRAK

In hierdie tesis word 'n 'belyningsbenadering' tot die gehalteversekering van mediese kurrikula ontwikkel en prakties op die proef gestel deur 'n gedeelte van die nuwe kurrikulum vir voorgraadse mediese onderrig, wat in 1999 aan die Fakulteit Gesondheidswetenskappe van die Universiteit van Stellenbosch ingestel is, te evalueer.

Die agtergrond van kurrikulumverandering in hierdie instansie gedurende die 1990's word ondersoek, en daar word 'n oorsig gegee van die literatuur oor die konsepte van gehalteversekering wat op daardie stadium in die hoër onderwys in die algemeen en in mediese onderrig in besonder in gebruik was. Die huidige fokus op sosiaal responsiewe kurrikula en verantwoordbaarheid illustreer die noodsaaklikheid van 'n studie van hierdie aard.

Die empiriese gedeelte van die studie is in twee fases uitgevoer. Die eerste fase het bestaan uit 'n 'verklarende evaluasie'. Die beplanning van die 1999-kurrikulum is retrospektief geanaliseer deur die bestudering van die relevante beplanningsdokumente en deur onderhoude met leiers van die beplanningsproses te voer. Die resultate van die verklarende evaluasie is in die vorm van 'n 'Logika Model' voorgestel. Die implisiete teorie van die kurrikulum, soos voorgestel in die Logika Model, is daarna geëvalueer ten opsigte van die ooreenstemming van die model met die tendense in mediese onderrig wat op daardie stadium geldig was. Hierdie tendense is nagespeur in die belangrikste literatuur oor die onderwerp wat in dieselfde tydperk as die beplanning van die 1999-kurrikulum gepubliseer is. Die bevinding was dat die beplanning van die kurrikulum in lyn is met die meerderheid geïdentifiseerde tendense, maar dat die basiese wetenskappe en opleiding in kliniese vaardighede nie in detail aangespreek is nie. Dit het die evalueerbaarheid van fase I van die kurrikulum en die kliniese rotasies[4] deur die metode wat in hierdie studie gebruik is, gekompromitteer. Om hierdie rede, en met inagneming van die tydsraamwerk van hierdie evaluasie, is fase I en die laat kliniese rotasies nie in die tweede gedeelte van hierdie studie ingesluit nie.

Die doelwitte van die kurrikulum wat gedurende die verklarende evaluasie geformuleer is, is ook met die dokument, *Die Profiel van die Stellenbosch dokter*[5], belyn. Dít het aangedui dat die beplanningsproses van die kurrikulum in lyn met die beoogde uitkoms daarvan is.

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[4] Sien Addendum A vir 'n diagrammatiese oorsig van die kurrikulum. Die kurrikulum is gestruktureer volgens drie teoretiese fases (fases I, II en III) en drie kliniese rotasies (vroeg, middel en laat).

[5] Hierdie dokument is gedurende die vroeë fases van die beplanningsproses van die kurrikulum saamgestel en word deur die Fakulteit as 'n bloudruk vir die beoogde uitkomste van die kurrikulum beskou.

Die tweede deel van die studie het bestaan uit 'n 'implementerings-evaluasie' van fases II en III van die teoretiese komponente en van die vroeë en middel kliniese rotasies van die kurrikulum. Data vir die implementerings-evaluasie is vanaf April 2002 tot Junie 2003 ingesamel. Module-voorsitters[6], dosente en studente is as bronne van data vir die evaluering van die teoretiese fases gebruik. Die indrukke van hierdie groepe persone betreffende die implementering van die teoretiese fases is deur middel van vraelyste ingesamel wat spesiaal vir hierdie studie ontwerp is. Vir die evaluering van die kliniese rotasies is die resultate van die standaard studenteterugvoer wat deur die Fakulteit ingewin word, gebruik as bron vir sekondêre analise. Die studiegidse wat vir elke teoretiese module en die kliniese rotasies verskaf word, het ook as 'n bron vir sekondêre data-analise gedien.

Die data wat vir hierdie studie ingewin is, is deur middel van die raamwerk wat deur die Logika Model verskaf is, geanaliseer. Daarna is 'n oordeel gevel oor die kwaliteit van die implementering van die kurrikulum. Die kurrikulum-soos-beplan is belyn met die uitgevoerde kurrikulum deur 'n 'kurrikulumtelbord' op te stel. Die bevinding was dat hierdie belyning voldoende bereik is vir ses van die geïdentifiseerde doelstellings van die kurrikulum, terwyl die uitvoering van vier van die doelstellings nie goed met die beplanning daarvan belyn was volgens die kriteria wat vir hierdie studie gebruik is nie.

Hierdie studie illustreer dat die metodes van programevaluasie geldig toegepas kan word in die evaluering van 'n kurrikulum in mediese onderrig en opvoeding. Die Logika Model maak dit moontlik om die beplande kurrikulum met die uitgevoerde kurrikulum te belyn. Dit kan dan gebruik word as 'n maatstaf van die kwaliteit van 'n kurrikulum in terme van 'geskiktheid vir doel'.

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[6] 'n **Module-voorsitter** in die konteks van die Fakulteit Gesondheidswetenskappe van die Universiteit van Stellenbosch is 'n senior lid van die fakulteit wat verantwoordelik is vir die organisasie en bestuur van die modules wat as deel van die kurrikulum in mediese onderrig en opleiding aangebied word.

Acknowledgements

I am a medical doctor by profession and have specialised as a pathologist in Clinical Microbiology. Coming from this background, I had to cross many frontiers to undertake a study in Social Science Methodology. This would have been impossible without the firm base provided by my family and the help of many other wonderful people in my environment. I acknowledge the contribution of the following people to this learning experience:

Firstly, I would like to acknowledge the continuous support of my promoter, Professor Jan Botha, who patiently guided me through this endeavour. I also am grateful for the expert advice and critical support I received from Professor Johann Mouton, director of the Centre for Research in Educational Technology (CREST) at the University of Stellenbosch, who acted as co-promoter for this study. Professor Wynand van der Merwe, dean of the Faculty of Health Sciences, supported this study in principle and practice and contributed to the successful completion of this work in many ways.

Above all, I am indebted to the medical students of the Faculty of Health Sciences of Stellenbosch University. This thesis is mostly about them. The students served as my primary inspiration, but also as a major source of data, together with the module chairpersons and lecturers involved in medical education and training. Throughout the data-collection period, I encountered enthusiasm and patience, and very few complaints, from these three groups.

The groups of students and lecturers and the three module chairpersons (Professors Robert Gie and Patrick Bouic and Dr Paul van Zijl) who contributed to the pilot studies of the questionnaires deserve a special mention, as well as those members of the Faculty involved in the planning of the curriculum who were always willing to answer my numerous questions.

I am also indebted to the lecturers of the Centre for Research in Education, Science and Technology (CREST), who helped me through the modular work required for the DPhil degree in Social Science Methodology. All of them were always willing to assist, also with the operationalisation of this study.

I owe special gratitude to Ms Antoinette van der Merwe, who helped and supported me throughout this study, both as a personal friend and as a fellow student. Dr Martin Kidd assisted

me with the statistical analysis of the data, and I am grateful for his contribution to my education. The staff of the academic support services at the Faculty of Health Sciences deserve to be mentioned in these acknowledgements, as they were always willing to assist me in many ways. The student feedback obtained by them regarding the clinical rotations was used in this study as a secondary source of data. Dr Pierre Bredenkamp, Ms Myrna van Zyl and Dr Francois Cilliers were very helpful in this regard.

Ms Marisa Honey, my language editor, did a crucial job under great pressure. I am grateful for the professional and friendly way in which she contributed to this thesis.

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My interest and involvement in medical education also led to my application and acceptance as a FAIMER [7] fellow in 2002. I owe much to this organisation, both for research specifically undertaken in the area of student assessment, and for involving me in an international circle of medical educators. The fellowship involved two training sessions in Philadelphia, an intersession project and continuous discussions on a listserv. I would like to thank the training and support provided during the course of my studies by this organisation and its faculty. The class of 2002 (Dr Bosede Afolapi, Professors Rima Berriashvili, Henry Campos, Jose Cueto, Zalina Ismail, S.M. Wasim Jafri and Nor Azila Mohd Adnan, Dr E. Oluwabunmi Olapade-Olapa, Professors Avinash Supe and Kristina Weil) provided me with continuous encouragement, knowledge and wisdom shared from their own passion and pursuit of innovation and excellence in medical education. Thanks to this group, I was able to broaden my horizons to an international perspective.

Finally, I have to thank the staff of the Department of Medical Microbiology at Tygerberg Hospital. Since I started there as a registrar in Microbiological Pathology in 1993, this department has become my working home and a second family. I appreciate the way they tolerated the distractions caused by my studies in the field of medical education, and their continuous and unconditional support.

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[7] The Foundation for the Advancement of Medical Education and Research (FAIMER) is a non-profit division of the Educational Commission for Foreign Medical Graduates (ECFMG) that is committed to advancing international medical education. The ECFMG is based in Philadelphia, USA.

This dissertation is dedicated to my German Shepherd, Max, who shared the four years of getting up at four in the morning in order to complete this study without it interfering with my other duties as a wife, a mother and a pathologist.

Elizabeth Wasserman

August 2004

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CHAPTER 1: INTRODUCTION

1.1   BACKGROUND AND RESEARCH QUESTIONS

1.1.1 Quality assurance, accountability and policy changes during the 1990s

Although the concept of quality is not new to the academic arena, emphasis on the assurance of quality in education gained momentum during the final decades of the 20th century. This was the result of factors such as the idea of mass higher education, the changes in the relationship between higher education and society and the steering roles of governments (Vroeijenstijn, 1995a, pp. 2-4).

This thesis was written during a time of transformation in South African higher education. Following the institution of the first democratically elected government in 1994, the major policy documents concerning higher education indicated the importance of quality assurance in the restructuring of the South African system of higher education (Botha, 2000, p. 2; Wilkinson, 2003, p. 161).

The focus on quality issues emerged concomitant to significant developments in the field of health science education and training. The growth of medical education as an emerging discipline is evident in the number of journals published in this field (for example *Academic Medicine*, *Medical Education*, *Medical Teacher*, *Advances in Health Sciences Education*, *Teaching and Learning in Medicine*, *Education for Health*), as well as the increase in the number of international conferences focusing on health science education (for example the Ottawa conferences on medical education and training held every second year, and the annual conferences of the Association for Medical Education in Europe).

Existing theories, models and approaches to quality can be applied to the discipline of medicine (see, for example, the article by Vroeijenstijn (1995b) describing the implementation of the two pillars of internal quality control and external assessment by peers in a quality assessment system for medical education and training). At the time of the policy changes in higher education

during the 1990s (see chapter two for more detail), a system of accreditation of medical education and training based on peer review already existed in South Africa. Providers of health science education and training were obliged to develop quality assurance practices in accordance with a redefined system of accreditation reflecting the policy changes in higher education that had taken place during the last decade of the twentieth century. These policy changes were shaped by, amongst others, the Report of the National Commission on Higher Education (RSA, 1996), the Draft Education White Paper (RSA, 1997a) and the Higher Education Act (RSA, 1997b).

This thesis has a large empirical component that was undertaken to bridge the gap between theory and practice. In the environment of predominantly quantitative research that is encountered in most health science faculties, it is important to also emphasise research on the quality of educational processes and practices. Ideally, the practice of quality assurance should seamlessly form part of the main processes of educating and training future doctors. Such a seamless integration would be an important way to add value to medical education and training.

The research presented here consists of an evaluation of a part of the curriculum for medical education and training offered by the Faculty of Health Sciences of the University of Stellenbosch, South Africa. The first chapters of the thesis formulate an approach to a facet of quality assurance based on the methodology of programme evaluation. This approach is then applied to the practice in order to evaluate a section of a curriculum.

The study was conducted during a period following major revision of the curriculum in medical education and training offered by the Faculty of Health Sciences of the University of Stellenbosch. It is important to evaluate the success of the implementation of the new curriculum during its initial years to determine whether all of the changes occurred as planned. Furthermore, it is important to undertake this evaluation of the implementation in the broader context of quality assurance in higher education. This context will be explored in chapter three.

Since the empirical part of the study is based on a specific curriculum (*viz.* the new curriculum introduced by the Faculty of Health Sciences of the University of Stellenbosch in 1999), the context and the main features of this curriculum will now be discussed.

1.1.2 The medical curriculum of the Faculty of Health Sciences of the University of Stellenbosch

In 1999, the Faculty of Health Sciences of the University of Stellenbosch introduced a new curriculum for medical education and training. Various considerations prompted the Faculty to review and drastically change the curriculum that was offered up to 1998.

Early in the 20th century, the Flexner report (1910) popularised a model of medical education and training grounded in the natural sciences. This paradigm remained unchallenged for many decades. However, during the last two decades of the 20th century, a sharper focus on the needs of society emerged, accompanied by the demand that the main mission of medical education and training must be to contribute towards the WHO's stated goal of 'health for all' (Boelen, 2000). Three dominant trends can be identified as universal to the restructuring of medical curricula across the globe at the turn of the 20th century: a focus on primary health care, training students in the community rather than in large teaching hospitals, and incorporating social sciences alongside the natural sciences.

Prior to 1999, the University of Stellenbosch's curriculum for education and training in medicine was structured in accordance with the traditional paradigm based on the German model: the curriculum was built upon a foundation of basic natural sciences, and preclinical teaching was largely separated from clinical training, both conceptually and practically. The organisation of the curriculum was discipline based and academic departments were responsible for education and training in subjects directly linked to the various disciplines in medicine (for example anatomical pathology, medicine and surgery) (University of Stellenbosch, 1997, pp. 4-6). The buildings of the medical school of the University of Stellenbosch and the Tygerberg academic hospital, built in the 1950s, reflect this departmental organisation.

The new curriculum introduced in 1999 can be described as integrated, problem orientated[8] and system based. Content was divided into phases in which integration between the various

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[8] *Problem-based* learning is a defined instructional method designed to enable students with knowledge suitable for problem solving (Schmidt, 1983, p. 11). During the planning phases of the 19999 curriculum in medical education and training, it was decided that the (then) Faculty of Medicine did not possess adequate resources to fully employ this method. A *problem-oriented* approach was therefore adopted. This approach is less structured and has the aim of enhancing the relevance of the students' learning by incorporating clinical problems or patient cases in the system-based modules. The method of instruction concerning these problems is not defined.

disciplines is expected to occur. The pedagogical model that was chosen emphasised the development of problem-solving skills. Modules (subunits of the curriculum) were arranged according to biological systems in medicine (for example, the cardiovascular system or the reproductive system) and not according to academic disciplines. This new curriculum is the object of study of this thesis. The structure of this curriculum is described in more detail in chapter two.

This study investigated the planning and implementation of the 1999 curriculum for medical education and training, which, in many ways, can be described as the most fundamental curriculum revision and change undertaken since the foundation of the Faculty in 1956.

1.1.3 Problem statement

Three research questions prompted this study:

a) What are the implicit theories underpinning the new curriculum in medical education and training introduced by the Faculty of Health Sciences of the University of Stellenbosch in 1999?

b) Is the theoretical framework of this curriculum aligned with current trends in medical education and training?

c) Is the implementation of the new curriculum in medical education and training coherent with its original planning?
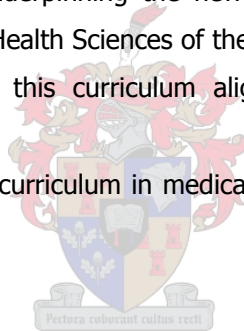
1.1.4 Position of the researcher

As a pathologist working in the field of medical microbiology, I have been involved in the teaching of microbiology and infectious diseases at the Faculty of Health Sciences at Stellenbosch since 1993. Although not participating in the original planning of the structure of the new curriculum, I was intimately involved, from 1996 to 1998, in the planning of the basic microbiology offered as part of a module named The Basis of Disease Processes, which is presented in phase II of the programme.[9]

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[9] See Addendum A: An overview of the programme in medicine instituted at the Faculty of Health Sciences of the University of Stellenbosch at the beginning of 1999.

Because infections occur in all systems of the human body, my involvement as a microbiologist in the new curriculum increased and I was invited to participate in the planning and presentation of most of the phase III modules. Having experienced the previous curriculum as a lecturer and being acutely aware of some of its inadequacies, I was and remain very enthusiastic about the principles and ideas upon which the 1999 curriculum is based.

As a pathologist, I am involved with the process of quality assurance in laboratory practice on a daily basis. This provides me with a frame of reference that carries over to my teaching activities. As I became increasingly aware of the complexities of medical education and training (which cannot simply be equated with the complexities of a pathology laboratory), I became concerned about the quality assurance of medical education and training. I also realised that the education and training I had received in medicine did not prepare me adequately to explore this new challenge. I had to broaden my horizons beyond the Faculty of Health Sciences.

The Centre for Research in Educational Science and Technology of the University of Stellenbosch provided the necessary platform for my study of quality assurance in higher education (including medical education and training). This broadening of my horizons beyond the laboratory and the patient's bedside has had an irrevocable influence on both my practise of medicine and my role as a medical educator.
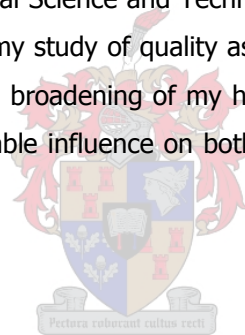
1.2 METHODOLOGY

In this study, the methods of programme evaluation are applied to the evaluation of a curriculum. Objectives are used for evaluation, but it is the *process* of implementation rather than the *outcomes* of these objectives that is evaluated.

Because a curriculum is continuously being developed, the results of an evaluation can feed into the continuous review and planning processes. It is the intention of this study to inform curriculum development through the evaluation of existing practices. A hybrid of curriculum evaluation approaches is used for this aim and, in this way, the study contains elements of Stenhouse's 'research model for curriculum evaluation' (Stenhouse, 1976).

Mennin *et al.* (1992, p. 130) emphasise the role of observations, outcomes and information that are systematically collected and analysed by programme evaluators in frequent 'in-flight'

corrections of educational programmes in curriculum development. Although this study only examines a cross-section of the implementation of the curriculum, I attempt to illustrate how the methods used in this study can identify the specific areas that need to be readdressed or adjusted within the life cycle of this curriculum.

A 'Logic Model' of programme implementation forms the backbone of this study. This Logic Model is an analytic tool used by programme evaluators to describe the logical linkages between programme resources, activities, outputs, customers reached and short-, intermediate- and longer-term outcomes (McLaughlin & Jordan, 1999, pp. 65-66). One of the methodological points of departure of this study is that programme evaluation methods can also be used for curriculum implementation evaluation. This point of departure is explained and substantiated in chapter four. Elements of Stufflebeam's content, input, process and product (CIPP) model (Stufflebeam *et al.*, 1971) are clearly discernable in the Logic Model, and this model is therefore suitable to be used to implement Stufflebeam's approach.

A Logic Model of the curriculum-as-planned (the 'planned curriculum') is used as a framework for analysing the alignment between the planned curriculum and the curriculum-as-executed (the 'practised curriculum'). This process enables a gap analysis of the planned curriculum compared to the practised curriculum, as well as an identification of strengths and weaknesses in the implementation of the curriculum. This method forms the basis of the 'alignment criterion' for the quality assurance of a curriculum proposed in this study (see chapter four). It is important that this alignment criterion should not be seen as a rigid or one-directional activity; it is a dynamic concept. Alignment should also be executed in reverse: practice should influence planning in a cyclic way in order to keep all the elements congruent.

The research questions concern the *quality* of the new curriculum. Quality can be defined in many ways. Harvey and Green (1993, p. 10) maintain that the concept of quality has different meanings for different people. The definition of quality will therefore vary according to the purpose for which it is evaluated. One possible understanding of quality is to describe it in relation to processes or outcomes (Vroeijenstijn, 1995a). The concept of quality in higher education, and in medical education and training in particular, will be discussed in detail in chapter three.

1.3   OPERATIONALISATION

In order to do an evaluation of the quality of the implementation of the curriculum, the initial needs assessment and curriculum planning (done by the curriculum planners) were revisited so as to clarify the theoretical framework underpinning the curriculum innovation. For this purpose, the methodology described by Owen and Rogers (1999) was applied to conduct a 'clarification evaluation'. During the process of a clarification evaluation, the implicit theories and assumptions on which a programme is based are identified and made more explicit. In this way, the intended outcomes of a programme can be clearly identified, rendering a programme more suitable for further evaluation (see chapter four for more detail).

The clarification evaluation of the new curriculum for medical education and training enabled me to formulate a Logic Model of the curriculum as it was planned (see chapter five). The *relevance* of the planned curriculum was assessed against international trends in medical education and training described in four seminal documents in the field of medical education and training published during that time, in particular the Edinburgh Declaration (World Federation for Medical Education, 1988), the General Medical Council's document Tomorrow's Doctors (General Medical Council, 1993), the 'five star doctor' described by Boelen (1993), and the Cape Town Declaration (World Federation for Medical Education & World Health Organization, 1995). Through this process, the first two research questions (a & b; cf. section 1.1.3) are answered.

In order to answer the third research question, the next phase of the study consists of an 'implementation evaluation' of a section of the new curriculum using data collected during from April 2002 to July 2003.[10] The implementation evaluation serves to assess the curriculum as it was practised by using the framework provided by the clarification evaluation (in this case, the Logic Model), in order to determine if the programme, as planned, was actually executed. This process and its results are described in chapters six to eight.

Data for the implementation evaluation was obtained from various sources, including students, lecturers and module chairpersons. A mixture of qualitative and quantitative methods was employed, and the data collection methods included questionnaires, focus group interviews/discussions as well as an analysis of documents. The Logic Model developed during

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[10] It was not possible to evaluate the outcome of the programme during the stage of empirical data collection, as the new curriculum yields its first graduates only at the end of 2004.

the clarification evaluation of the planned curriculum is used as a framework for the analysis of data relating to the implementation evaluation of the curriculum.

The final act of evaluation is to arrive at a judgment regarding the evaluated object. Regarding the context of justification, the findings of this study can only be justified by the logic and validity of the methods employed. The evaluation criteria used by the Higher Education Quality Commission (HEQC) for the re-accreditation of MBA programmes (Higher Education Quality Committee, 2003c) are applied to place the findings in the local context at the time of evaluation.

1.4 DELIMITATION

This study uses current understanding of and existing knowledge on education and training as a contextual background to the quality assurance of curriculum innovation and implementation. However, as this type of programme evaluation study is applied and problem driven, an extensive review of the body of scholarship concerning education and training is not considered essential (Mouton, 2001, p. 95).

This study does not attempt to evaluate the whole curriculum in medical education and training offered at the University of Stellenbosch, or to form a judgment of the quality of the graduates that will be delivered by this institution. Because of the time frame in which data collection for this study was carried out (April 2002 to June 2003) this evaluation focuses on the planning of the 1999 curriculum and the implementation of certain parts of it during 2002 and 2003. During the time of data collection for this study, the whole curriculum had not yet been implemented and the programme had not yet delivered any graduates. The quality (or lack thereof) of these graduates as products of this medical curriculum can only be evaluated at a later stage, when these graduates are working as medical practitioners. This study rather attempts to illustrate practices of valid data collection in order inform curriculum evolution in a continuous and practical manner.

1.5   BRIEF OUTLINE OF THE THESIS

Having explained the context and the aim of the study, I shall outline the way this thesis is structured to logically address the problem statement set out in section 1.1.2.

In the next chapter (chapter two), I will provide a short historical background of the Faculty of Health Sciences at University of Stellenbosch and describe how this Faculty is organised. This is followed by a review of factors that led to the need for curriculum renewal. I indicate how the Faculty responded to this demand by planning and implementing the new curriculum.

Before attempting to evaluate the new curriculum for medical education and training according to its planning and execution during the time frame of this study in order to make a judgment of its quality, it is necessary to first examine current concepts of quality in the context of higher education. This is done in the first section of chapter three. Against this theoretical background, I provide a brief account of the recent South African experience of quality assurance in higher education. The final section of chapter three concerns itself more specifically with medical education and training. International trends in and debates on the quality assurance of medical education and training are reviewed in this section and, finally, I describe the practices concerning the accreditation of medical programmes in South Africa that were current during the time of this study and the writing of this thesis.

Chapter four addresses issues regarding the methodology used for this study. I examine the curriculum as a social construct, paying particular attention to the various *Gestalten* of a curriculum that can be identified, namely the planned, practised and hidden curricula.[11] Following this, the methodology of programme evaluation is examined to determine its suitability for curriculum evaluation, and the elements of the Logic Model are aligned to the different forms of the curriculum to illustrate how programme evaluation can be applied to the planned and the practised curricula. Programme logic suggests that, if the planned and the practised curricula are aligned, the projected outcomes will probably be attained. However, poor alignment, which signifies maladjustment between the planned and practised curricula, may impact negatively on the expected programme outcomes. This negative impact may contribute to the third form of the curriculum, which is described as the 'hidden curriculum'. The hidden curriculum is generally understood to signify elements of the learning experience of students that do not form part of the curriculum as it was planned. Different descriptions of the concept of the hidden curriculum

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[11] The various definitions of the hidden curriculum encountered in the literature are described in chapter three.

will be explored in chapter five. By evaluating the alignment between the planned and the practised curricula, the methodology employed in this study endeavours to inform us about some of the aspects of a hidden curriculum.

Chapter five contains the empirical part of this study and describes the clarification evaluation of the planned curriculum. This part of the study examines the planning processes of the curriculum in order to articulate the various theories underpinning it. This activity cumulates in the development of a Logic Model for curriculum innovation, which forms the basis of the implementation evaluation described in chapter six. The results of the clarification evaluation are analysed in order to evaluate the relevance of the planning of the curriculum and to identify the strengths and possible areas of weakness in the planning process.

The methodology of empirical data collection for the implementation evaluation of the 1999 curriculum for medical education and training is explained in chapter six. This includes a secondary analysis of documents and the student feedback data and questionnaires developed for the evaluation of the theoretical phases of the curriculum.

The results of the implementation evaluation are presented in chapter seven in accordance with the framework provided by the Logic Model of curriculum planning.

In chapter eight, the data collected from the various stakeholders acting as sources of data are collated. In a final step of analysis, the data are further reduced and a 'curriculum scoreboard' is developed. This scoreboard summarises the results of the implementation evaluation for each of the objectives of the curriculum for medical education and training as identified by the process of clarification evaluation. In this way, the curriculum scoreboard aligns curriculum practice with curriculum planning and enables us to identify the strengths and weaknesses of curriculum implementation in accordance with the criterion of alignment discussed in chapter four. The scoreboard includes a judgment of the success with which the curriculum objectives had been achieved during the time frame of the study.

Chapter nine concludes the thesis by recapturing the rationale, methodology and results of the study. It is recommended that the judgments derived at and discussed in the curriculum scoreboard must be fed back into the curriculum-planning process. This suggests a role for the quality cycle as an underlying force in the process of curriculum renewal. A system of quality assurance is proposed that is integrated into the culture and practices of an institution, making it able to connect to the broader arena of programme accreditation and institutional audit.

CHAPTER 2: THE CONTEXT OF CURRICULUM CHANGE AT THE FACULTY OF HEALTH SCIENCES OF THE UNIVERSITY OF STELLENBOSCH

In the first section of this chapter, I describe the *background* of the Faculty of Health Sciences of the University of Stellenbosch. I briefly recount the history and describe the structure of the Faculty up until the implementation of the new curriculum in 1999. In order to better explain the challenges presented by curriculum innovation and change, I also describe the prevailing educational tradition by recounting a lecturer's perspective of the learning environment at the Faculty of Health Sciences.

The second section of the chapter is devoted to a description of the *changes* in the social and academic environment (both national, regional and international) that influenced this specific instance of curriculum innovation. Four particular influences are identified and briefly discussed: the effects of globalisation, changes in the prevailing concepts of teaching and learning (during the mid-1990s), the increasing demand for social responsiveness and accountability experienced by institutions of medical education and training during that time, and international and regional trends in medical education and training.
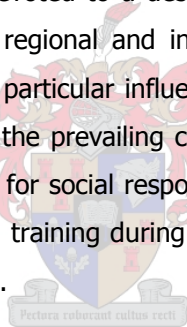
In the final section of this chapter, I describe how the Faculty responded to these changes by planning a new curriculum during the 1990s, and the implementation of this curriculum at the beginning of 1999.

2.1 THE CONTEXT OF THE FACULTY OF HEALTH SCIENCES OF THE UNIVERSITY OF STELLENBOSCH

In order to contextualise the 1999 curriculum in medical education and training, it is appropriate to briefly sketch a history of the University of Stellenbosch, and of the Faculty of Health Sciences in particular.

2.1.1 A brief history of the Faculty of Health Sciences of the University of Stellenbosch

The University of Stellenbosch was founded in 1918, in the place of the former Victoria College, as one of three colleges of the University of the Cape of Good Hope (University of Stellenbosch, 2002, pp. 1-2). The main campus of the university is situated in the historical town of Stellenbosch in the Western Cape Province, South Africa.

The Faculty of Medicine of the University of Stellenbosch was established in 1956. Karl Bremer Hospital served as the initial teaching and training site for the Faculty of Medicine. This hospital was equipped with four hundred beds and was situated approximately thirty kilometres from the main campus of the university.

Tygerberg Hospital was specifically designed and built to serve as a training hospital for the (then) Stellenbosch Faculty of Medicine. It was built a few kilometres down the road from Karl Bremer Hospital and, at its completion in 1972, the staff and students moved across to this 1200-bed facility, which still serves as the main educational and training facility today. The faculty buildings for medicine and dentistry were built adjacent to the teaching hospital and are attached to it by enclosed walkways. Together with a student centre and a growing number of student residences, this complex of buildings forms the Tygerberg Campus of the University of Stellenbosch.
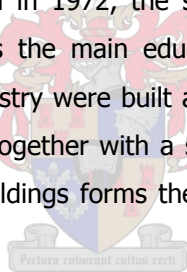
During 2001, the Faculty of Medicine and the Faculty of Dentistry merged to form the current Faculty of Health Sciences. This new entity was initially organised to include five schools: the School of Medicine, the School of Basic and Applied Health Sciences, the School of Oral Health Sciences, the School of Allied Health Sciences and the School of Public and Primary Health Sciences. However, as a result of the restructuring of higher education in South Africa (RSA, 2003), the School of Oral Health Sciences was incorporated into the University of the Western Cape at the beginning of 2004.

Today, the University of Stellenbosch is one of eight public higher education institutions in South offering medical education and training. There are no private medical schools in South Africa.

In 2003, approximately 2 000 graduate and 600 postgraduate students were registered at the Faculty of Health Sciences. From 1998 to 2003, an average of 160 medical students, 50

postgraduate medical students and 180 students in allied health professions graduated annually (Van Heerden *et al.*, 2003, p. 6). Education and training take place mainly on the Tygerberg campus and 810 students are housed in the five student residences.

In this study, an evaluation of parts of the medical curriculum is conducted in order to answer the research questions posed in the first chapter. Therefore, only the education and training of medical students are relevant and data concerning other health science programmes will not be considered. At the time of data collection for this study (2002 to 2003), the curriculum in medicine involved the School of Medicine, the School of Basic and Applied Health Sciences and the School of Public and Primary Health. For these three schools, the general calendar of Stellenbosch University (University of Stellenbosch, 2002) listed 31 full professors, 15 associate professors, six emeritus professors (employed part time), 38 senior lecturers, 110 full-time employed lecturers and 29 part-time employed lecturers.

These numbers do not adequately explain the student to staff *ratio*, since a large part of the education and training of medical students is the responsibility of staff appointed jointly by the Western Cape Provincial Government's Health Department or the National Health Laboratory Services (NHLS) and the University of Stellenbosch. The responsibilities of these staff members include a heavy service load, as well as research, teaching and training.

At his retirement in December 2002, a previous dean of the Faculty of Health Sciences, Professor J. de V. Lochner, commented on the increasing strain on the Faculty experienced during the 1990s (Lochner, 2002) . He listed the political strategies employed during the political transition and the confrontation with the two sister universities in the Western Cape (the University of Cape Town and the University of the Western Cape) as the main challenges encountered during his term as dean, and bemoaned the attrition of staff experienced in the state and provincial administration. He also maintained that, at that point, the remaining staff were generally overworked, stressed and demoralised. In a commentary on the state of medical education in South Africa, Ncayiyana (1999, p. 714) remarks on the deteriorating state of academic hospitals and the low priority often given to education and training in an environment that is depleted of adequate human resources.

2.1.2 Previous curriculum transformation at the Faculty of Health Sciences of the University of Stellenbosch

The medical curriculum predating the one instituted in 1999 can be described as lecture orientated, discipline based and under departmental management (Terblanche & Van der Merwe, 1996). A clear division existed between the preclinical and clinical sections of the curriculum. The previous major curriculum reform at the Stellenbosch Medical School took place in 1984 (Van Heerden *et al.*, 2003).

The 1984 reform focused on the integration of the clinical component of training with the theoretical component of teaching, in accordance with international trends at the time. This curriculum started with a one-year foundation of basic science presented on the main campus at Stellenbosch. The basic science foundation incorporated physics, mathematics, chemistry, data management and biology. The next level was composed of so-called 'preclinical' subjects. The preclinical subjects were presented on the Tygerberg Campus during the second and third year of study, and included anatomy and physiology, pharmacology, anatomical pathology, chemical pathology, medical microbiology and virology. Contact with patients was introduced at the end of the third year, continuing in the fourth, fifth and sixth years of study. During the clinical phase of training, students were taught major clinical subjects, including surgery, internal medicine, paediatrics, obstetrics and gynaecology, along with anaesthesiology. They rotated in groups through the wards of the teaching hospital to acquire the clinical skills. The inpatient spectrum of disease in the training hospital included patients needing predominantly tertiary and secondary levels of care. The profile of outpatients seen at the clinics of the hospital was mainly at the secondary and primary levels of care. The students did some of their clinical training in peripheral provincial (secondary) hospitals, but spent very little time in true primary care settings.

Although this type of traditional, discipline-based model of a curriculum is rapidly going out of fashion, it can still be found in many medical schools (Foundation for the Advancement of Medical Education and Research, 2003).

2.1.3 A lecturer's perspective on the learning environment encountered in the Faculty of Health Sciences

The practice of medicine is a cultural as well as a scientific pursuit (Gastel, 1995b, p. S3). The lecturers involved, as well as the national context of health sciences and service delivery, influence the context of education and training at an institution where curriculum innovation is undertaken.

As explained in the introduction (chapter one), the majority of lecturers at the Faculty of Health Sciences are also actively involved in the practice of medicine. Biggs (1996, p. 347) explains how the way in which lecturers think about their professional practice (their theories-in-use) will influence the way in which they teach medicine. Professionalism requires the espoused theory to be the theory-in-use (see Argyris, 1976, pp. 638-639)).

The way lecturers instruct and assess student performance is the result of their individual ideas and practices (which may not be consciously formulated as theories) relating to medicine and the teaching and training of students. Teachers derive these ideas and practises mainly from their own experience in their career practice, and very often this is also strongly influenced by their own educational experiences. In the reality of the practicing physician in an academic post, the emphasis on teaching as part of his or her job description is not as pressing as the emphasis on service delivery and discipline-related research.

In South Africa, medical education and training as an academic discipline was slow to evolve and, by 2003, only four of the eight institutions for health sciences education and training in South Africa had established specialised units for medical education (Cilliers, 2003). Medical education and training in South Africa lagged behind modern international trends, such as problem-based learning, community-based education and training and the utilisation of general/family practitioners as trainers (De Villiers & De Villiers, 1999). Furthermore, discipline-based research has always been strongly emphasised as the most important aspect of an academic staff member's job description, to the detriment of research on education. In the case of staff appointed in a joint university/provincial position, incentives are provided for service delivery, but there are no significant rewards for excellence in teaching and training. Turner (1963) warned that the teaching faculty in some developing countries are reduced to 'educational impotence' by the crushing burden of service to patients. This early warning is relevant to the context of education and training at the Faculty of Health Sciences of the University of Stellenbosch today.

Although well qualified in the medical profession, a small minority of the faculty involved in the medical curriculum at the University of Stellenbosch is formally trained in education. This situation is not unique at most medical schools in South Africa. In this country's context of medical education and training, and especially in clinical practice, the so-called 'see one, do one and teach one' approach is familiar to the experience of all students.

During the time of data collection for this study, the Faculty of Health Sciences was organised in accordance with the typical 19th century German model. According to this model, medical schools are attached to their own teaching hospitals and organised according to a departmental pattern, with each hospital unit under the supervision of a permanent chief, who has a corresponding chair at the medical school. A further aspect of this model is that the practice of medicine is committed to laboratory science and clinical research (Stevens, 1995, p. S11).

The discipline-based organisational structure of the Faculty therefore was, and still is, not aligned with the system-based organisation required by the new curriculum.

2.2 ENVIRONMENTAL CHANGES THAT INFLUENCED CURRICULUM REFORM AT THE FACULTY OF HEALTH SCIENCES OF THE UNIVERSITY OF STELLENBOSCH

Curriculum innovation at the Faculty of Health Sciences of the University of Stellenbosch in the mid-1990s took place against a background of globalisation, as well as changes in the understanding of the nature and purposes of education and training as such. The socio-political changes occurring in South Africa[12] during that time brought about a heightened demand for social responsiveness and accountability. [13] The socio-political changes also influenced the educational sector and demanded a response through appropriate curriculum innovation.

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[12] South Africa's first democratic elections took place in 1994. This change in the political dispensation was accompanied by major changes in almost all aspects of South African society.

[13] The demand for the social responsiveness of medical curricula is also reflected in the international literature during that time. See, for example, the WHO's document entitled 'Towards Unity for Health' (Boelen, 2000)

In the next paragraphs, I shall briefly discuss these influences on the curriculum revision that took place at the Faculty of Health Sciences of the University of Stellenbosch during the 1990s and cumulated in the institution of the new curriculum at the beginning of 1999.

2.2.1 The effects of globalisation on education

Advances in information and communication technology break down global boundaries. As in almost all spheres of society, institutions of higher education in general, and institutions for the teaching and training of health care practitioners in particular, did not remain unchanged in the context of the challenges brought about by globalisation.

Kraak (2001, p. 4) describes globalisation as the outcome of three simultaneous developments in the advanced economies of the world: the demise of Fordist production regimes and the onset of a global economic crisis in the mid-1970s, the advent of information technology in the early 1980s, and the rise of innovative forms of work organisation in the early 1980s, now referred to as 'flexible specialisation' or 'post-Fordism'. Kraak maintains that the new economic system that emerged from these developments is characterised by high-quality export manufacture aimed at specific consumer niche markets. This new system demands constant innovation through the reconfiguration of information and knowledge. This gives rise to the need for a highly skilled labour force able to employ the new technologies and add value to existing goods and services (Kraak, 2001, p. 5) and, in this way, globalisation has a profound effect on the desired outcomes of education.

The effects of globalisation demand diverse skills and competencies and broad-spectrum problem-solving skills. The sheer magnitude of human knowledge renders its coverage by education an impossibility (Bransford *et al.*, 2000, p. 5). The individual requires different skills in order to contribute to and make the most of the increasing availability and accessibility of information. This broadens the teacher's previous responsibility for the education and training of the learner to a much broader time span, and a much larger context. It also makes it necessary for a larger part of the population to stay in the educational system for a longer period in order to acquire these skills. The result of this is the massification of higher education and a shift away from traditional elite institutions to more accessible institutions offering innovative and transferable programmes. The massification of higher education is the basis of Trow's argument for the increase in the demand for quality and accountability faced by institutions of higher

education today (Trow, 1994). Bowden and Marton (1998) respond with a vision of a 'changed university' that is able to deal with the challenge of quality learning in such a changed environment.

Sophisticated technology provides mobility to education and training. This increases competitiveness amongst institutions of higher education across national and even continental borders. In South Africa, public institutions are faced with an increasing number of private and foreign providers of higher education. This is evident in a monitoring report published by the Council on Higher Education (CHE) on the state of private higher education in South Africa (Council on Higher Education, 2003a). This report indicated that there were 117 private providers of higher education operating in South Africa in 2003. The social interactivity of medical curricula restricts the transferability of medical education and training across international borders and, compared to other disciplines, medical education and training has been spared most attempts at internationalisation up to this point.[14]

2.2.2 Changes in concepts of learning and teaching in higher education

During the latter part of the twentieth century, our understanding of how people learn and how this should influence teaching was significantly influenced by the results of new research (Bransford *et al.*, 2000, p. 4). The most important changes for medical education and training were the emergence of a learner-centred paradigm, together with a move from a 'cognitive' to a 'constructivist' concept of learning. Much has also been learned about the approaches to learning that students may adopt and the effect of these learning styles on medical education and training (see, for example, the article by Newble and Clarke (1986)).

This broadening base of educational research led to a change in teaching practices.

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[14] Ironically, the reverse situation is true, with doctors trained in developing countries being poached by developed countries, which are suffering a deficit of locally trained physicians (Stevens, 1995).

2.2.2.1   The move towards a constructivist theory of learning

During the period following the Flexner report at the beginning of the 20th century (Flexner, 1910), medical knowledge was regarded as an external commodity with which the student had to familiarise him/herself in order to be able to use this knowledge in daily practice. The student traditionally assumed the role of receiving and absorbing knowledge from lecturers. An understanding of what it means to learn from the student's perspective has not generally been seen as an indispensable or even desirable component of accomplishment in teaching. The teaching process as it is experienced by students has remained hidden from view (Hounsell, 1984, p. 189). This conception of learning is based on a cognitive theory of learning and an empiricist understanding of knowledge.

Biggs (1996, p. 347) describes such a cognitive concept of education and training as a dualism between the learner and knowledge. Understanding, in this paradigm, is coming to know that which already exist. Teaching is a matter of transmitting knowledge, without regard to the context of what needs to be learned. Learning is conceived as an increase in the quantity of information stored in students' 'heads'. The learner has to receive and store information accurately, since assessment is based on the quantitative measure of the reproduction of information. This way of teaching was strongly ingrained in the natural sciences, including medicine, and dominated by a lecture-based method of teaching.

The emergence of a constructivist theory of learning is based on the idea that knowledge is the construction of meaning (see, for example, Bransford *et al.* (2000, p. 10). This requires learners to create meaning by actively selecting and cumulatively constructing their own knowledge, through both individual and social activity. The constructivist theory of learning maintains that the construction of knowledge always builds on previous assumptions, motives and intentions and on existing knowledge, which determine the course and the quality of the learning that may take place. Learning is seen in qualitative and not quantitative terms. The learner (not the teacher) is central in the creation of meaning. In this way, learner-centred teaching and a constructivist theory of learning are intrinsically connected.

The constructivist theory of learning further implies that the engagement of the learner with the teaching environment is an active process that will lead to the construction of knowledge by the learner him/herself (see, for example, Ramsden (1992)). Students are expected to engage in activities that will enhance their own learning, and what the student does is regarded as being of

more importance than what the teacher does (Shuell, 1986, p. 429). The extent to which a student will engage with his/her learning environment is also influenced by the individual approach of the student to learning (see section 2.2.2.3).

2.2.2.2 The shift towards a learner-centred perspective in education and training

The constructivist theory of learning alters the relationship between the teacher and the learner. A vast body of research [15] on the processes of learning, as well as the democratisation of learning, has influenced the way in which the traditional lecturer-student relationship is perceived. In this new dynamic between the student (learner) and the lecturer (teacher), the main emphasis is on the learner taking centre stage and primary responsibility for his/her own learning.

This change in perspective, from a teacher-centred to a learner-centred orientation, has brought about a shift from what is *taught* towards what is *learnt*. A learner-centred perspective of education and training has a strong influence on the relationship between learner and teacher. In this relationship, the student (now preferably called a learner) directs his own learning, selecting and choosing from the arena of knowledge presented to him by the lecturer (now preferably called a facilitator of learning). According to this shift in perspective, the student can be better viewed as a 'partner' in the building of his/her conceptual knowledge, rather than as an 'apprentice'.

The nature of the relationship between learner and teacher can be related to two current, contesting discourses regarding the structuring of higher education curricula: a disciplinary discourse and a credit accumulation and transfer discourse (CAT). Medicine, as a profession, has traditionally categorised knowledge in discipline domains. Ensor (2002, p. 276) argues that CAT, as discourse, attempts to provide a mechanism to facilitate the circulation of knowledge in an organised framework and favours modular curricula with explicit outcomes. Along with this modularisation comes a shift in the organisation of curricula, from previously being centred on departments to now being organised as integrated programmes. In this scheme of things, an academic, as a teacher, has to act as a facilitator in the learning process, rather than as an expert in a discipline (Ensor, 2002, p. 246). As a CAT system also allows for more flexibility and

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[15] Excellent examples of such research are described in the book 'The Experience of Learning' by Marton *et al.* (1984).

freedom of choice regarding modules, this discourse can be understood to be more learner-centred. According to Ensor (2002, p. 276), the vertical pedagogic relations associated with academic apprenticeship are to be eroded in such a curricular structure.

Although the 1999 curriculum for medical education and training is organised as a programme presented in modules, the Medical School and Faculty of Health Sciences are still structured according to disciplines. The erosion of departmental barriers in teaching and training is therefore incompletely affected by the restructuring of the curriculum because of the departmental affiliation of the lecturers.

2.2.2.3 A focus on the different approaches to learning by students

Marton and Säljö (1976) categorise students' approaches to learning tasks into two broad categories, namely *deep* or *surface* approaches. Biggs identifies a third approach to learning, namely an *achieving* approach[16] (Biggs, 1979).

A *surface approach*[17] to learning relies primarily on an attempt to memorise course material, treating the material as if different facts and topics are unrelated. In contrast to the surface approach, Newble and Clarke (1986) argue that a *deep approach* involves an active search for meaning, underlying principles, structures that link different concepts or ideas together, and widely applicable techniques. This approach is related to the constructivist theory of education and training, and translates well into a student-centred learning environment.

Students adopting an *achieving approach* to learning try to get good results by the selective use of the most efficient means. Strategies employed to achieve good results are the efficient organisation of time, working space and syllabus coverage through planning ahead, allocating time according to task importance and the systematic use of study skills. Whereas deep and surface approaches appear to be mutually exclusive, an achieving approach could be associated with either a deep or a surface approach (Pickworth, 2001, p. 140).

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[16] The term *strategic approach* is sometimes used as an equivalent to the term *achieving approach* (Newble & Clarke, 1986, p. 165).

[17] The term *rote learning* is sometimes used to denote the same concept.

The way in which students approach their learning is dependent on a variety of factors, including the characteristics of the institution and the teaching methods to which they are exposed (Newble & Clarke, 1986, p. 272). Learning activities should be designed to maximally engage students in order to achieve a deep approach to learning. Rote or surface learning is encouraged by a high volume of course content, relatively high class contact hours, a lack of opportunity to pursue subjects in depth, a lack of choice over subjects and method of study, a threatening and anxiety-provoking assessment system, and assessment that emphasises the recall of information (Gibbs, 1992, p. 9).

This emphasis on the approach that students have towards learning creates new challenges and opportunities for curriculum innovation. It is important to remember that, although students may have an existing inclination towards a certain approach to learning, it is not a fixed characteristic. Students' individual approaches to learning are encouraged by their learning environment. The factors encouraging surface learning that are listed above are to be avoided, and Gibbs (1992) finds that an appropriate motivational context, a high level of learner engagement with frequent interaction with others (including peers), a well structured knowledge base and a relevant system of assessment help to build a learning environment wherein students are more likely to adopt a deep approach to learning. Teaching practices and methods of instruction should be designed to maximise the opportunities for the student to actively engage with the learning environment.
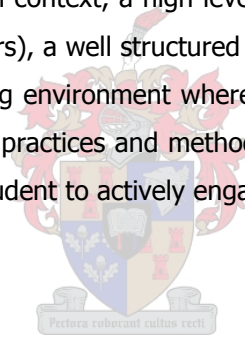
2.2.2.4 Changes in teaching practices and methods of instruction

A constructivists understanding of the process of learning, a student-centred learning environment and an attempt to invoke students to adopt a deep approach to learning rather than a surface one are all factors that impact on the decisions made regarding teaching practices and methods of instruction.

A constructivist understanding of the process of learning highlights the need to introduce a range of activities, involving teachers, peers and the individual students, as appropriate, so that the higher-level objectives have a greater probability of being achieved than when only one teaching method, such as lecturing, is used (Biggs, 1996, p. 354).

Many of the studies reviewed by Crooks (1988) to assess the impact of classroom evaluation practices on students reveal that the learning strategies students adopt are powerful predictors of

educational outcomes, so that skill in the selection and application of learning strategies is an important educational outcome.

According to Bligh (2000, pp. 8-19), lecturing is regarded as a less than optimal tool to teach values associated with subject matter, to inspire interest in a subject and to effect personal and social adjustment. The activities commonly associated with lectures include listening, interpreting, comprehending, note taking and (hopefully) reflection (Biggs, 1996, p. 353). Individual ability and interest determine the amount of student activity elicited.

Tutorials elicit elaboration, clarification, the removal of misconceptions and the challenging of established interpretations. Tutorials also help the students to see how their peers interpret concepts or apply their interpretations. The group size has a huge effect on the activities elicited (Biggs, 1996, p. 354).

Gibbs (Gibbs, 1992, p. 42) states that it is only when there is a ratio of class time to independent study time of about 1: 3 that the class contact becomes less dominant in a learning environment, and students become more strategic in allocating their out-of-class time to what counts (to what is assessed!). Out-of-class time is influenced most by assignments, by assessment criteria and by perceptions of what the important topics are.

Many medical schools have followed McMaster University's pioneering footsteps in problem-based learning. A good description of problem-based learning and its rationale can be found in an article written by Schmidt (1983). This instructional method is fundamentally student centred. However, moving into the problem-based format of learning from a background of traditional lecture-based teaching requires considerable resources, both in the training of lecturers in the problem-based methodology, and in the time required to provide learning material suitable to problem-based learning. Alterations to infrastructure are also required. An example of this is the need to refurbish large lecture theatres to provide enough smaller rooms for group work. There is also a general perception that a lower faculty to student ratio is required for problem-based learning to be effective (Hemker, 1998). Considerations such as these compelled the Faculty of Health Sciences of the University of Stellenbosch not to employ problem-based learning as an instructional method in the new curriculum for medical education and training that was instituted in 1999 (Faculty of Medicine, 1997d).

The changes in concepts of teaching and learning described in section 2.2.2 influenced the design of the structure of the curriculum, as well as the presentation of the content of the

curriculum. It is not the aim of this study to evaluate the effects of the teaching practices employed in the 1999 curriculum on the learning of students, but, as an important environmental factor influencing curriculum change, the teaching activities implemented in the curriculum will be described as they were conceptualised in the planning stages of the curriculum (see chapter five). The implementation of teaching according to this planning will be evaluated (see chapter six).

2.2.3 Social responsiveness and accountability

It is not only educational paradigms that influence the practices of institutions of higher education. Gibbons (1999, pp. C81-C82) describes how the manner in which knowledge is produced is evolving as a result of a change in the contract between science and society. In this new contract, communication between science and society is bidirectional. Society is no longer the passive beneficiary of the products of science, but also actively informs science about its needs. Gibbons terms knowledge produced to address these needs 'contextualised knowledge', stating that this leads to a rapid shift within science from the search for 'truth' to the more pragmatic aim of providing a provisional understanding of the empirical world (Gibbons, 1999, p. C82). In an earlier work co-authored by Gibbons, this new type of knowledge production was called 'mode 2 science' (Gibbons *et al.*, 1994). Mode 2 science is characterised by knowledge produced in the context of application, transdisciplinarity, heterogeneity and organisational diversity, enhanced *social accountability* and broadly based *systems of quality control* (Gibbons *et al.*, 1994, p. 26).

Breier (2001, p. 7) remarks on the influence of Gibbons's work on the report of the National Commission on Higher Education (1996) and subsequent policy pronouncements. The emphasis on producing knowledge to address the identified needs of society is recognisable in the idea of the responsiveness of higher education.

The National Commission on Higher Education prioritised responsiveness to the society as one of the key policy issues for the transformation of the South African higher education system. The Commission regarded responsiveness as a shift away from the closed knowledge systems of traditional disciplines and collegially-recognised authority to more open systems that are more dynamically interactive and possess broader social interests and outside processes of knowledge generation (National Commission on Higher Education, 1996, p. 6). In this way, the values of

non-elite communities will be incorporated into the educational and cognitive culture of institutions. This places higher education in a broader arena, with many more role players, and would make higher education *accountable* to larger social and economic constituencies (Breier, 2001, p. 6). Although these ideas were mooted in the period directly after 1994, the National Plan for Higher Education (RSA, 2001) activated their implementation only after 1999. In its new funding framework for higher education institutions published in terms of the Higher Education Act, (RSA, 1997b), the government subsequently made it clear that institutions of higher education would be assessed according to their *contribution to society* and their *participation in the redress* of previous inequalities (Ministry of Education, 2003).

In its Framework for Institutional Audits (Higher Education Quality Committee, 2004b, p. v), the Higher Education Quality Committee (HEQC) describes the demands of multiple stakeholders for greater responsiveness to social needs through enhanced student access and mobility, research and innovation that address social and economic development, and engagement with local, regional and international communities. In this way, institutions of higher education are compelled to encompass a broader arena than the internal environment of any university or faculty.

This view of responsiveness focuses on the interaction between institutions of higher education and the societies in which these institutions exist. This broader social responsiveness can be carried over in what is taught to the students at these institutions. However, the role of universities to create socially responsible citizens is not universally accepted. Fish (2004, p. 2) remarks that forming such citizenship is a task that should rather not be taken on by academics, because performing academic work responsibly and at the highest level is a job big enough.

The relevance of education and training to the needs of society is particularly pertinent in the health sector. In the literature on medical education and training, the social responsiveness of *curricula* is frequently mentioned. For example, the second reform proposed by the Edinburgh Declaration [18] is to ensure that curriculum content reflects national health priorities (World Federation for Medical Education, 1988, p. 464). In the project of the World Health Organization (WHO), Towards Unity for Health (Boelen, 2000, p. 44), the concept of social responsiveness is defined as the measure by which a (medical) school responds to societal needs as measured by

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[18] During the World Federation for Medical Education's World Conference of 1988, the Edinburgh Declaration was formulated to establish the direction that medical education needed to take in order to advance the health and well-being of mankind.

the performance of its graduates in society, the extent to which its research results have an impact on priority health issues, and the validity of the health services it delivers as models for health service providers. In medical education and training, the focus is on the responsiveness of *curriculum content* to the health needs of the society. This narrower understanding of social responsiveness is dominant in the literature on medical education and training.

The South African government's 1997 White Paper for the Transformation of the Health System in South Africa (RSA, 1997a) clearly states that education and training programmes should be aimed at recruiting and developing personnel who are competent to respond appropriately to the health needs of the people they serve.

Apart from the pressure to change the profile of their students to reflect the country's population profile, South African medical schools therefore also needed to reassess the *content* of their curricula to respond adequately and appropriately to the needs of the society in which their graduates would serve. According to Bligh (1999, p. 711), less than 20% of the South African population had access to a medical aid scheme at the turn of the century. Therefore it became vital to focus on primary care, rather than on secondary and tertiary care, which are only accessible to a small minority of the population.

Terblanche and Van der Merwe (1996, pp. 1-2) identified the following national priorities to shape reform in the health sector and provide an impetus for curriculum reform at the Faculty of Health Sciences of the University of Stellenbosch:

- Reforms in national health care policy emphasising comprehensive primary health care,
- A reduction of focus on and finance for hospital-based care,
- Decentralisation of health care facilities, and
- Demands for broader accessibility for all to higher education.

It is important to keep in mind that this trend towards increased social awareness and responsiveness in the mid-1990s was not unique to medical education and training or to South Africa. The democratisation of nations and individuals led to global demands for broader access to and 'openness for all' in both basic and higher education. Broader access leads to mass higher education that differs significantly from traditional 'elite' forms of higher education. According to Trow (1994, p. 1), this raises questions concerning the accountability of governments, industry and the universities themselves regarding the adequacy of quality control. It is increasingly necessary for the survival of higher education globally for it to be accountable to the external world.

Society is profoundly influenced by the health of both the individual and the public in general, and therefore the medical profession is a high-profile one. Medical education and training cannot be excluded from the broad demand for accountability in higher education rising from both government and society. The training of medical doctors is expensive financially to both the state and the individual, and drains many years of a person's life. Society needs to be protected from inadequately trained doctors and the concurrent waste of resources, while the student needs to be assured of the best possible learning experience in order to be adequately equipped to enter professional life, meet society's expectations of health care and promote the health of all people (see for example, the Health Professions Council of South Africa's document Education and Training of Doctors in South Africa (Health Professions Council of South Africa, 1999, p. 3) and the World Federation for Medical Education's international guidelines for quality improvement in basic medical education (World Federation for Medical Education, 2001, pp. 3 - 4).

The increasing need for accountability focuses attention on quality assurance in higher education, and this will be discussed in greater depth in chapter three.

In the next section I will describe some international and regional trends that emerged during the last two decades of the previous century in response to the evolution of medical education and training described above. These trends also impacted on the curriculum innovation that took place at the Faculty of Health Sciences of the University of Stellenbosch during the 1990s.

2.2.4 International and regional trends in medical education and training

The field of medicine vividly reflects the impact of a changing world. Apart from the changes in education described above, scientific advances are happening with such speed and are of such a magnitude that it becomes impossible for a single individual to keep up with the expansion of knowledge. Of great importance are the social changes that also affect the basic practice of medicine.

The demands of this changing environment on today's doctor have been addressed by the growth in a body of knowledge on medical education and training. During the past two decades, various summits, papers and blueprints have expressed the expected competencies of today's medical doctor. The most important examples of these include the Edinburgh Declaration of the

World Federation for Medical Education (World Federation for Medical Education, 1988), the General Medical Council (GMC)'s Tomorrow's Doctor (1993), and the recommendations formulated by the WFME following the World Summit on Medical Education held in 1994 (World Federation for Medical Education, 1994) , all of which emphasise responsiveness to the needs of society. Closer to home, the Cape Town Declaration (World Federation for Medical Education & World Health Organization, 1995) reiterated this response to community needs, but, at the same time, emphasised the attainment of global standards. This was manifested in the South African Medical and Dental Professions Board's document, Education and Training of Doctors in South Africa (Health Professions Council of South Africa, 1999).

Boelen (1993) describes the ideal doctor (what he calls the 'five star doctor') as being competent in the following five aspects:

- Assessment and improvement of the quality of care: preventive, curative and rehabilitative care should be integrated in order to respond to a patient's total health needs.
- The optimal use of modern technologies: while this should be employed to the ultimate benefit of the patient, ethical and financial considerations must be borne in mind.
- The promotion of healthy lifestyles: individuals and groups must be sensitised to their own health protection
- Reconciliation of individual and community health requirements: a balance must be maintained between the individual needs of the patient and the needs of the community at large.
- Team work: within the health sector, but also across the health sector and other socio-economic sectors influencing health.

The social imperative is also obvious in the 'five star doctor' described by Boelen. *No longer are diagnosis and treatment regarded to be adequate as core functions of a health care professional*.

In 1993, the General Medical Council of the United Kingdom recommended six key changes to medical teaching to meet these changing demands on the medical profession (General Medical Council, 1993). Many of these changes to teaching were in accordance with emerging educational paradigms, while others were formulated to address globalisation and the explosion of knowledge, as well as:

- The development of a core curriculum: this should decrease the number of facts that have to be digested. The remainder of the curriculum should consist of a choice of modules.

- That problem-based learning should be introduced, using real clinical situations to make teaching more practical, relevant and stimulating.

- That a firm understanding of scientific methods should be built at undergraduate level.

- The encouragement of vertical integration of the clinical aspects of organ systems with anatomy, physiology, biochemistry and pathology.

- That skills should be developed progressively, from skills laboratories to simulated patients and, ultimately, to real patients.

The Cape Town Declaration of the African Regional Conference on Medical Education (World Federation for Medical Education & World Health Organization, 1995) makes specific recommendations for the education and training of a 'Doctor for Africa'. These include the following:

- While education and training must be of internationally recognised standards of excellence, the doctor for Africa must be educated, trained and equipped specifically to serve communities in Africa.

- Attitudes must be fostered that specifically promote ethical awareness, respect for human rights, a community-based orientation, progressiveness and a willingness to adapt to local conditions and changing circumstances.

- Knowledge must be specific to the needs of Africa and be related to the relevant basic medical sciences, epidemiology, locally-occurring infections and diseases, maternal and child health, mental health, rehabilitation, diagnostic skills, medico-legal issues, social and cultural anthropology, the economics of health care, the management of resources and the humanities.

- Skills must be specific to include all areas of clinical medicine; epidemiology; preventive medicine and health promotion; general practitioner competence; scientific, managerial, educational and learning skills; interpersonal and communication skills; computer literacy; community capacity building; and a multi-sector approach fostering work in multidisciplinary teams.

This master plan for education and training strategies to address the knowledge, skills and attitude of the 'Doctor for Africa' presents an emphasis on student-centred, problem-based, patient-oriented and community-based learning. It suggests that integrated core curricula have to be adapted to local conditions and available resources. The Cape Town Declaration (World Federation for Medical Education & World Health Organization, 1995) also recommended that medical education units should be established in every medical school to enable the promotion, coordination and evaluation of the necessary educational reforms. The declaration also advises

the involvement of private practitioners in medical education and training, and that medical education settings should be in both teaching and private facilities. It was further advised that staff development should be undertaken to promote job satisfaction, for instance by using appropriate awards and incentives, as this would minimise the brain drain problem.

The Stellenbosch curriculum previous to the 1999 reform was no longer suitable, in format and content, to meet the demands of students, government and society. The Faculty of Health Sciences recognised that the scope of the environmental changes summarised above was significant enough to demand a complete curriculum renewal. The course of action followed by the Faculty in order to achieve this is described briefly in the following section.

2.3 THE FACULTY OF HEALTH SCIENCES' RESPONSE TO THE CHANGING ENVIRONMENT

The response of the Faculty of Health Sciences of the University of Stellenbosch to the environmental changes summarised above was to embark upon a process of comprehensive curriculum renewal. In this section of the chapter, I describe the process of curriculum planning and summarise the features that were considered to be essential to the new curriculum. I also describe the structure that was proposed to be most appropriate to accommodate the features of the proposed curriculum. Finally, I briefly recount the process of curriculum implementation that began in 1999.

2.3.1 The planning of the new curriculum

In an unpublished faculty report, Terblanche and Van der Merwe (1996) listed the following international trends in education and training identified by the curriculum planners and faculty management as the major reasons for curriculum change at the University of Stellenbosch:

- The shift away from hospital-based towards community-based learning and teaching.
- The shift away from the dominance of the didactic lecture format to learner-centred and problem-orientated approaches facilitated by the use of new educational technologies.
- The principle of developing core curricula to reduce information overload, yet making adequate provision for essential basic knowledge, skills and attitudes.

- The integration of subjects and a system-orientated approach to organising learning content.

In 1994, the Faculty Board established a Curriculum Working Group, consisting of a 20-member Committee for Undergraduate Education, to lead the process of curriculum reform. Two student representatives and three faculty members with a special interest in and knowledge of medical education and training were included in this group. A facilitator guided the group through the process, which was designed to take place in four phases (Terblanche & Van der Merwe, 1996):

- Phase one: an environmental analysis considering local, national and international trends and needs relevant to medical practice and education.
- Phase two: defining the profile of the ideal Stellenbosch doctor based on the above environmental analysis (this resulted in the document, Profile of the Stellenbosch Doctor, which is very important to this study and is included in this thesis as Addendum B).
- Phase three: identification of changes necessary to the existing curriculum implicated by the above process.
- Phase four: structuring of an implementation model that accommodates the defined changes to the curriculum.

The process of curriculum planning took place during a series of workshops held over a time span of five years (1994 to 1998). The foundation and principles of the new curriculum were laid down during the first three years, while the committee focused primarily on the details concerning the first part of the curriculum during the last two years. The definition of a final outcome of the educational process, in the form of the Profile of the Stellenbosch Doctor, was done early in the process. A draft of this document was produced as early as 1994, following an environmental analysis conducted in phase I. The Profile of the Stellenbosch Doctor was defined during phase II of the planning process. The Working Group then commissioned a subgroup to compile a survey to obtain feedback from alumni who had graduated between 1985 and 1991, as well as from the final-year students of 1995, regarding three aspects of each feature of the proposed profile:

- The importance of the particular feature.
- The level or standard at which it should be dealt with during training.
- The respondent's opinion on the adequacy with which this feature was dealt with during his/her own training.

The feedback from this survey was used to adjust and finalise the profile. This profile served as a guide for the rest of the planning process, as well as for the implementation of the curriculum. In this way, the Profile of the Stellenbosch Doctor became a roadmap for the type of doctor that

was to be the end product of the education and training programme. This process adopted by the working group, of planning activities according to a visualised end product, offers exciting evaluation opportunities, which were taken up by this study. The Profile will be used extensively in this study and consists of a description of the knowledge, skills and attitudes that the graduate should possess. These elements are presented below (see also Addendum B):

Knowledge:
- Basic knowledge of the necessary medically applicable scientific and mathematical concepts.
- Basic and relevant knowledge of the normal functioning and morphology of the human body and psyche.
- Relevant knowledge of the abnormal functioning and morphology of the human body and psyche.
- Knowledge of the maintenance of health and prevention of disease (physical, mental and social).
- Knowledge of the recognition and diagnosis of common diseases and abnormalities of the human body and psyche.
- Basic knowledge of the relevant treatment and rehabilitation options.
- Knowledge of the appropriate use and limitations of special investigations and diagnostic methods.
- Knowledge of factors in the community environment that can influence health.
- Knowledge of the finances, management and structures of health care.
- Basic knowledge of ethics and legal aspects that are applicable to medicine.
- Basic knowledge of the interaction between biological, psychological and sociological factors that play a role in health.
- Basic knowledge of alternative and complementary medicine.
- Knowledge of the basic principles of research methodology.

Attitudes/views:
- Respect for person and life.
- A loyal and ethically accountable disposition towards the profession, patients and community.
- An acknowledgement of the limitations of own knowledge and skills.
- A positive disposition towards continuing professional development.
- A willingness to be involved in and of service to the broader community.

- An empathic disposition towards the patient, his/her family and the community, and a willingness to be accessible.
- The acceptance of full responsibility within the patient-doctor relationship.
- The willingness to set a positive example regarding social responsibilities and obligations.

Skills:

- The ability to integrate, interpret and apply knowledge.
- The ability to think and act in a problem-solving fashion.
- The ability to communicate effectively with patients from different cultural groups in the process of diagnosis and management.
- Sufficient skills in diagnostic and therapeutic procedures to be able to function autonomously as a doctor in primary care.
- The ability to function holistically within the context of family and community.
- The ability to establish and manage a primary health care infrastructure.
- The ability to interpret and apply relevant literature.
- The ability to function effectively under stressful circumstances.
- The ability to function in the broader team context.
- The ability to take part in and guide continuous and in-service training, as well as community education.
- The ability to effectively utilise relevant technological resources (e.g. computers) in the health environment.
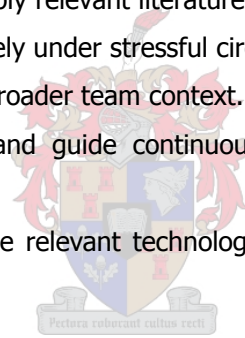
Terblanche and Van der Merwe (1996, p. 5) report that, as may be expected during any process of change, the changes proposed to the existing curriculum in phase III encountered varying degrees of resistance from a limited number of faculty members. They surmise that the basis of this resistance was perhaps the lack of inclusiveness of the process and the fact that the non-participants in the process of curriculum innovation did not have the chance to be convinced of the validity of the scientific basis of the curriculum innovation and subsequently did not accept ownership of the results. Nevertheless, the Faculty Board approved the proposals for changes to the previous curriculum in 1995 with the proviso that the final, detailed changes to the curriculum should be properly motivated.

2.3.2 Features of the new curriculum

The decision of the working group to found the new curriculum on a system-based, integrated model is described in their report on a workshop held at Zevenlodge (Faculty of Medicine, 1997b). Preclinical and clinical teaching and training had to be integrated, and the level of management had to be moved away from departments and disciplines to a central governance structure at faculty level. The planning process will be described and evaluated in detail in chapter five, but, as a synopsis, the following strategic core decisions regarding the new curriculum made by the Faculty Board are listed here:

- A core curriculum relevant to the comprehensive South African background needed to be developed.

- Such a curriculum needed to be adapted continuously in order to stay relevant.

- The curriculum should be aimed at delivering a product that:

    - can serve general practice

    - would can be able to enter the public sector

    - would be able to serve in peripheral locations

    - would be able to undertake postgraduate study

- Training must be aimed at maximising the self-development of the student.

- Training must be aimed at nurturing a positive attitude to and ability for self-study, in order to equip and motivate students to become lifelong learners.

- The primary health care approach must be expanded in the curriculum, with specific focus on the prevention and early identification of diseases and on the bio-psychosocial [19] model.

- The students must be equipped to support the nursing profession as primary care providers in practice and to act as leaders in the primary care team.

- A community-oriented and community-based approach must be taken in training, involving general practitioners where relevant.

- Lack of resources must be addressed by:

    - the development of self-study packages

    - the development of computer-based and audiovisual programmes

    - rationalisation and sharing of infrastructure for training

    - sharing and using lecturers and facilities outside the faculty

- Where feasible, an integrated approach to the curriculum must be followed.

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[19] A bio-psychosocial model of medicine, in contrast with a biomedical model, appreciates the patient not only as an organ system, but also considers the psychological and social diversity associated with each individual (Mash, 2001).

- Mechanisms for monitoring the quality, standards and relevance of undergraduate training must be developed.

The educational approach of this envisioned curriculum was set out as follows (Faculty of Medicine, 1997a, addendum E) :

- Only half of the day's schedule should be structured. The rest of the time should be made available for guided self-study.
- Formal lectures must be kept to a minimum.
- The ratio between self-study components and structured activities should be maximised.
- Modules and themes must be planned and presented as outcomes based. Outcomes must be clearly specified and made available to the learners.
- Maximum integration of the course as a unit must be attempted within the themes by the use of workbooks, problem-based presentations, etc.
- Work in small groups with feedback should be prioritised.
- Resources should be identified and clearly communicated to the students.
- Maximum content of the preclinical modules must be integrated in the modules, with the minimum retained in the preclinical part of the programme following the first six months of the first year of study.
- Optimal exposure to clinical material is an important pillar of the training process.
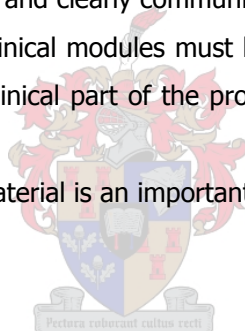
2.3.3 The structure of the new curriculum

An overview of the structure of the 1999 curriculum is included as Addendum A.

The new curriculum that emerged from this planning phase has the following structure:
It remained a six-year curriculum and, although maximum integration of disciplines was the object, the curriculum was layered into three phrases, each building progressively on the foundation of the previous one.

The first phase consists of basic science subjects, shortened to a study period of six months. The second phase starts in the middle of the first year of study and continues until the middle of the second year of study. System-orientated modules, with an emphasis on the so-called 'preclinical' subjects, are presented during this phase. Clinical work commences at the beginning of the third phase (second half of the second year of study), in the form of clinical rotations. This is

interspersed with system-based modules focusing on more advanced clinical content. An 18-month student intern period completes the training.

2.3.4 The implementation of the new curriculum

Following the careful consideration and planning described above, the new curriculum was implemented at the beginning of 1999. At the end of the period of data collection for this study (June 2003), the first group of students was in its fifth year of study and the full six-year curriculum had not yet been fully implemented. The old curriculum was being phased out and replaced by the new one, as indicated in table 2.1.

Table 2.1: Time frame for phasing out the old curriculum and implementing the new curriculum

	1999	2000	2001	2002	2003	2004
6th year	Internship	Internship	Internship	Internship	Internship	Internship
5th year	Old	Old	Old	Old	Internship	New / Internship
4th year	Old	Old	Old	New	New	New
3rd year	Old	Old	New	New	New	New
2nd year	Old	New	New	New	New	New
1st year	New	New	New	New	New	New

New curriculum

Old curriculum

Student internship

As indicated in this table, the first intake of students for the new curriculum took place at the beginning of the 1999 academic year. For the next five years, the system was burdened with the simultaneous running of both the old and the new curriculum, and this added considerable strain to the lecturers and hampered the provision of a quality learning environment. As can be seen in table 2.1, this effect was reduced by the time of data collection (2002/2003).

2.4 SUMMARY OF THE CHAPTER

In this chapter I have described how a changing environment, both internationally and locally, affected the outcomes expected from the teaching and training of a medical doctor, and specifically how the Faculty of Health Sciences of the University of Stellenbosch responded to these changes.

I have focused on the factors leading to the planning of the new medical curriculum at the Faculty of Health Sciences of the University of Stellenbosch in particular, and described the process of its planning and implementation.

It is necessary and important to evaluate the implementation of the new curriculum, not only to determine whether the initial implementation adhered to the original planning, but also to sustain the development of the curriculum as a dynamic process. In the following chapter, I shall explore the context of quality assurance in higher education in general, and in medical education and training in particular. This is done in order to set the broader scene before I embark on a description of the methodology used in this particular evaluation of curriculum planning and implementation.
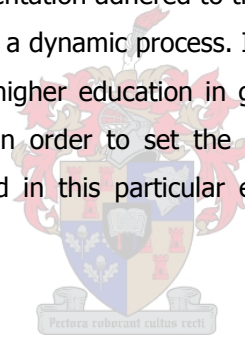
CHAPTER 3: QUALITY IN THE CONTEXT OF HIGHER EDUCATION AND MEDICAL EDUCATION

In the previous chapter, I examined the background and context of curriculum innovation at the Faculty of Health Sciences of the University of Stellenbosch. In order to provide a more comprehensive background for this study, in this chapter I will interpret some of the current concepts of and debates on quality assurance in higher education, and in medical education and training specifically. I will also recount how these concepts were interpreted in the South African context at the time of this study.

In the first part of this chapter (3.1 to 3.6), I will focus on concepts of quality and quality assurance in higher education, and more specifically in the South African context. In the second part of the chapter (3.7), I focus on the quality assurance of medical education and training specifically, starting with a global overview of quality assurance practices in medical education and training. I conclude the chapter by focusing on accreditation practices that were current in the South African context at the time of this study. By so doing, the quality of the specific curriculum evaluated by this study can be contrasted with the broader concepts of quality in higher education and located in the international and local frameworks of the then current quality assurance of medical education and training.

This chapter concludes the introductory and context-setting part of the study. In the next chapter (chapter four), I will focus on the methodology used in the study.

3.1   THE IDEA OF QUALITY: PARALLELS BETWEEN INDUSTRIALISATION AND THE MASSIFICATION OF EDUCATION

Sallis (1996, p. 2) describes quality assurance as '*…an idea whose time has come*'. According to him, the concept of quality assurance became formalised with the advent of industrialisation. Prior to this, quality assurance was an individual hallmark, with craftsmen setting and maintaining their own standards, on which their reputations and livelihoods depended. This personal responsibility was lost with the onset of mass production. New production methods broke work

down into narrow and repetitive tasks and reduced many in the workforce to human components in the process of manufacture.

Sallis (1996, p. 2) describes how mass production led to a loss of congruency, and how the quality of the completed product suffered due to a lack of personal interest and responsibility. This created the need for an alternative system of checking the quality of individual components in order to assure satisfaction with the finished product. The birth of the quality movement should be seen against this industrial background. Initially, it was a system of inspection.

During the last part of the twentieth century, a growing consciousness of quality was manifested in the many quality awards and standards that were introduced globally to promote quality and excellence in a wide range of industries and services. Examples of these include the Malcolm Baldridge Award in the USA (Baldridge National Quality Program) , the Citizen's Charter and the Investors in People Standard in the UK (Investors In People), as well as the European Quality Awards developed by the Foundation for Quality Management (European Foundation for Quality Management, 1992). International standards, such as the ISO9000, are widely used in many economic sectors (Sallis, 1996, pp. 51-52).

Following in the footsteps of industry, higher education has also shifted its position in society over the past few decades. Higher education is currently undergoing a process that may be likened to industrialisation, namely the process of massification. Massification describes the escalating process of broadening access to higher education. No longer is higher education regarded as a privilege of the elite; it is now viewed as a basic human right that should be accessible to all people with the potential to succeed in higher education (Trow, 1994, p. 9). This is an international trend that had not yet materialised in South Africa at the time of writing. The trend not only influences the numbers of students enrolled in higher education, but profoundly affects the type of higher institution suitable to this altered environment, as well as the programmes offered by such institutions. Mass higher education implies the need to restructure the system itself (National Commission on Higher Education, 1996).

Trow (1994) also describes the shift of higher education from being essentially a part of the cultural apparatus of society to being a tool to enhance and shape the development of society. It is expected of higher education to equip individuals to contribute to social prosperity and, as such, it has a transformative societal value. For this potential effect, it is also considered to be of importance to assure the quality of higher education. Quality assurance, however, is not an 'add

on', but should be fully integrated across all the activities of an institution of higher education (Smout, 2000, p. 2).

The factors mentioned above point to the road that higher education has embarked upon, and present certain challenges for quality assurance in higher education. Along with this complicated process of re-appropriating higher education to fulfil its role as a transformative social value applied to a large section of society, we can no longer afford the traditional teaching model, according to which a single teacher has close contact with a small number of students and is able to closely follow the personal development of each. This can be likened to the worker losing touch with the product of manufacturing in the process of industrialisation. Students are becoming a progressively more 'faceless' entity due to increased student numbers and fragmented teaching in interdisciplinary modules. We are losing the personal touch of traditional education and, with it, the implicit possibility of the provision of quality education. Some 'cure' must be found to prevent the alienation of learners from their teachers, or, more importantly in terms of the contemporary paradigms of education described in chapter two (2.2.2.1 in particular), to prevent the alienation of the student from his/her learning environment.

In this way, education is following in the footsteps of industry regarding the problem of quality. This has a possible advantage in that we may be able to draw on the experience of industry, although this is still subject to much debate (Sallis, 1996). Education can be described as a 'service' rather than a 'production line', and, although progress may be facilitated by the experience in industry, there is a danger of transferring systems and terminology that are not entirely suitable to the culture and practice of education. Furthermore, the status of education as a service that can be traded across international borders has been hotly debated following the World Trade Organization's signing of the General Agreement of Trade in Services (GATS) in 1994 (see, for example, Sinclair and Grieshaber-Otto (2002)). South Africa has joined other African counties in a recent (2004) declaration on GATS (Association of African Universities, 2004). In this declaration, the Association of African Universities (AAU) comments on the lack of transparency in GATS deliberations and the ambiguities and lack of clarity in GATS provisions, and notes that concerned parties still lack sufficient knowledge and understanding of the full implications of GATS for higher education, especially in developing countries (Association of African Universities, 2004, p. 3). There is a concern that higher education will be reduced to a commodity that is subject to international trade rules and negotiations and that there will be a loss of national authority to regulate higher education according to national needs and priorities. The AAU does not take a stand against the cross-border provision of higher education, but rather expresses the desire that such provision should serve national and regional development needs

and priorities (Association of African Universities, 2004, p. 4). The practice of quality assurance can serve as a tool to promote this aim.

Quality assurance is also driven by other imperatives. Although expenditure per student in a mass system has decreased in many countries, the interest in quality assurance is linked to the interest of government to get value for money from the institutions it funds (Bowden & Marton, 1998, p. 211). Higher education in particular is expensive and its efficiency needs to be ensured. For this, governments require better insight into the costs and benefits of education.

A focus on value for money and performance criteria migrated to higher education from the audit practices of the financial world (Singh, 2003). Accountability is essential for social responsibility, and it is tempting to test the efficiency of higher education through a process of audits. The challenge is to translate quality into a form that can be measured. This implies a quantification of the core functions of higher education in order to conduct an audit or an accreditation event. However, given the fundamental differences between an industrial production process and higher education, it would be a serious mistake to conceptualise quality assurance in higher education purely from a quantitative perspective. Appropriate qualitative measurements also need to be developed.

Increasingly, programme *accreditation* is regarded in many countries as one of the building blocks of a national quality assurance system. In South Africa, the HEQC is carrying out its mandate of quality assurance through a two-pronged approach of institutional audit and programme accreditation. This approach will be discussed in more detail in section 3.6.

In the next section, I shall explore the more specific interpretations of the concept of quality and quality assurance by the higher education sector, and continue the discussion on the reasons why the notion of internal control of quality is increasingly regarded as inadequate to address broader social demands.

3.2 THE INTERPRETATION OF THE CONCEPT OF QUALITY IN HIGHER EDUCATION

Sallis (1996, p. 8) describes how the concept of quality *control* developed from the ideas of Juran and Deming with the aim of obtaining market dominance in the world of manufacturing. In contrast, the value of a service is accounted for in a more complex manner than the value of a product of industry. It is arguable whether education can be classified as a service, since students *participate* in the process of education and their role is much more complex than those of customers. This view is illustrated by the GATS debate referred to in section 3.1.

Quality *control* is therefore not easily applied to higher education. The quality *assurance* of teaching and training is also complex, and the notions of 'product', 'manufacturer', 'supplier' and 'customer', which are common in the terminology of quality management systems outside the educational context, do not readily translate into higher education functions (Bowden & Marton, 1998, p. 16).

The upsurge of interest in the subject of quality assurance in higher education is also rooted in a growing tension between traditional, internal notions of quality assurance and external trust. Trow (1994, pp. 10-13) reminds us what these traditional notions are:

- The quality of teachers, as determined by the attractiveness of the institutions to scholars and scientists, and the care and rigor with which the institution recruits and appoints people.
- The quality of the students, which is largely determined by admission criteria, but also by the prestige and desirability of the education on offer.
- The quality of research and scholarship as a product of one of the three core functions (research, teaching and service delivery) of an institution.
- The quality of individual programmes, as manifest in their curricula and instructional technologies.

These notions reflect the internal culture of quality of an institution. In South Africa, the legacy of discriminatory exclusion created an uneven landscape in higher education. The reconfiguration of higher education in terms of size and shape (as outlined in the National Plan for Higher Education (RSA, 2001)) can also contribute to conflicting internal cultures and notions of quality in institutions that have been incorporated or restructured in other ways.

The growing scrutiny of institutions of higher education by the public and the state also surpasses these traditional notions of quality described by Trow. There is a demand for the processes and criteria of quality assurance to be made more explicit in order to sustain public trust in the institution.

The crisis of trust in institutions of higher education can be ascribed to a number of factors. Some of these can be found in history, as is indeed the case in the South African situation. There is also a growing awareness that the monopoly of knowledge and expertise traditionally enjoyed by universities leaves their clients (students, and ultimately the larger community) vulnerable to exploitation. The relationship between society and institutions of knowledge production (research) and knowledge distribution (teaching) is changing. Gibbons warns that the institutional arrangements through which science flourished following the Second World War have expired, and that a new social contract is now required (Gibbons, 1999, p. C81). There is an increasingly intense involvement of science in society and, while science is transforming modern society, society is 'speaking back' and transforming science. Gibbons uses the term 'contextualization' to describe this process, and 'contextualized knowledge' as the outcome of this reverse communication (Gibbons, 1999, p. C82). In order to produce contextualised knowledge, knowledge production can no longer exclusively remain within the controlled environment of scientific peers. However, the joint production of knowledge by society and science requires more open, socially distributed, self-organising systems of knowledge production that generate their own accountability and audit systems (Gibbons, 1999, p. C84).

In this way, the changing relationship between society and institutions of higher learning is not only creating a demand for accountability, but also has an effect on what is perceived as 'quality'. The traditional notions of quality described above by Trow can no longer be regarded as adequate.

Five different approaches to quality in education are described by Harvey and Knight (Harvey & Knight, 1996, pp. 1-23):

- Quality as 'exceptional', implying superior input (in the form of the best staff and students, as well as the best facilities) as well as superior output in comparison with peers.
- Quality as 'perfection', based on the perception that all expectations should be met. Such an approach to quality specifies that all expectations should be met ('perfection'), but does not allow for recognition of performance that exceeds expectations. This approach is of high value in an industrial or administrative environment, where defects cannot be

allowed. However, Botha (2000, p. 8) cautions that this approach does not fit well in an environment of learning and teaching.

- Quality as 'fitness for purpose'. This approach to quality is 'democratised' in the sense that it is accessible to all because a variety of purposes can be described to address the niche of each institution in the diverse landscape of higher education. The road taken in many countries, and also in South Africa since the mid-1990s (Botha, 2000, p. 11), is to allow institutions to define their own 'purpose' in the form of mission statements. The 'fitness-for-purpose' approach conceptualises quality in terms of the institution fulfilling its stated mission.

- Quality as 'value for money'. This approach to quality balances the quality of a product or service against its cost. This market view of quality is an aspect of accountability that is justifiably emphasised by governments and other funding agencies.

- Quality as 'transformative', where quality, defined in terms of transformation, describes the extent to which the knowledge and skills of each individual student are enhanced. This approach to quality recognises the empowerment of individuals, encompassing the acquisition of new knowledge, the ability to think analytically and critically, the ability to challenge preconceptions and to solve problems in the world of work. Transformation in the educational sense is therefore a much broader concept than the notion of social transformation.

Three of these approaches to quality in education are encountered in the HEQC founding document (Higher Education Quality Committee, 2001, p. 9) and are identified as criteria according to which the HEQC developed a national quality assurance framework:

- Quality as fitness for purpose – this allows for differentiation and diversity amongst institutions of higher education

- Quality as value for money – this allows for a judgment of the effectiveness and efficiency of provision of the service, including labour market responsiveness and cost recovery.

- Quality as transformation – this transcends the requirements of social development and recognises the development of the capabilities of individual learners for personal enrichment.

The need to redress past inequalities is a prime concern in South Africa. In his address at the media launch of the National Plan for Higher Education, the then minister of Education, Professor Kader Asmal (Asmal, 2001), emphasised the role higher education has to play in erasing the inequities of the past. A quality assurance system serving the needs of the unified higher education system as envisaged by the National Plan should be able to encompass various notions

of quality and allow for the diversity of institutional missions in a larger national framework. This diversity of institutional missions is allowed for in the HEQC criteria for institutional audits in that it asks questions about the unique and distinctive ways in which the institution enriches and adds excellence to the higher education sector and society, and the intellectual culture of each institution (Higher Education Quality Committee, 2004a, p. 5).

The different approaches to quality described in this section should serve to illustrate that the practice of quality assurance in higher education is more involved than in the industrial sector. To make matters even more complex, the practice of quality assurance is influenced by the various stakeholders involved in the educational arena. Different stakeholders have different requirements for 'quality' in education, and this influences the shape and form of what is perceived as 'quality'. In the next section, I discuss the various stakeholders in higher education and the influence they have on the practices of quality assurance.

3.3 THE ROLE OF DIFFERENT STAKEHOLDERS IN THE EVALUATION OF QUALITY IN HIGHER EDUCATION

The reason why a quality evaluation is undertaken impacts on both the methodology and the possible outcome of the evaluation. An evaluation may be requested by various stakeholders and this influences the possible motive for the evaluation. In order to examine possible motives for the evaluation of quality, the various stakeholders in the quality assurance of higher education must first be identified.

3.3.1 Identifying the stakeholders in quality assurance in higher education

From a sociological perspective, notions of quality in higher education do not operate in a vacuum, but are influenced by the stakeholders seeking evidence of quality. Barnett (1992, p. 8) identifies three types of stakeholder that relate to three different approaches to quality assurance in higher education:

- The academic approach: peer review forms the basis of this approach, with its main objective being to advance the knowledge and develop the minds of those who present themselves to the academic community.

- The approach of the state: this focuses on the performance indicators of the institution and value for money.
- The market approach: this may be the real driving force of quality assurance in many instances, even in education. The market is interested in the type of graduate that can fulfil its requirements most effectively. Often the evaluation that satisfies the requirements of stakeholders requiring this approach will use indicators relating to the performance of graduates, for example customer satisfaction.

Barnett cautions that the perspective of the student is often neglected in the attempt to satisfy the above-mentioned three approaches and their quality assurance requirements. Vroeijenstijn includes the staff of an institution of higher education as a crucial component of the educational arena that should never be neglected in any approach to quality assurance. Quality can only be assured by those who are responsible for the quality, and external quality assurance should primarily be an instrument of quality assurance and improvement, and not be used for control (Vroeijenstijn, 1995a, p. xiv).

The stakeholders in higher education can therefore be more broadly identified as:
- The staff (academic and administrative) of the institution.
- The larger academic community, including the international research community.
- The students of the institution.
- The parents of the students.
- The state.
- The future employers of the graduates in the 'world of work' (see Mouton (1996, p. 8)).
- The society in which the graduates will live and work.
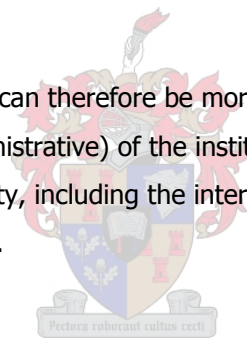
As mentioned in the introductory paragraph of this section, the outcome of quality measurement is determined by the perspective of the stakeholder. Depending on the stakeholder and its purpose for conducting the evaluation, the outcome of the evaluation can be either *formative* or *summative*. These two terms were introduced into the field of evaluation by Scriven (1967). Formative evaluations are mainly done with the object of improving and enhancing the quality of an institution. Formative evaluations are usually initiated by the academic community itself (internal evaluations). Summative evaluations, on the other hand, are done with the object of arriving at a judgment of the quality of an institution and are usually initiated from outside the institution (external evaluations). Summative evaluations are mainly executed by the state and may have a serious effect on the future of an institution. For example, in the South African context, providers offering programmes in which quality problems are identified that are not

rectified within a stipulated time frame will lose their accreditation to offer these programmes (Higher Education Quality Committee, 2001, p. 14).

Irrespective of the stakeholders or the purpose of the evaluation, both types of evaluations should involve all of the abovementioned stakeholders in order to be valid. This relationship is illustrated in figure 3.1.
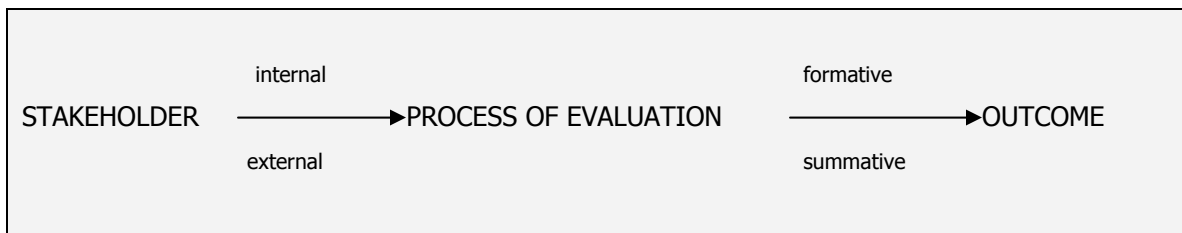
Figure 3.1: The relationship between the stakeholders requesting the evaluation, the process of evaluation and its possible outcome

The type of outcome (formative or summative), in turn, influences the process of quality measurement. A stakeholder wielding power to reward or to punish may be met by a much more guarded approach, not necessarily a more rigorous one, and often one that is lacking in innovation. A stakeholder cultivating improvement without sanction may be permitted to take a much closer and more intimate look at the object being scrutinised, but may not be taken as seriously.

3.3.2 The effect on evaluation of the stakeholder perspective on the concept of quality

An educational evaluation can be conducted by the institution itself (an internal evaluation) or by outside agents (an external evaluation). Trow (1994, pp. 19-28) describes four quadrants of quality evaluation [20] according to two separate dimensions of quality evaluation, namely the source of the evaluation being external or internal, and the objective of the review being supportive (formative) or evaluative (summative). The four quadrants created by these

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[20] Trow uses the term "review". In this thesis, the term "evaluation" will be used consistently to denote the same concept.

dimensions make it possible to classify quality reviews as four different types, and these typologies of 'academic reviews', as they are called by Trow (1994), are diagrammatically illustrated in figure 3.2.
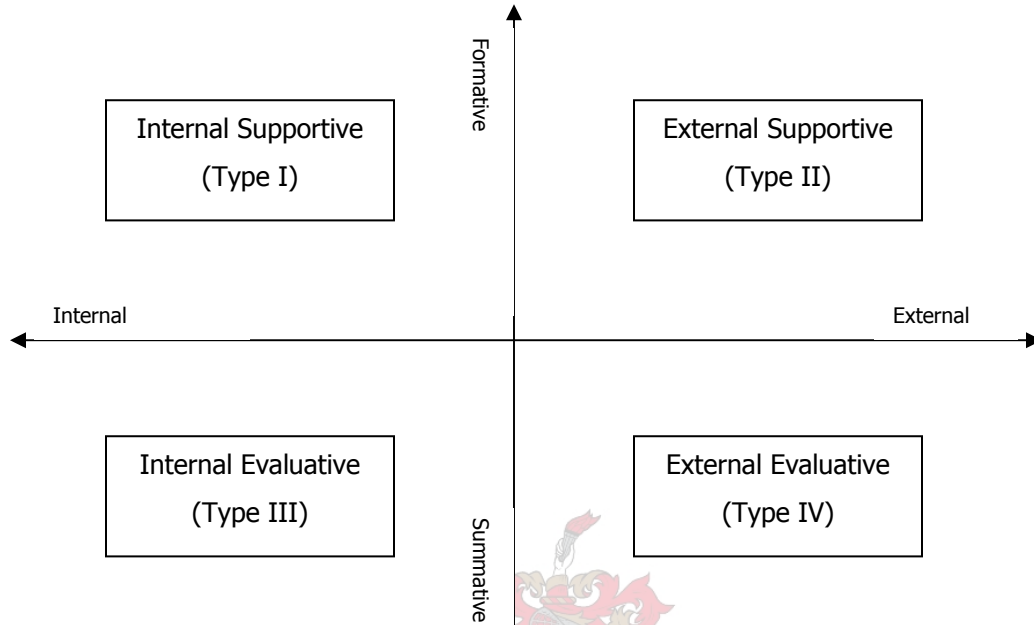
Figure 3.2: Trow's typologies of academic reviews

The four types of reviews depicted in figure 3.2 can be described as follows:
- Type I reviews are internal and supportive, since they originate from inside the academic community and tend not to be sharply critical.
- Type II reviews involve external agents, usually fellow academics, but are initiated by central university administrators. These reviews are linked to actions of some sort, e.g. attainment of accreditation status or the allocation of funds.
- Type III reviews exert their effect through the influence of authorities within the institution itself.
- A drift towards type IV results in the regulation of higher education. This is generally regarded as undesirable to the academic community, as it suppresses autonomy and limits academic freedom.

It is useful, for practical purposes, to always bear in mind which type of review one is dealing with. If one is aware of the typologies of reviews, it could contribute to proactive planning, since,

in most circumstances, valid and frequent type I and II reviews will fend off pressure for type III and IV reviews.

Barnett (1992, pp. 7-8) further distinguishes between a 'communicative' conception of quality and an 'instrumental' conception of quality as being dominant and rival in the modern age. He describes the *communicative* version to be based on the expression of the tacit conceptions of value and propriety in the academic community, reflected in peer review. It is the character and quality of the continuing interactions of the academic community that is at issue, rather than any end point or definite outcome. This version takes the continuing conversation of this community as being self-sufficient, and it often focuses on the interests of academics as researchers rather than as educators. It bars any outside voices from getting a purchase.

In contrast to this, the *instrumental* approach regards higher education as the issuing of products, with inputs and outputs. Students are viewed as units destined for the labour market. The quality of the system is understood in terms of its performance indicators, and an institution's effectiveness is assessed in terms of its efficiency. The instrumental approach to quality takes as its point of departure the values and interest of the external world. By doing so, the internal characteristics of higher education tend to be neglected.

Barnett's communicative approach can be related to the internal evaluations in Trow's typology, while the instrumental approach is often encountered in external evaluations. Barnett argues for an alternative approach, which he calls *educational*. He declares that there is a lack of educational sensitivity in all the major stakeholder groups: "…the major social forces at work in the 'quality' debate are unlikely to develop a vocabulary which reflects educational concerns for that is not their main motivation" (Barnett, 1992, p. 8).

It becomes clear that different concepts of quality and approaches to quality assurance emerge from the different perspectives of stakeholders. Much better known and more commonly used are the concepts of quality as 'fitness for purpose' and 'fitness of purpose', described by Harvey and Green (1993, pp. 16-21). To be comprehensive and to link to the various concepts of quality considered by the HEQC in South Africa, the concepts of quality as 'value for money' and as transformation are also included in this discussion, based on the insights of Harvey and Green (1993, pp. 21-23 and 24-27).

Fitness for purpose or use: This widely accepted fundamental definition of quality was first offered by Ball (1985). It is sometimes called the producer definition of quality or the procedural

concept of quality (Sallis, 1996, p. 15). In this relative sense, quality is about measuring up to predetermined standards and meeting those standards time and time again. This concept of quality places considerable emphasis on working to defined systems and procedures. Quality is achieved by putting systems and procedures into operation and ensuring that those systems are efficiently and effectively operated. It needs to find appropriate evidence about the way activities have been carried out, and it may also follow an audit trail. The procedural concept is about proving that the activity has happened in accordance with predetermined specifications, and that the activities conform to requirements. This approach is therefore well suited to an accountability imperative.

Fitness of purpose: This is a term often encountered in external evaluations, where not *what* is done, but *why* it is done comes under the evaluation microscope. It is particularly important in a national context wherein institutions of higher education must contribute to broader national goals. It therefore is especially important for the institutional mission to be aligned to broader national goals, and this may be taken as a perspective from which quality may be evaluated.

Value for money: This concept of quality translates strongly into accountability (Botha, 2000, p. 12), and measures quality in terms of cost effectiveness. Trow regrets that 'accountability' has come to mean the assessment of institutions by some external body that reports back to the central funding agencies (Trow, 1994, p. 23). Due to dwindling national subsidies, cost effectiveness is of growing concern to institutions of higher education in South Africa. Governments and taxpayers are also particularly interested in this aspect of of higher education institutions. However, this is a narrow perspective for the evaluation of quality. In the South African context, the HEQC's approach to quality in institutional audits includes value for money in its understanding of quality in relation to the full range of higher education purposes (Higher Education Quality Committee, 2004b, p. 5).

Quality as transformation, both personal and of society: This has less to do with systems and procedures and more to do with organisational and personal transformation. The transformational concept views quality as a complex process, integrating 'softer' and more 'intangible' aspects of quality. The transformational approach focuses on improvement and adding value. It is a state of organisational mind that sees continuous improvement at the heart of the quality process. This attitude embraces the complete organisation, also on the personal level of the students and staff. The transformational culture is viewed as a function of staff motivation and academic leadership in a setting that is student centred (Sallis, 1996, p. 16). This is consistent with Trow's (1994, p. 29) elaboration of his view of what constitutes quality in

higher education: it does not rely only on an academic unit's capacity to conduct research or teaching, but also its capacity to govern itself, to define its own character and mission, and to act effectively in fulfilling that mission.

The application of these different conceptions of quality in higher education has been hotly debated in the South African context. Quality as 'value for money' was emphasised in the early policy documents on higher education in South Africa (for example, the Framework for Transformation (National Commission on Higher Education, 1996) and the White Paper 3 (RSA, 1997a)), but other notions of quality, including quality as fitness for purpose and quality of transformation, are also mentioned. As policy developed, the need to redress past inequalities and the reconstruction of higher education in South Africa emerged as high priorities and quality as 'fitness of purpose' re-entered the discussion. In their paper at the 15th International Conference Assessing Quality in Higher Education in July 2003, Naidoo and Singh argued that the two conceptions of quality ('fitness of purpose' and 'fitness for purpose') can and should be combined in a single framework of institutional audit and programme accreditation (Naidoo & Singh, 2003). It remains to be seen whether this is a workable approach to appeasing the conflicting conceptions of quality and their various supporters.

In this section, I have not yet attempted to relate approaches to evaluation in practice to the different concepts of quality that may be held by the different stakeholders described above. Before this is done, I will first describe how the perspectives of the various stakeholders in institutional quality audits can lead to tension between accountability and improvement.

3.4   THE TENSION BETWEEN ACCOUNTABILITY AND IMPROVEMENT

Bowden and Marton (1998, p. 230) mention that, when the primary intention of an evaluation is accountability, the main activities embarked upon will be to gather positive evidence of how well an institution is performing. In contrast, if the purpose of the evaluation is the improvement of quality, evidence of both strengths and weaknesses need to be gathered. Accountability implies a summative process of evaluation, while improvement is satisfied with a formative process of evaluation. Vroeijenstijn (1995a, p. xiv) calls accountability and improvement the Scylla and Charybdis of external quality assessment practices. The conflict between accountability and improvement remains the subject of debate wherever quality assurance procedures have to be operationalised, and determines the relevant methodology for gathering evidence for the purpose of quality assurance.

It can be argued that the stakeholders create the tension between 'accountability' and 'improvement' and, in doing so, prescribe the required methodology. By generalising the possible viewpoints of various stakeholders, the following synopsis can be formulated:

- On the improvement side, one finds the academic community, with its emphasis on academic improvement and standards. The academic community will tend to favour peer review as a method of assessing quality.

- On the accountability side, one finds the state demanding greater accessibility to the practices of higher education institutions, and a higher output of graduates at a lower 'unit cost'. The state will tend to favour performance indicators as a means of assessing quality.

- The market or 'consumers' of academic products, where graduates must inevitably compete for economic survival, tends to emphasise both accountability and improvement.

- Students (and their parents), as intimately involved stakeholders, have an interest in both accountability and improvement and need to be engaged in whatever method(s) of evaluation are employed.

It can therefore be construed that the methodology for quality assurance will vary depending on the viewpoint of the stakeholder, because the stakeholder determines the type of outcome (which can be either improvement or accountability). Quality evaluation with an accountability objective requires a summative process and needs to adhere to a structured and uniform methodology. It calls for transparency and democracy in order to be accepted. Quality evaluation with a formative objective does not imply a less rigorous methodology, however. Both of these quality objectives should be founded in rigorous scientific practice to ensure that they are regarded as valid and credible.

In the South African situation (which will be discussed in more detail in section 3.6), the HEQC has the mandate to promote quality, conduct institutional audits and bestow programme accreditation. The HEQC also includes capacity development and training as critical components of its programme of activities (Higher Education Quality Committee, 2004b, p. v). However, the HEQC states as a principle that the primary responsibility for quality and quality management rests with the higher education institutions themselves (Higher Education Quality Committee, 2004b, p. 5). In this way, the HEQC seeks to encourage type I evaluations in order to provide evidence of internal processes of quality assurance and evaluation so as to satisfy the criteria set for institutional audits (Higher Education Quality Committee, 2004a).

3.5 QUALITY EVALUATIONS IN PRACTICE

Summative and formative assessments (evaluations) require a different approach (Trow, 1994, p. 12). A general trend in higher education is that external evaluations are conducted by governments or other agencies, e.g. professional bodies, and have a summative objective. Internal evaluations are generally done by the institutions themselves, with a formative objective. A formative external evaluation is the ideal expressed by most authorities on quality assurance, as quality will benefit more from the improvement approaches encountered in formative assessments than from control (Trow, 1994, p. 36). Although the imperative of improvement is frequently written into the *initial* approaches of most external evaluations, the practice of such evaluations in the real world often turns out to be summative.

3.5.1 A classification of quality evaluations encountered in practice

In order to account for the different types of evaluations initiated by various stakeholders and the different objectives and outcomes, I have tabulated a generic classification of quality evaluations as encountered in the literature originating in various countries with documented quality assurance practices. This is presented in table 3.1. The level of quality evaluation can be categorised as either a macro-evaluation of the whole institution, or a micro-evaluation of smaller units such as departments or programmes. The stakeholder(s) initiating an evaluation will determine whether the objective of the evaluation will be summative or formative, or a combination of the two. The outcome of the evaluation, in turn, will depend on the level of the quality evaluation and the stakeholder that initiated the evaluation. The aim of the table is to provide a basic orientation to the different types of quality evaluations that may be encountered. Admittedly, this is an oversimplification of the complexities that are often encountered in the real world.

Table 3.1: A classification of quality evaluations

Nature of quality evaluation	Object of evaluation	Stakeholder initiating the evaluation	Type of evaluation	Objective of the evaluation	Outcome of the evaluation
Organisational	Institutions, departments	Governments, Departments of Education, national quality agencies	External	Mostly summative, often with a formative component built into the system	Institutional audit
		Institutions themselves	Internal	Formative	Internal system of quality assurance of the organisation
Operational	Programmes	Governments, Departments of Education, national quality bodies or professional bodies	External	Mostly summative, often with a formative component built into the system	Programme accreditation
		Institutions themselves	Internal	Formative, summative component may exist	Internal system of quality assurance of the programme*

*In terms of table 3.1, the type of evaluation executed by this study will concern itself with an internal system of quality assurance of a programme (in this case, a part of the curriculum for medical education and training presented by the Faculty of Health Sciences of the University of Stellenbosch). Programme evaluation methodology is therefore used to evaluate the curriculum.

Ideally, all quality evaluations should be conducted in concert and on the same database in order to avoid duplication of work and overload of the system. Therefore no evaluation of quality, whatever its classification, should be planned and implemented in isolation. This will result in an enormous waste of the time and money by an already overburdened system of higher education

(this is certainly true in the South African higher education context, and also in the case of the Faculty of Health Sciences of the University of Stellenbosch at the time of this study).

In order to conceptualise the processes that an internal system of quality assurance may share with an external one, it is at this stage worthwhile to briefly recount the generic process encountered in external quality evaluation exercises.

3.5.2 The process of external quality evaluations encountered in practice

A generic process of external quality evaluations is described in the literature on the evaluation of both higher education in general and medical education specifically (see, for example the Criteria for Institutional Audits described by the Higher Education Quality Committee (2004a, p. 7), Bowden (1998, p. 235) and Gastel (1995a, p. S75)). This process can be roughly divided into five steps:

1. Completion of a self-evaluation report.
2. Formation of a panel including peers to conduct a site visit.
3. Site visit to the institution, programme or department to be evaluated, with the objective of validating the self-evaluation report and, if necessary, to gather additional information.
4. Preparation of a draft report.
5. Final report and presentation of the outcome of the evaluation.

Evaluations are typically cyclic and are usually repeated every four to six years. Most systems of quality evaluation, even when summative in nature, have some form of feedback built into their design, with varying degrees of follow up. There is also a difference in the actions that the body responsible for the evaluation can undertake if the object of the evaluation turns out to be deficient, depending to a large extent on whether the evaluation was undertaken voluntarily or not (Cueto *et al.*, 2004).

Evaluation depends on an evidential base and the principle activity of evaluation is the gathering and presentation of data (Bowden & Marton, 1998, p. 230). This is the most daunting and time-consuming task. Therefore, it is vital that the process of external evaluations should link to any internal evaluations (should they exist) and share the same database.

In the following section, I describe how the South African authorities are dealing with this issue of building an improvement component into a summative external evaluation, and will argue that the notion of quality as a transformative value will appropriately feature high on both the improvement and accountability agendas.

3.6 THE SOUTH AFRICAN EXPERIENCE OF QUALITY ASSURANCE IN HIGHER EDUCATION

In South Africa, the formalisation of quality assurance in higher education began during the 1990s. The Higher Education Act of 1997 (RSA, 1997b) assigned the responsibility for quality assurance in higher education to the Council on Higher Education (CHE). The CHE acts as an independent advisory board to the Department of Education and discharges this responsibility for quality assurance through its permanent subcommittee, the Higher Education Quality Committee (HEQC) (Higher Education Quality Committee, 2004b, p. v).

This formalisation has a profound effect on the quality assurance practices of institutions of higher education at all levels. The internal quality assurance mechanisms of institutions now have to be made explicit, and these mechanisms also have to be adapted and extended to conform to the national processes.
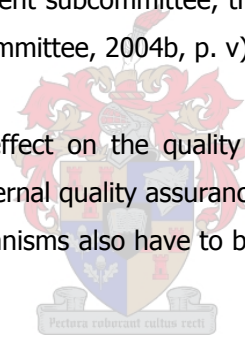
The process of developing quality assurance policies in South Africa was in line with international trends, although it took place later than similar developments in other countries. This gave South Africa the advantage of not having to break new ground in all respects and being able to learn from others' experience. A big challenge for South Africa is to adapt international experiences and best practices successfully to the local environment.

In this section I shall briefly describe the history of the development of quality assurance policy in higher education in South Africa, and describe the form that quality assurance was beginning to take at the time of the completion of this study (August 2004). Finally, I shall mention some of the most pressing debates on quality issues and make a few comments on the possible way forward with quality assurance in this country.

3.6.1 The birth and evolution of a national mechanism for quality assurance

Although the birth of a national mechanism for quality assurance followed in the footsteps of a global upsurge in what Sallis refers to as the 'quality movement' (Sallis, 1996, p. 1), it also coincided with the historical political events occurring in South Africa during the 1990s. Along with all the imperatives described in the previous sections of this chapter, quality assurance in South Africa was complicated by the agenda of also ensuring the redress of historical inequalities in higher education. The form taken by quality assurance in the South African context was determined by the events that are summarised in table 3.2.
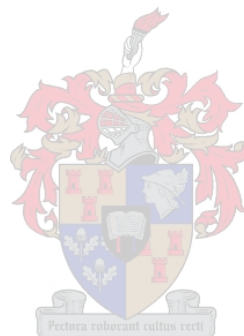
Table 3.2: Major events that shaped the South African national mechanism of quality assurance between 1995 and 2003

Year	Event
1995	The **"South African Qualifications Authority (SAQA) Act"** (Act No 58 of 1995) set the mandate for the development of the National Qualifications Framework (NQF), which was mandated with the complex task of establishing an integrated national framework for higher education in order to enhance the quality of higher education and to contribute to the redress of previous inequalities in higher education. Registration and accreditation of institutions of higher education, as well as the registration of national standards and qualifications, are provided for under this act.
1996	The **National Commission on Higher Education (NCHE)** publishes its report (RSA, 1996). This report makes a case for the importance of quality assurance in a transformed system of higher education and prioritises the redress of differences amongst the programmes presented by various institutions.
1997	The **"Education White Paper 3: A programme for the transformation of Higher Education"** (RSA, 1997a) identified quality as a critical principle in the restructuring of higher education in South Africa. It recognises institutions of higher education's primary responsibility for their own quality assurance, but also emphasises the role of a national authority body responsible for integrated quality assurance. Along with quality assurance, institutional planning and state funding were identified as steering mechanisms for the transformation of higher education into a single, coordinated, quality-approved, more equitable and more responsive entity.
1997	**The Higher Education Act of 1997** (Act No 101 of 1997) provides, *inter alia,* for the establishment of the Council on Higher Education (CHE) and its permanent subcommittee, the Higher Education Quality Committee (HEQC), with the mandate to promote quality in higher education, to audit systems of quality assurance mechanisms in institutions and to accredit programmes in higher education.

Year	Event
1998	**SAQA regulations** (RSA, 1998): Section 14 of the SAQA Act provides for regulations to control the so-called Education and Training Quality Assurance bodies (ETQAs). These ETQAs form part of the NQF system of quality assurance. For example, the CHE has to be accredited by SAQA to function as an ETQA. The functions of an ETQA are, amongst others, to register providers of qualifications, to enhance quality amongst these providers and to evaluate their functions. Professional boards may be assigned by the HEQC through various memoranda of agreement to accept responsibility for some of these functions.
2001	The Department of Education publishes the **National Plan for Higher Education,** and it becomes evident that higher education will be significantly restructured and rationalised, with mergers of institutions as the most drastic step to create a reformed system and higher education landscape.
2002	The Department of Education releases a draft document, **New Academic Policy for Programmes and Qualifications in Higher Education**, and a document entitled **A New Institutional Landscape for Higher Education in South Africa, 2002**.
2003	The HEQC announces its programme for the first cycle of institutional audits to take place between 2004 and 2009 (Higher Education Quality Committee, 2003b).

In summary, the Council on Higher Education (CHE), an independent advisory body of the Minister of Education brought about by an Act of parliament, mandated its permanent subcommittee, the Higher Education Quality Committee (HEQC), to assume responsibility for the development and implementation of a national quality assurance system for higher education in South Africa. The HEQC exercises its mandate by organising a range of quality development opportunities and by conducting two types of quality evaluations: institutional audits and programme accreditation. In a communiqué to higher education institutions in South Africa, the HEQC announced its plan for the roll-out of the first cycle of audit from 2004 to 2009 (Higher Education Quality Committee, 2003b). According to this plan, full-scale audits of institutions will commence in 2004, but only new programmes will initially be accredited by the HEQC. Following satisfactory proof of quality arrangements, institutions may apply for self-accreditation status during the second half of the cycle (2007 to 2009). If this is granted, the qualifying institutions will then have the authority to accredit their own programmes. In this way, the HEQC will be able to delegate the task of quality assurance to institutions, while remaining in overall control of the

process. Certain selected programme areas were targeted to be accredited by the HEQC through a so-called 'national review' (for example, in 2003/2004, the HEQC undertook an evaluation and re-accreditation of all MBA programmes offered in South Africa (Higher Education Quality Committee, 2003c)). The programmes of only six institutions received full accreditation, while a number of programmes were not re-accredited, with the result that those institutions were instructed to terminate the offering of those programmes.

For many professional programmes, including medicine, there are professional bodies which have statutory powers to accredit the programmes and thereby play a role in the national quality assurance system. At the time of writing, it appeared that the quality assurance (QA) system proposed by the HEQC would recognise the accreditations of professional bodies. Institutions may therefore accept the outcomes of the accreditation of professional bodies as sufficient, provided that the particular professional body has entered into an Agreement of Understanding with the HEQC (Higher Education Quality Committee, 2003b).

3.6.2 The shape and form of the national mechanism for quality assurance

The Council on Higher Education (CHE) has the responsibility to contribute to the general development of higher education in South Africa. Part of the CHE's mandate is to establish a monitoring and evaluation framework and system for higher education that will assist the CHE to relate the state of higher education to the transformation agenda of the government, to keep higher education on the track of the goals and objectives of Education White Paper 3 and to establish the role and efficacy of policy, structures, instruments, strategies and processes in the implementation of change in higher education and at higher education institutions (Council on Higher Education, 2001). The Higher Education Quality Committee (HEQC) is a permanent subcommittee of the CHE, and it has the task of building an effective national quality assurance system (Higher Education Quality Committee, 2004b, p. v). This quality assurance system took shape between 2001 and 2004, with audit and accreditation activities starting to roll out in 2004 (Higher Education Quality Committee, 2003b).

3.6.3 National debates on quality assurance

One of the main challenges of instituting a national system of quality assurance remains the achievement of consistency, while recognising the diversity of the higher education system. In order to achieve consistency and fairness, it is necessary to recognise these differences. This was acknowledged in the report on the evaluation of SERTEC (Certification Council for Technikon Education) and the Quality Promotion Unit (Interim Higher Education Quality Committee, 2000, p. 41). This document prepared the ground for the founding document of the HEQC (Higher Education Quality Committee, 2001).

According to the founding document of the HEQC, the quality assurance framework to be developed should be based on the following criteria:

- 'Fitness for purpose'.
- Value for money.
- Quality as transformation, both personal and of the society.

These criteria should be located within a 'fitness of purpose' framework based on national goals, priorities and targets (Higher Education Quality Committee, 2001, p. 10).

None of these approaches can be deemed to be of lesser importance in the South African context, particularly for the following reasons:

- Fitness of purpose: In the South African context, this definition of the purpose of the institution is subject to the considerations of the *National Plan for Higher Education* (RSA, 2001). As such, the emphasis is on each individual institution contributing to the larger national plan in order to respond to the needs of the whole country.
- Fitness for purpose: This is based on the idea of matching the process to meet the requirements of the purpose and is a popular definition of quality (originally proposed by Ball (1985)). It evaluates the manifestation of the stated mission of the institution, and not the mission itself.
- Value for money: This criterion of efficiency hardly merits debate in the national context of stringent budgetary constraints. State funding was identified as a steering mechanism for the transformation of higher education by the Education White Paper (RSA, 1997a) and, as such, poses as a serious incentive to conform to the standards of higher level quality evaluations.

- Quality as transformation: The restructuring of higher education in South Africa is linked to social and political transformation. This transformation should address equity in race and gender, equity of skills and knowledge between the public and private sectors, as well as equity in access to higher education. As such, equity can be taken as a category of analysis when evaluating quality. In South Africa, equity targets set by the government demand that the curricular and institutional culture considers this transformation imperative very seriously. Quality as transformation should not, however, only be seen in the narrow context of equity, but rather as a broader concept (described in section 3.2). Issues of social transformation are located under the 'fitness of purpose' approach.

In its response to the draft document for comment regarding the Institutional Audit Framework, the South African Universities Vice-Chancellors' Association (SAUVCA) remarks that quality as 'fitness of purpose' is emphasised in the document and questions whether it is possible or desirable to incorporate both approaches in the same framework (SAUVCA, 2000, p. 4). This underlines the continuing debate on the different concepts of quality and how they should be incorporated into the South African quality assurance system.

3.6.4 The way forward

In 2003, the HEQC embarked on the accreditation of programmes offered by both public and private providers. In the system instituted by the HEQC, the accreditation of programmes is linked to the audit of institutions. Historically, technikons (called Universities of Technology since the beginning of 2004[21]) in South Africa emphasised accountability and focused their quality assurance activities on the programme level, while universities emphasised improvement and focused on the institutional level (Interim Higher Education Quality Committee, 2000, p. 33). In a keynote address at the 15th International Conference Assessing Quality in Higher Education in July 2003, the executive director of the HEQC, Dr Mala Singh, stated that the legislative mandate of the HEQC focuses mainly on issues of efficiency (the managerial model) and not of transformation (Singh, 2003). The HEQC attempted to combine audit and accreditation into a single framework, while addressing both improvement and accountability.

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[21] The various mergers of institutions, together with their new names, were announced in Government Gazette No. 25737 of November 2003.

In the outline of the HEQC's audit and accreditation activities in the quality assurance cycle planned for 2004 to 2009 (as set out in section 3.6.1), an enactment of the old carrot and stick principle can be detected: the HEQC promises more autonomy to institutions that are able to prove that they can guarantee their own quality in the form of the award of self-accreditation status. For those institutions not satisfying the scrutiny of the HEQC, the privilege of self-accreditation status will not be awarded and re-accreditation of their programmes will be done by the HEQC in the next quality assurance cycle (2010 to 2016) (Higher Education Quality Committee, 2003b, p. 2). In this way, institutional autonomy and quality assurance are two sides of the same coin. Taking responsibility for its own quality assurance, an institution of higher education may aspire to greater autonomy.

Against this very dynamic background of events in the quality arena in South Africa, I will now consider quality assurance practices in medical education and training specifically, and then attend to the national practices relating to the accreditation of undergraduate medical education and training in South Africa.

3.7 QUALITY ASSURANCE OF MEDICAL EDUCATION AND TRAINING

Recent changes in medical education and training, and global trends in higher education in general (as discussed in chapter two), have created an increasing need to make quality in medical education and training more explicit, not only for the sake of accountability, but also for improvement. It is also necessary to align the concepts of quality and quality assurance in medical education and training with higher education in general.

Internationally, the rapid increase in the number of new medical schools[22] in the past few decades adds to the need to monitor responses to change and to document the results of quality assurance processes to ensure the quality development of basic (undergraduate) medical education and training. Medicine is a global profession and medical knowledge and research have traditionally crossed national boundaries. Globalisation offers the opportunity to disseminate knowledge, experience and research regarding teaching and learning in medical education and provide training across international borders (see section 2.2.1). Globalisation can be viewed as an instrument and opportunity to improve the quality of medical education and training and of

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[22] In South Africa, the number of medical schools (eight) has remained stable since the 1960s.

medical practice (see, for example, Stevens's reflections on the historical influence of medical migration on the concept of quality in medical education and training (Stevens, 1995)). It should be a concern that the international standardisation of quality may be adversely influenced by the norms of leading nations, which may be perceived as being superior in their teaching, training and practice in medicine. Cultural variation amongst nations therefore features strongly in the debate opposing the international standardisation of quality (Stevens, 1995, p. S11).

3.7.1 International evaluation of medical education and training

Two possible approaches to the international evaluation of medical education and training are discernable from the literature: the evaluation of the *process* of medical education and training, and the evaluation of the *outcomes* of the educational effort. In the following sections, I set out the interpretation of the World Federation of Medical Education's approach to the evaluation of the process of medical education and training, and the Institute for International Medical Education's approach to the evaluation of the outcomes.
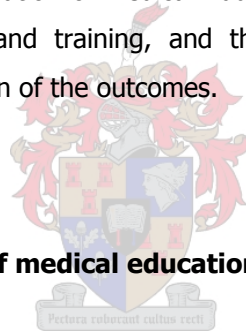
3.7.1.1 Evaluating the process of medical education and training

The World Federation of Medical Education (WFME) has been conducting an International Collaborative Programme for the Reorientation of Medical Education since 1984. One of the results of this process was the Edinburgh Declaration (World Federation for Medical Education, 1988). The World Summit on Medical Education in Edinburgh formulated 22 strategies to implement the recommendations of the Edinburgh Declaration (World Summit on Medical Education, 1993). In a position paper published in 1998, the WFME announced its intention to embark on international discussions to reach consensus about international accreditation standards. The aim was to pilot these standards and finally establish an International Board of Accreditation with the responsibility of evaluating accreditation reports and entering accredited medical schools into a World Register Accreditation (World Federation for Medical Education, 1998, p. 556).

In the global context, this appears to be a far-reaching and ambitious intention. There are variations among countries in medical education and training due to differences in teaching

traditions, cultures, socio-economic conditions, the health and disease spectrum, as well as the existence of a large variety of forms of health care delivery systems. Such variations also occur within countries themselves.

The WFME argues that the *scientific* basis of medicine is fairly universal, as well as the task of educating and training with the purpose of solving health care problems in order to prepare learners to provide health care (World Federation for Medical Education, 1998, p. 550). Notwithstanding variations in educational and cultural approaches, there is a high degree of equivalence of structure, processes and products in medical schools worldwide.

The WFME drafted (World Federation for Medical Education, 2001) and finalised (World Federation for Medical Education, 2003) such a set of global standards for undergraduate medical education and training, as well as guidelines for their use. These standards do not address details of content and quantity and, as such, are not to be equated with the 'global core curriculum' that was mentioned in the 1998 position paper (World Federation for Medical Education, 1998, p. 552). However, the global standards are intended to serve as a basis for internal evaluation and quality improvement. They are considered to be a necessary tool for the external evaluation and accreditation of medical schools.

The WFME rationalised the formulation of global standards in terms of the expectation that, if medical education and training are placed on a basis of shared international standards, this will facilitate the exchange of medical students and the ease with which medical doctors are accepted in countries other than those in which they trained. In this way, the burden of controlling the competencies of doctors who have been educated in medical schools in different countries can be lessened. This approach could be viewed as threatening to developing countries, which are suffering the effects of attrition of their medical staff by migration.

The results of a pilot study using these criteria have been published in the form of a report (Grant *et al*. 2004). The applicability of international standards in medical education and training to developing countries in particular remains the subject of much debate and dispute.

3.7.1.2 Evaluating the outcome of medical education and training

The Institute for International Medical Education (IIME) has formulated global minimum essential requirements for medical education and training, built upon existing standards (IIME, 2001). These 'essentials' represent only the core of a medical curriculum, leaving room for each country, region and medical school to incorporate its individual requirements. In this way, it becomes possible for each school's educational programme to be different, while all will include the same core. The concept of 'essential requirements' is viewed as a three-tiered structure, composed of global, national and local layers. Medical schools are encouraged to ensure that their graduates achieve the core competencies envisioned in the minimum essentials, and to 'think globally and act locally'.

This project will first be implemented and evaluated in medical schools in China during the first decade of the 21st century, before it is disseminated further. It is hoped that these 'essentials' will serve as a tool for improving the quality of medical education and training and provide a foundation for an international assessment of medical education and training programmes.

3.7.2 The South African experience

Quality assurance practices in medical education and training are not restricted to international organisations or to large developed nations. The accreditation of undergraduate medical programmes has been conducted in many developing countries for many years (Cueto *et al.*, 2004).

This section will briefly describe the medical education and training accreditation practices in South Africa. These practices must be considered as a background to the empirical part of this study. As argued in section 2.5.1, it is important that an internal quality cycle should be aligned with external evaluations, and that, as far as is possible, it should ideally share the same databases in order to be optimally time and cost efficient.

3.7.2.1 The regulation of medical education and training in South Africa

The Health Professions Council of South Africa (HPCSA) is an autonomous but statutory body created by the Health Professions Act, 1974 (Act 56 of 1974). It has the responsibility (amongst others) to set and maintain standards of education and training for undergraduate programmes in medicine in South Africa. In order to carry out this responsibility, the board implements a system of accreditation of faculties or schools of medicine. Details of this system have been published in a document entitled Regulations Relating to Accreditation of South African Faculties or Schools of Medicine and Dentistry (Health Professions Council of South Africa, 2002). The Subcommittee for Undergraduate Teaching and Training of the board is directly responsible for the accreditation of medical programmes presented in South Africa. This accreditation is compulsory for all medical schools.

In the past, the accreditation of medical schools was mainly discipline based and, after thorough revision, a new process of accreditation of undergraduate programmes in medicine was instituted by the HPCSA in 2001 (Health Professions Council of South Africa, 2002). This process is not exclusive to medical programmes. Other health professions, e.g. physiotherapy and occupational therapy, are also accredited by their separate boards under the auspices of the Medical and Dental Professions Board of the HPCSA. At the time of writing, an Agreement of Understanding between the HEQC and the HPCSA, in terms of which the HEQC may delegate certain education and training quality assurance (ETQA) functions to the HPCSA, was still to be finalised.

3.7.2.2 Objectives of the accreditation of undergraduate medical programmes in South Africa

The goal of accreditation is to control the quality of education and training, especially with a view to protecting patients, assuring the maintenance of academic standards and bringing about comparability of standards amongst the various medical faculties in South Africa (Health Professions Council of South Africa, 2002). The evaluation and accreditation processes establish a common, formal basis for the recognition of undergraduate medical education and training and determine and certify the achievement and maintenance of minimum standards. The objectives of accreditation are not designed to exclude diversity in instructional methods. Within the broad framework of the curriculum as prescribed by the Medical and Dental Professions Board, faculties or schools are given academic freedom with regard to strategies, the time of instruction,

pedagogical approaches and the way in which teaching and learning are structured and conducted during the various years of study.

Through this process, the Medical and Dental Professions Board attests to the educational quality of accredited faculties, ensuring that these faculties or schools produce competent medical practitioners at the exit level of first professional qualification.

3.7.2.3 Methods used to define the criteria of evaluation

The Subcommittee for Undergraduate Education and Training of the HPCSA developed a profile of the South African doctor and set the goals and objectives for medical education and training (Health Professions Council of South Africa, 1999).

This profile of the doctor includes the following elements:
- Knowledge, skills, attitudes and professional behaviour.
- Health promotion, prevention, treatment and rehabilitation.
- Research, management, continuous professional development.

The education and training recommendations of the HPCSA (Health Professions Council of South Africa, 1999) are based on the following premises:
- Sensitivity to academic demands and the unique needs of the South African society.
- Education and training according to modern medical standards of professional excellence in practice.
- The development in future graduates of a high standard of ethical principles and a healthy outlook on life.

3.7.2.4 Procedure of accreditation

A self-evaluation questionnaire is sent out by the accrediting body appointed by the Medical and Dental Professions Board approximately six months preceding the accreditation visit. This constitutes a basic framework for self-evaluation, with a template for the data that need to be provided. This self-evaluation report should reflect on the educational and training programmes

offered by the faculty or school. The internal self-evaluation report is the primary source of information for the visiting panel.

The requested categories for self-evaluation include:

1. The aim, purpose and outcomes of the programme.
2. Student and staff resources.
3. Information on the programme, including the level designated to the programme in terms of the Higher Education Qualifications Framework (Ministry of Education, 2004)[23], the duration of the programme and the number of credits allocated.
4. Curriculum design, content and organisation.
5. Teaching, learning and assessment.
6. Student progression and achievement.
7. Student development, support and guidance.
8. Resources.
9. Management/governance/supervisory structures.
10. Staff development.
11. Quality assurance and enhancement.
12. General clinical training.

The self-evaluation report is submitted to the HPCSA, after which an accreditation panel for the institutional visit is appointed by the HEQC. This panel includes members of different medical faculties in South Africa. The composition of the panel is as follows:

- A chairperson, who represents the Subcommittee for Undergraduate Teaching and Training of the HPCSA.
- A secretary, appointed by the Board.
- One expert involved in education and training.
- Three to four persons actively involved in medical or dental education and training. These include a representative of the surgical disciplines, as well as representatives of the consultative disciplines (including Internal Medicine, Psychiatry and Paediatrics) and a representative of the diagnostic disciplines.

The completed self-evaluation report is distributed to the members of the accreditation committee, who then utilise the Delphi method[24] to finalise requests for additional information

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[23] In the Education White Paper 3, 'A Programme for the Transformation of Higher Education' (RSA, 1997a), it was proposed that a single qualifications framework should be developed for all higher education qualifications in line with the National Qualifications Framework.

and draft a programme for the institutional visit. The institutional visit is three days in duration, and takes place every five years, provided that the previous accreditation assessment has resulted in the allocation of unconditional accreditation to the academic programme for such a (maximum) period.

3.7.2.5 Outcomes of accreditation

Following the institutional visit, the visiting panel and its secretary prepare an official report. The accreditation report is a detailed document, containing the findings, comments and recommendations of the panel. Areas requiring attention and areas of special note are addressed in the report (Health Professions Council of South Africa, 2002, p. 13). The dean of the faculty or school is given an opportunity to correct factual errors, and the report is then first submitted to the Subcommittee for Undergraduate Teaching and Training of the Medical and Dental Professions Board, after which it goes to the education and registration management committee for final recommendation. All the relevant documents are thereafter submitted to the Medical and Dental Professions Board for a final decision. The report, or parts thereof, may be made public if the Medical and Dental Professions Board wishes to do so.

The final judgment is a resolution of the Medical and Dental Professions Board itself. This decision is made in consultation with and on the recommendation of the visiting panel and the Medical and Dental Professions Board's Subcommittee for Undergraduate Teaching and Training.

Following the final acceptance of the report, accreditation is granted for a period of five years. Accreditation may be granted subject to conditions. This implies that accreditation for any period of up to five years may be conditional upon certain issues of concern to be addressed within a specified period. In the case of conditionally accredited programmes, the accreditation body reserves its right to revisit the particular medical or dental faculty or school. Such a faculty or school is required to submit a written report during the fifth year after the accreditation, or as specified in the accreditation report.

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[24] The Delphi Method is a group decision process making use of the responses of a panel of experts to a series of anonymous questionnaires. The group of experts is provided with a summary of opinions before answering the next questionnaire, and it is believed that the group will converge toward the 'best' response through this consensus process.

If a significant deficiency is noted, accreditation may be awarded for a period of less than five years. Such a period may then only be extended to the full accreditation period following a further assessment, which may require a site visit.

The following adverse actions may be taken by the HPCSA, should an institution not satisfy the requirements of the Medical and Dental Professions Board:

- Denial of the status of provisional or full accreditation (in the event of a programme applying for accreditation for the first time).
- Probation imposed for a specified period of time, during which the board expects the faculty or school concerned to rectify the deficiencies identified.
- Withdrawal of accreditation, if such accreditation has been achieved previously.

To conclude this section: the purpose of this description of the accreditation process is to complete the background against which this study was done and needs to be understood. The approach to quality used in this study, together with the methods used to collect and analyse data, should be able to fit into the system described here. In the final chapter of this thesis (section 9.6), I shall argue that this is indeed the case.

3.7.2.6 Advantages and disadvantages of the national system of accreditation of medical education and training

The system of accreditation practised by the Medical and Dental Professions Board of the HPCSA is external and has a predominantly formative purpose. Therefore, according to Trow's typologies, it can be categorised as a type IV evaluation (see section 3.3.2).

The advantage of this process is that the accreditation event presents an opportunity to reflect critically upon all aspects of the undergraduate programme offered by the school. The self-evaluation exercise, which forms the platform for the evaluation, requires the identification of strengths and weaknesses in the curriculum and its supporting structures. The process is generally perceived as formative, and the final report generates recommendations for improvement in a non-punitive manner.

Some disadvantages of the current system of accreditation are that the process is labour intensive, and that activities are concentrated in the period surrounding accreditation visits.

Although the object of the evaluation is a programme, the nature of the quality evaluation is *organisational* rather than *operational* (see table 3.1). It is the *process* of medical education and training that is evaluated (in line with the WFME approach; see section 3.7.1.1), and not the *outcome.* This may not be comprehensive enough to capture all aspects of the operationalisation of the curriculum.

The cyclical nature of the process may be inadequate to engage all members of the faculty, and to engage them in a continuous manner. A flurry of activity to collect evidence to prove the quality of practices often precedes accreditation events, and that can leave academics cynical about what are perceived to be quality processes (Bowden & Marton, 1998, p. 229).

Accreditation by the HPCSA is mandatory for all programmes in medical education and training offered in South Africa, but this process alone will not provide the necessary conditions to achieve the ideal of integrating continuous quality improvement in educational practice (Wilcock & Lewis, 2002, p. 670).

3.8   SUMMARY OF THE CHAPTER

This chapter has considered quality as an idea and a practice in higher education in general, and in medical education and training in particular.

I discussed the benefits and pitfalls that may ensue if practices of quality assurance in higher education follow blindly in the footsteps of practices in industry. Following that, I examined how the concept of quality is interpreted in the context of higher education, and identified the expectations of various stakeholders in higher education in order to illustrate the effect of the perspectives of these stakeholders on the approaches to the evaluation of quality to be followed.

I explained how the tensions between improvement and accountability created by the various stakeholders may influence the methodology of quality evaluations, such as 'internal and external evaluation' and 'formative and summative evaluation'. These methods were clarified in order to arrive at the various levels of evaluation encountered in the practice of quality assurance in education.

Having set this background, I briefly described the development of quality assurance in higher education in South Africa until the time of writing. I provided a brief sketch of the status of the internationalisation of standards in medical education and training, and explained the South African national processes of the evaluation and accreditation of undergraduate medical education and training.

The evaluation of the curriculum undertaken in this study is located against this broader background of quality and quality assurance in global and national contexts.

CHAPTER 4: THE DESIGN OF THIS STUDY: A CLARIFICATION OF THE USE OF THE METHODS OF PROGRAMME EVALUATION TO ASSESS THE QUALITY OF A CURRICULUM

Babbie and Mouton highlight the role of the research design when presenting the research plan or logic of a study (Babbie & Mouton, 2001, p. 366). Having examined the background to and context of curriculum change in the curriculum in medical education and training offered by the Faculty of Health Sciences of the University of Stellenbosch, and the concept of quality in the context of higher education and in medical education more specifically, I shall now first clarify the research design of this study before presenting the next chapters, which comprise the empirical part of the study.

The design of this study applies the methods of programme evaluation to the quality assurance of a curriculum. It draws upon the well described methods used by social sciences in the field of evaluation research (see, for example, Owen and Rogers (1999), Babbie and Mouton (2001) and Rutman (1977)), but adapts and expands these methods to formulate an approach to quality assurance based on the alignment of curriculum planning and implementation.

The design specifically addresses the research questions formulated in the introduction to this thesis. Clarification evaluation or evaluability assessment, as described in evaluation texts such as those of Owen and Rogers (1999) and Rossi *et al.* (1999), provides a method for the articulation of the theories underlying the process of planning the new curriculum in medical education and training. A theoretical framework for curriculum planning can then be formulated and evaluated with regard to the *coherency* of the planning with the outcomes that were hoped to be achieved, and with regard to its *consistency* with current trends in medical education. By executing the evaluation of the curriculum as it was planned in this way, the first two research questions ("What are the implicit theories underpinning the new curriculum in medical education and training introduced by the Faculty of Health Sciences of the University of Stellenbosch in 1999?" and "Is the theoretical framework of this curriculum aligned with current trends in medical education and training?") will be answered.

The methods of implementation evaluation described in Babbie and Mouton (Babbie & Mouton, 2001) are examined and applied to answer the third research question ("Is the implementation of the new curriculum in medical education and training coherent with its original planning?"). In this way, the implementation of the curriculum can be aligned with its original planning. Quality, when evaluated in this way, is defined in terms of the alignment of the planned and the practised curriculum[25].

This chapter begins with an examination of a curriculum as a construct in order to establish its suitability to be studied by a social science methodology. I shall also identify aspects or forms of the curriculum that can be linked to the different types of programme evaluation, namely the clarification evaluation and the implementation evaluation.

The next section of the chapter will deal with programme evaluation and, more specifically, with the methods of clarification evaluation and implementation evaluation. This section will argue the appropriateness of the use of these methods to the practice of quality assurance of a curriculum.

The final section will explain the approach to quality assurance employed in the design of this study. Alignment serves as an approach to quality assurance as conducted in this study. I do not argue the superiority of this approach above any other, but present it as a method of assessing quality in a way that facilitates improvement. The method employed in this approach is also appropriate for different types of evaluations (see the classification of quality assurance evaluations described in chapter three, section 3.5.1.)

4.1   THE CURRICULUM AS A CONSTRUCT

In order to devise a valid design for the implementation evaluation of a curriculum, it is necessary to first clarify different concepts relating to the construct of a curriculum. For this purpose, the curriculum as an educational and social concept will be reviewed. Aspects or forms of the curriculum as identified in the literature (namely the planned and the practised curriculum) will then be linked to the methodology of programme evaluation in order to adapt this methodology more specifically to the context of curriculum evaluation.

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[25]The concepts of the planned and the practised curriculum will be clarified later in this chapter, in section 4.1.2.

4.1.1 The curriculum as an educational and a social concept

The word curriculum has its roots in the Latin word for a track or a racecourse. Many different interpretations of the concept of 'curriculum' are found in the literature (see, for example, Cornbleth (1990), Muller (2000) and Young (1976)), and it appears that there is not a single accepted definition applied by all practitioners in the field. The National Commission on Higher Education (NCHE) acknowledges these diverse ways in which the concept is used and understood and remarks that the broad definitions of the concept include the full range of teaching, learning and assessment activities in higher education, including course content, relevance and design, the organisation and presentation of knowledge, and the structures in which qualifications are organised (National Commission on Higher Education, 1996, p. 110). In a report on policy and change dialogues conducted by the Centre for Higher Education Transformation (CHET) (CHET, 2004, p. 13), a useful description of the components of a curriculum is found: it is described as the statements of intention and desired outcomes, the curricular contents, and the modes of assessment and delivery that make up a course of study.

A curriculum can be narrowly viewed as an entity represented by a set of documents describing the knowledge to be imparted during a particular module or course. Although convenient and easily recognisable in the form of written documents, this definition is not sufficient to describe the construct of a curriculum as it is implemented. Documents or plans are only one aspect of the context that shapes curriculum practice.
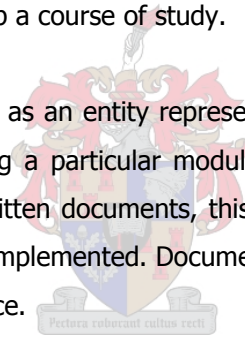
According to Muller (2000, pp. 7-20), curricular knowledge is usually seen in one of two ways. The fist is the curriculum as a package of the official or codified knowledge that can be taught to learners. Young (1976) calls this the 'curriculum as fact'. The second and alternative view of curricular knowledge is that of 'curriculum as process', according to which the curriculum is seen as the passage of knowledge within the educational system through which social knowledge becomes validated as educational knowledge. The latter view has a clear social focus and acknowledges the importance of viewing the stock of knowledge of a society holistically as an interlinked circuit of the intersecting fields of social meaning production in society (namely the domains of everyday life, the academic domain, the bureaucratic domain of state curriculum planning and the domain of the school).[26]

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[26] For an expansion of this view, see Muller (2000, pp. 7–20).

While Grundy (1987, p. 115) describes the curriculum as an active process in which planning, acting and evaluating are all related and integrated, Cornbleth maintains that a curriculum emerges from the dynamic interaction of action, reflection and *setting*, and not from action and reflection alone (Cornbleth, 1990, p. 7). Cornbleth concurs with the view of a curriculum as a process, and describes the assumption that a curriculum is comprised of only the planning documents as 'technocratic'. She argues that a curriculum should be treated critically, rather than technically, as a contextualised social process. This concept of what she calls a 'critical curriculum' is shaped by various contextual influences within and beyond the classroom or lecture theatre. It is accomplished by interaction between teachers and learners, and by the engagement of learners with learning material and the learning environment.

Such a concept of the curriculum is compatible with the constructivist paradigm of learning discussed in chapter two.

It can be concluded from these arguments concerning the different concepts of curriculum, namely that it is purely educational, or that it has a broader social meaning, that the curriculum as it is planned becomes a much more complex entity once it is practised.

This argument sets the scene for two of the forms of the curriculum that will be described in the following section: the curriculum as it is conceptualised is termed the 'planned curriculum', while the curriculum as it is implemented in the social domain becomes the 'practised curriculum'.

The notion of a curriculum as both an educational and a social concept has implications for quality assurance. Even when the planning of a curriculum attempts to also focus on broader social issues and not only on teaching and learning, it remains important to consider possible differences between the 'planned' and the 'practised' curriculum. This study will take the view that a curriculum can be evaluated by examining both planning and practice, where 'practice' is taken as equivalent to the process of implementation. In the following section, the various forms or *gestalten* of the curriculum, including the planned and practised curriculum, will be introduced and described.

4.1.2 Different forms of the curriculum as described in the literature

Different forms (also sometimes called 'faces' or *gestalten*) of a curriculum emerge from various descriptions in the literature (see Biggs (1996), Cornbleth (1990), Crooks (1988), Entwistle (1984), Grundy (1987), Luckett and Sutherland (2000), Marton *et al.*, (1984), Portelli (1993), Prideaux (2003), Sambell and McDowell (1998) and Snyder (1971), amongst others).

Although sometimes called by other names, we can discern between a *planned curriculum*, a *practised curriculum* (sometimes called a 'delivered curriculum'), an *assessed curriculum* and a *hidden* (or 'experienced') *curriculum*. The assessed curriculum is often regarded as an integral part of the practised curriculum, and this approach will also be followed in this study. In table 4.1, the features of these different forms or 'faces' of a curriculum are set out. These different forms of a curriculum will be discussed in more detail in the following section.

Table 4.1: The different forms or 'faces' of the curriculum

Aspect or 'face' of the curriculum	Description
The planned curriculum	This is the curriculum as it is envisioned during the planning process. It is described in the planning documents and policy statements regarding its implementation.
The practised curriculum	This is manifested as the teaching and learning experiences that actually occur.
The assessed curriculum	This forms part of the practised curriculum and, as such, is sometimes grouped with the practised curriculum. It is a vitally important aspect of the practised curriculum and is hugely influential in student learning. As assessment is a reflection of the learning that has taken place in a certain course or module, one should be able to form a 'picture' of the curriculum by evaluating the assessment of such a course or module.
The hidden curriculum	This can be roughly described as the curriculum as perceived or experienced by the students. It is also sometimes described as the difference between what is planned and what is practised.

4.1.2.1 The planned curriculum

The planning of the curriculum sets out the objectives of teaching, and the curriculum as originally planned is described by the concept of the planned curriculum. There are usually planning documents that provide an outline of this aspect of the curriculum. In the case of the medical curriculum that is the subject of this study, a curriculum working group consisting of members of the Committee for Undergraduate Teaching executed the planning of the curriculum as described in chapter one. Over a period of five years, this committee left a paper trial of reports on workshops, minutes of meetings and recommendations forwarded to other administrative bodies (e.g. the Committee for Undergraduate Teaching) that were available for secondary analysis in order to create a blueprint of the planned curriculum. This process was executed in the form of a clarification evaluation and will be described in detail in chapter five.

4.1.2.2 The practised curriculum

Once the curriculum is taken off the drawing board and implemented, it becomes the practised curriculum. Different role players and stakeholders become involved (teachers and students who may not have been involved in the original planning process) and, due to this and other environmental and social factors, the planned curriculum may be interpreted differently when put into practice, or simply disregarded by individual lecturers who proceed with what they consider to be the appropriate approach.

How the teaching *activities* relate to the teaching *objectives* is crucial when considering the implementation of a curriculum. Teaching activities depend on teaching methods and the learning environment. Assessment procedures are an important aspect of teaching activity and, in themselves, form a recognised aspect of the curriculum (the assessed curriculum) (Marton *et al.*, 1984, p. 4), although assessment can be grouped as part of the practised curriculum.

Chapter five will describe the evaluation of a practised curriculum, executed as an implementation evaluation of a large section of the curriculum in undergraduate medical training at the University of Stellenbosch.

The planned and the practised curriculum can be grouped together as the 'formal' curriculum and contrasted with what is described as the hidden curriculum, which will be described in more detail in the next section.

4.1.2.3 The hidden curriculum

The concept of the hidden curriculum is somewhat enigmatic and not uniformly understood. According to Entwistle (1984), the unrecognised contrast between the 'teaching objectives' and the 'teaching activity' comprises the hidden curriculum. The hidden curriculum is about the message received by the students concerning what they are expected to learn. With the learner-centred approach becoming increasingly preferred above the traditional teacher-centred approach (as discussed in chapter two), this view of the curriculum can therefore not be ignored when reviewing the quality of a curriculum.

The literature yields variant descriptions of the concept of the hidden curriculum, and therefore I shall explore this aspect of curriculum in greater depth.

The concept of the hidden curriculum is usually attributed to the sociologist Philip W. Jackson's study, Life in Classrooms (Jackson, 1968). This study drew attention to the idea that schools do more than simply aid the transmission of knowledge from one generation to the next. Education is a process that involves the transmission of norms and values, as well as of a body of socially approved knowledge. The basic idea behind the concept of the hidden curriculum as originally described by Jackson is that pupils learn things that are not actually taught in the formal curriculum and, in this respect, the concept of a hidden curriculum reflects the way the learning process is organised.
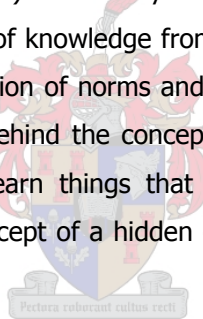
Although the hidden curriculum as a concept was researched mainly in the school setting during the 1970s, it applies equally to higher education, where students similarly learn to adopt certain actions and strategies in order to survive and achieve in a specific learning environment. Snyder (1971) was a key influence in bringing the term 'hidden curriculum' to the attention of the higher education community. He explored the ways in which the formal curriculum emphasises high-order educational goals, such as independent thinking, analysis, problem-solving ability and originality, but, from the student viewpoint, the assessment and teaching procedures suggest that the hidden curriculum involves memorising facts and theories to achieve success. What happens in schools and during education affects students far more than just what is written in the official curriculum (Portelli, 1993).

Various other definitions of the concept of the 'hidden curriculum' can be found in the literature. The IBE Education Thesaurus of UNESCO (UNESCO, 2002) defines the hidden curriculum as the

unstated norms, values and beliefs that are transmitted to students through the underlying educational structure. In many other sources it is referred to as the 'implicit curriculum'. For example, Cornbleth uses this term in Curriculum in Context (Cornbleth, 1990). Sambell and McDowell describe the hidden curriculum as an apposite metaphor to describe the shadowy, ill-defined and amorphous nature of that which is implicit and embedded in educational experiences, in contrast with the formal statements about curricula and the surface features of educational interaction (Sambell & McDowell, 1998, p. 391). At a micro-level, the hidden curriculum is expressed in terms of the distinction between 'what is meant to happen', that is, the curriculum stated officially by the educational system or institution, and what teachers and learners actually do and experience 'on the ground'.

The power of assessment in learning is not to be argued. Biggs formulated the idea of the *constructive alignment* of assessment with the curriculum (Biggs, 1996b, p. 350) based on Cohen's idea of *instructional alignment* (Cohen, 1987). Sambell and McDowell (1998, p. 392) argue that assessment forms a major part of the hidden curriculum. I recognise the assessed curriculum as an integral part of the practised curriculum that affords us a separate and well-delineated view of the curriculum. Rather than *forming part* of the hidden curriculum, the assessed curriculum should be recognised as having a *major influence* on the hidden curriculum. When assessment is not aligned with the curriculum as it is planned and executed, it certainly contributes significantly to the hidden curriculum.

The evaluation of the planned curriculum conducted in chapter five will result in a picture of the curriculum as it was intended to be according to the people who contributed to its planning. The implementation evaluation described in chapter six will examine the curriculum as executed by its active participants, *viz*. the lecturers and students. Assessment forms an important part of this practised curriculum. I am arguing that the form and face of the hidden curriculum will emerge from the process of aligning the planned and the practised curriculum. In this way, the existence of a hidden curriculum in the curriculum in medical education and training offered by the Faculty of Health Sciences of the University of Stellenbosch can be examined.

4.1.3 The curriculum as a programme

According to the Concise Oxford English Dictionary, the word 'curriculum' means the subjects comprising a course of study in a school or college, while 'programme', when used as a noun,

describes a planned series of events or a set of related measures or activities with a long-term aim (Concise Oxford English Dictionary, 2002). In the Higher Education Qualifications Framework (Ministry of Education, 2004, p. 7), a programme is described as a purposeful and structured set of learning experiences that leads to a qualification.

This, in itself, does not provide a clear distinction between the two terms. The term curriculum can be said to *describe* the programme of education and training (a *learning* programme), at a more explicit level (CHET, 2004, p. 13) leading to a qualification or, as in the case of the curriculum in medical education and training, to a qualification that may be accredited or recognised by a professional body (in this case the Health Professions Council of South Africa). Such a body may then grant the recipient of the qualification a license to practise professionally (Health Professions Council of South Africa, 2002).

In this study, as in current practice, the terms curriculum and (learning) programme are often used interchangeably. One way of describing the difference between the two concepts perhaps lies in the application of a curriculum to a social context, when it becomes a programme. A curriculum is a process that can be planned and described in isolation, while a programme only materialises in a social context of application to a target group. This makes the term programme much more transferable to settings other than education (not all programmes are learning programmes). This way of distinguishing a curriculum from a programme does not, however, explain the way in which the two terms are used in the literature or in the policy documents concerned with education in South Africa.

As part of the transformation of higher education in South Africa during the 1990s, the National Commission on Higher Education (NCHE) called for universities to organise their curricula as programmes (National Commission on Higher Education, 1996). The subsequent Higher Education Act (RSA, 1997b) and White Paper on Education (RSA, 1997a) are ambiguous about what constitutes an academic programme, and contain elements of both the credit exchange and disciplinary discourse briefly referred to in section 2.2.2.2 (Ensor, 2002, pp. 279-283).

The main difference in practice between traditionally organised curricula and programmes as interpreted by the NCHE is that curricula are organised around largely self-referential disciplinary majors, while programmes have the objective of preparing students more specifically for the workplace. An interdisciplinary approach to curriculum organisation was seen as a way to address complex technological, cultural and social problems (Ensor, 2002, p. 278). Programmes consist of an accumulation of modules, rather than subjects, and subjects are integrated within these

modules to provide an interdisciplinary basis. The specification of learning outcomes has the rationale of contributing to the transferability of modules in order to make the educational system more flexible. The debate on the extent to which this has been achieved in the South African situation is beyond the scope of this thesis. The Higher Qualifications Framework (Ministry of Education, 2004, p. 7) provides for programmes that are discipline based, professional, career focused, and trans-, inter- or multi-disciplinary in nature.

Since the institution of the new curriculum, the Faculty of Health Sciences of the University of Stellenbosch has offered its undergraduate education and training in medicine as a 'programme'. However, the students have virtually no choice regarding the modules involved (apart from two elective modules) and there is a clear vertical pathway of progression.[27] Interdisciplinarity and modularisation have been appropriated to achieve an apprenticeship to the comprehensive discipline of medicine, rather than to specialised disciplines such as surgery or internal medicine. The outcome statements provided by the modular arrangement are not aimed at establishing equivalence and exchange between modules, although they provide a useful tool for the purpose of quality assurance.

4.1.4 The appropriateness of using social science methodology for curriculum evaluation

In section 3.1.1, I argued that the curriculum can be interpreted as both an educational and a social concept. Grundy (1987) regards the curriculum as a social process that develops through the dynamic interaction of action and reflection. The curriculum is not only a set of plans to be implemented; it is constituted through an active process in which planning, acting and evaluating are all reciprocally related and integrated into the process (Grundy, 1987, p. 115).

Babbie and Mouton (2001, p. 343) list the core dimensions that characterise all social interventions as follows:
- Clearly defined goals and objectives.
- The target group.
- Explicit measures of success.

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[27] See the overview of the curriculum provided as addendum A, and the description of the curriculum offered in chapter two.

- Programme components.
- The management and implementation system.
- The human resource base.
- The stakeholders that have a direct or indirect interest in the programme.
- The context of the programme.

My argument is that all of these dimensions are clearly recognisable in the construct of a curriculum. Therefore, the use of evaluation research methodology is justified in this context, and this type of research can be conducted by applying social scientific methods.

4.2 PROGRAMME EVALUATION AS A METHOD FOR CURRICULUM EVALUATION

Programme evaluation, or evaluation research, refers to a research design rather than a specific research method (Babbie & Mouton, 2001, p. 334). The purpose of programme evaluation is to *evaluate the impact* of social interventions on specific target groups, using various methods, for example surveys, focus groups and interviews.

Programme evaluation research has become an area of specialisation within the broader terrain of applied social research. It systematically applies social research procedures to an assessment of the conceptualisation, design, implementation and utility of social intervention programmes.

Rossi *et al.* (1999, pp. 35-36) suggest the following important motivations for programme evaluation: to facilitate programme managers to conduct their day-to-day activities as efficiently as possible, to provide evidence of activities to programme sponsors and other stakeholders and, thirdly and most importantly, to examine whether the intervention has indeed taken place and has been properly implemented, as there is no point in being concerned with the impact or outcome of a programme unless it can be confirmed. Built on these motivations for doing programme evaluation, Babbie and Mouton (2001, p. 340) list the following applications of programme evaluation:

- Program monitoring as a *management tool*,
- Programme evaluation as providing evidence within a context of *accountability* and, finally,

- Programme monitoring as establishing the *necessary conditions* to enable the assessment of programme *outcome* or *impact*.

These applications of programme evaluation can include some functions of quality assurance (for example, providing evidence for accountability). It follows from this that the practices of programme evaluation and quality assurance are related.

However, as this study progressed, I became aware of a basic divergence from 'classic' programme evaluation, which concerns itself mainly with the impact of an intervention on a target population. In the case of this study, the function of the evaluation is to contribute to the broader aim of the assurance of the quality of the curriculum, and the unit of analysis is the *curriculum* itself (understood as a completed 'plan' *and* an ongoing 'process'), rather than *its* **impact** *on a target population*. The target populations of the curriculum will include the students and, in the longer term, their future patients. At the point in time when this evaluation was executed, it was too early to judge the impact of the curriculum on the target population constituted by the patients (the first cohort of students will only graduate at the end of 2004). The students as a target population will be used as a source of data, and the curriculum will be analysed in accordance with its application to the students as a target population. In this way, the logic of evaluation, as described by Owen and Rogers (1999, pp. 4, 194-198), can still be applied, but a focus on the *curriculum* as a social intervention is maintained. This constitutes a specific application of the methods of social science.

In this section, I shall explain how I applied methods described for programme evaluation to this study in order to review the planning and implementation of a curriculum for the purpose of quality assurance.

4.2.1 Programme execution and aspects of quality

Three different aspects of quality can be discerned in the execution of any programme, including programmes in higher education (Babbie & Mouton, 2001):
- The quality of input: in the context of higher education, this embraces various resources, such as teaching and learning facilities, human resources, planning, management structures and student selection.
- Process quality: this focuses on the teaching and learning experience itself.

- The quality of output: this focuses on the quality of the graduate and the quality of research outputs.

In the HEQC's draft Programme Accreditation Criteria (Higher Education Quality Committee, 2003a, p. 3), a similar classificatory distinction is made between criteria relating to input, process, output and impact, and to the review of programmes.

The type of evaluation study selected for an evaluation is largely dependent on the point in time at which such a study is undertaken. 'Evaluation of needs' should take place before the actual implementation of the process, while 'evaluation of outcome' can only be truly successful if undertaken after the event, or, as in the case of curriculum evaluation, after at least one cycle has been completed and the first cohort of students has graduated. The 'evaluation of the graduates' of a programme poses special problems (Kassebaum *et al.*, 1997), as the impact of the graduates on the health of the communities in which they work can only be evaluated after a length of time that is usually beyond the reach of most institutional evaluation programmes (see, for example, Naggon (1987)).

At the point in the lifecycle of the curriculum when this study was undertaken, the programme had not yet delivered any graduates, and an evaluation of **process** (programme implementation) was the most appropriate of the above three classes of evaluation studies. In order to do an evaluation of process, or implementation evaluation, it is first necessary to evaluate the quality of input and, more specifically, the quality of the planning that laid the foundation for the new curriculum. This study therefore focuses on the evaluation of the planning of the new curriculum (the first and second research questions) and the evaluation of the implementation of the new curriculum (the third research question).

4.2.2 Aligning programme evaluation with the faces of the curriculum

The evaluation of the quality of the planning of a curriculum and the quality of implementation can be related to the different 'faces' of the curriculum described in section 3.1.2. The quality of the planned curriculum can be evaluated using the method of evaluability assessment or clarification evaluation described by Rossi *et al.* (1999, pp. 155-188) and Owen and Rogers (1999, pp. 190-219). Implementation evaluation, as described by Babbie and Mouton (2001, pp. 345-348) lends itself suitable for the evaluation of the practised curriculum. By aligning the

planned and the practised curricula, using the methods of clarification evaluation and implementation evaluation, areas of mismatch between planning and practice can be identified. As the practised curriculum will be evaluated by paying particular attention to the student's experience of the curriculum (see chapter five), I argue that there is a relation between such a possible mismatch and the existence and form of a hidden curriculum.

4.2.2.1 Clarification evaluation and the planned curriculum

The process of 'clarification evaluation' enables me to formulate an explicit framework or blueprint of the planned curriculum.

Evaluation of the quality of planning involves the articulation of the programme theory.[28] This process of clarification evaluation was used by Wholey and his colleagues during the 1970s as a way to involve stakeholders more intensely, and termed the *evaluability assessment* (Rossi *et al.*, 1999). In this dissertation, the process of evaluating the programme theory will be referred to as a 'clarification evaluation' rather than an 'evaluability assessment', as this is more consistent with the approach used in the study.

Rossi *et al.* also use the term 'evaluability assessment' and define it as "the process of negotiation and investigation undertaken jointly by the evaluator, the evaluation sponsor and possibly other stakeholders to determine if a programme meets the preconditions for evaluation and, if so, how the evaluation should be designed to ensure maximum utility" (Rossi *et al.*, 1999). As such, the clarification evaluation becomes an *evaluation of the quality* of one aspect of the programme: the quality of its planning and inception. Rossi *et al.* state: "*One aspect of evaluating a programme… is to assess how good the programme theory is*" (1999, p. 155). Evaluations of programme process, impact and efficiency ride on the presumption that the programme theory is coherent.

It follows from this that an important aspect of curriculum evaluation is the quality of the underlying or implicit theory according to which the curriculum was planned or designed. This theory needs to be articulated clearly in order for it to be evaluated. The articulation of

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[28] Programme theory refers to the set of underlying principles, norms and values on the basis of which a programme is designed. Owen and Rogers (1999, p. 194) remark that the terms 'programme theory' and 'programme logic' are often used interchangeably.

programme theory in order to make it explicit involves a description of the conceptions, assumptions and expectations that constitute the rationale for the way the programme is structured and operated.

The evaluability assessment described by Rossi *et al.* (1999, p. 157) generally involves three primary activities:

1. A description of the 'programme model', with particular attention being paid to defining the programme goals and objectives,
2. An assessment of how well defined and evaluable the programme model is, and
3. An identification of stakeholder interest in the evaluation and the likely use of the findings.

Rossi *et al.* highlight two components of programme theory (Rossi *et al.*, 1999): programme *impact* theory, consisting of an action hypothesis and a conceptual hypothesis, and programme *process* theory, consisting of the service utilisation plan and the organisational plan.

In the case of the new curriculum for undergraduate education and training in medicine, the programme *impact* theory was packaged and publicised by the Faculty as the Profile of the Stellenbosch Doctor (See Addendum B). The profile describes the attributes of the doctor who will be the 'product' of the programme and, in this way, provides an articulation of the desired impact of the programme. The profile was presented as a single-sheet document distributed throughout the Faculty on a continuous basis. In this way, it became a seminal document of the new curriculum, and indeed often the only link between the curriculum as planned and the curriculum as practised. The use of the profile in this study will be discussed further in chapter five.

Programme *process* theory provides an account of how the programme intends to bring about the desired outcomes. Programme evaluation uses an analytic tool, a Logic Model[29], to link the impact theory with the process theory, and to provide a framework for the process theory that can be used for evaluation. McLaughlin and Jordan (1999, pp. 66-90) describe the processes of establishing a Logic Model as follows:

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[29] The Logic Model is "an analytic tool used by programme evaluators to describe the logical linkages among programme resources, activities, outputs, customers reached and short, intermediate and longer-term outcomes" (McLaughlin & Jordan, 1999). This tool plays a central role in the execution of this study.

1. Collecting relevant information: information relevant to the programme should be collected from multiple resources, including document reviews and focus group interviews.

2. Clearly defining the problem and its context: the Logic Model should be grounded in an understanding of the problem that drives the need for the programme. A literature review to gain insight into how others have addressed the same problems is part of this process.

3. Defining the elements of the Logic Model: information must be organised into the relevant components of the Model (e.g. objectives, activities, outputs and outcomes). The logic of elements in one component relating to elements in the next component must be checked, e.g. an activity must address an objective and result in an output that will logically lead to a specific outcome).

4. Drawing the Logic Model: the programme elements identified during step 3 must now be organised to clarify the hypothesised logical linkages. The Logic Model is usually represented as a diagram with columns and rows. Cryptic text may be boxed, and linkages shown by means of connecting one-way arrows. The rows may be grouped according to the objectives identified or the activities planned.

This process was followed in the first part of the empirical section of this study and is described in the next chapter (chapter five). In order to answer the first research question, a Logic Model was formulated as a product of the processes of the clarification evaluation. The planned curriculum, as made explicit by the Logic Model, was then evaluated. To answer the second research question, the programme theory was evaluated against dominant trends in prominent literature of the day concerned with the design of medical curricula, in order to establish the consistency of the planned curriculum with current trends in medical education. Through a process of backward mapping, the programme impact (in the form of the Profile of the Stellenbosch Doctor) was also logically linked to the programme process theory as represented by the Logic Model. This provided evidence for the logic of the programme theory and indicated whether the planning process of the new curriculum was coherent and consistent with the underlying theoretical framework.

The final step of the evaluability assessment, in accordance with Rossi *et al.*, was to identify the stakeholder interest in the evaluation. This exercise paved the way for the operationalisation of the implementation evaluation, during which critical areas for the measurement of expected performance and the stakeholders for data collection were identified.

In this way, the Logic Model was formulated as the product of the clarification evaluation, and served as the foundation for the evaluation of programme implementation.

4.2.2.2 Implementation evaluation and the practised curriculum

The aim of implementation evaluation is to determine whether what was planned (as represented in the Logic Model) actually occurred. This process addresses the third research question formulated for this study.

There is a logical link between implementation evaluation and the practised curriculum: evaluation of the implementation of the curriculum will provide an indication of the curriculum as practised.

The evaluation of programme implementation may be done for at least two purposes: accountability and improvement. These two purposes bring us back to the debate on quality assurance described in chapter three (section 3.4), as well as the argument of this chapter, namely that the methods used in programme evaluation can be successfully applied to address the needs of various stakeholders in quality assurance. While providing evidence for accountability purposes (outcome information), the use of the Logic Model as a basis for implementation evaluation will also provide a balanced picture of the health of the programme, which in turn can assist in programme improvement (McLaughlin & Jordan, 1999, p. 70) .

In this study, the Logic Model will be used to identify measurable elements (also called indicators) of the implementation of the programme and to identify role players that can be linked to these elements. In this way, strategies to perform such an evaluation can be suggested. The Logic Model will serve as the basis for the operationalisation of the implementation evaluation, which will be described in chapter six.

From these two methods of evaluation of the planned and the practised curriculum, I will now formulate the approach to quality used in the curriculum evaluation performed in this study.

4.3 THE CRITERION OF 'ALIGNMENT' FOR THE EVALUATION OF A CURRICULUM

The role of analytical frameworks, such as theories and models, is to provide definitions of key concepts, guide data collection and data analysis and provide an explanatory framework for the interpretation of empirical findings (Babbie & Mouton, 2001, p. 366). These are best derived from practice and should serve to inform practice in return. This dialectical materialist interpretation of theory underpins this study, in which practical considerations led to the construction of a theoretical framework, which was designed with the function of informing and, specifically, improving practice.

This study operates in a conceptual framework of alignment: the alignment of the planned and practised curricula is a central criterion for the measurement of the quality of the curriculum. I also propose that, when the planned curriculum addresses broader issues than merely the content of curriculum and thus includes all aspects of the learning environment[30], the alignment of the practised curriculum with the planned curriculum will make explicit most of the aspects of the hidden curriculum described in section 3.2.1.

When this alignment of the planned and practised curricula is put into the context of quality and quality assurance, it can be linked to the 'fitness for purpose' notion of quality assurance. If there is good alignment between these two faces of the curriculum, the practised curriculum can be described as 'fit for its purpose', as it is in accordance with its planning and the quality goal will have been achieved. As argued in the previous sections, the available methods used in programme evaluation are suitable to operationalise this model of quality.

4.4 SUMMARY OF THE CHAPTER

This chapter argued a certain way in which the well-established methods used in programme evaluation can be more specifically applied to the design of an evaluation study of a curriculum for the purpose of quality assurance.

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[30] The learning environment for the purpose of this study is understood as a broad concept that includes teaching and learning practices, as well as environmental conditions such as teaching facilities and institutional and student culture.

The chapter started with a description of the construct of a curriculum and presented it in such a way that the different forms or 'faces' of the curriculum described in the literature (namely the planned, the practised and the hidden curriculum) can be linked to different types of evaluation studies. In this context, I argued the appropriateness of the use of social science methodology for this type of curricular study.

The design of this study links the method of clarification evaluation to the planned curriculum, and uses this method to provide a blueprint (in the form of a Logic Model) of this face of the curriculum. The methods used in implementation evaluation are applied to operationalise the evaluation of the practised curriculum, based on the foundation of the Logic Model that was formulated as a product of the clarification evaluation.

The Logic Model provides a link between the evaluation of planning and implementation, making it possible to execute an alignment between the planned and the practised curricula. This way of evaluating the quality of the curriculum is described as an alignment approach to quality assurance and provides an analytical framework according to which quality as 'fitness for purpose' can be evaluated.

In the following chapters, which comprise the empirical part of this thesis, the evaluation of the planned and practised curricula in undergraduate medical training, as presented at the Faculty of Health Sciences of the University of Stellenbosch, will be described as a case study applying this approach to quality assurance.

CHAPTER 5: EVALUATION OF THE PLANNED CURRICULUM

Chapters two and three of this thesis provided a description of the structure and history of the Faculty of Health Sciences of the University of Stellenbosch, as well as the theoretical background for this study. The fourth chapter focused on the design of the study. The next three chapters comprise the empirical part of the study, and will describe the operationalisation and results of the evaluation of the planning and implementation of the 1999 curriculum.

This chapter (chapter five) describes the evaluation of the planned curriculum by means of the 'clarificatory evaluation' described by Owen and Rogers (1999), and Rossi *et al.* (1999). This process is also called 'clarificative evaluation' and is similar to the notion of 'evaluability assessment' described by Wholey (1983). In this study, I prefer the term 'clarification evaluation'.

The process of clarification evaluation consists of an investigation of the implicit theory underlying the process of curriculum development and incorporates this into programme logic. This then clearly indicates the cause-and-effect relationships of various interventions intended to address problems identified during the process of curriculum planning. As discussed in chapter four, the results of the evaluations of the outcome of these interventions during the implementation of the curriculum can therefore be related back to the planning process. In this way, possible gaps or deficiencies in the programme implementation can be evaluated by aligning the planned curriculum with the practised curriculum.

The clarification evaluation culminates in the formation of a Logic Model for the 1999 curriculum for medical education and training offered by the Faculty of Health Sciences of the University of Stellenbosch. This provides hypotheses of how the programme is supposed to work to achieve the intended results by linking it to the intended outcome of the programme, as described in the document Profile of the Stellenbosch Doctor[31]. If the programme is not planned in alignment with the Profile of the Stellenbosch Doctor and/or not implemented according to this planning, the implication is that the long-term outcomes visualised by the Profile may not be achieved.

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[31] See Addendum B.

Information derived from the implementation evaluation process will be suitable to satisfy many of the accountability requirements of the national system of accreditation of medical programmes encountered at the time of this study and described in chapter two.

5.1 APPROACH TO CLARIFICATION EVALUATION

Clarification evaluation was the first step in developing concepts and indicators for the evaluation of the planned curriculum. This process, according to De Vaus, should start as early as possible (De Vaus, 1996, p. 58) and should continue throughout the research that is being conducted.

This need to develop concepts and indicators for evaluation is the first step in the logical process of evaluation described by Owen and Rogers (Owen & Rogers, 1999, p. 6), which I represent here in an adapted format:

1. Selecting criteria of merit: in what dimensions must the evaluated process do well?
2. Measuring performance to provide evidence of the process.
3. Constructing standards to reach conclusions regarding the performance of the process.
4. Synthesising and integrating data into a judgment of merit or worth of the evaluated process.

In order for these logical steps to be followed in the evaluation of this medical curriculum, the criteria of merit must first be established as a foundation for the further steps of evaluation. As described in chapter three, the method of clarification evaluation operationalises this intention.

The sources of data used for the clarification evaluation are primarily documents generated during the planning process of the new curriculum. In addition, further clarification of the process of planning was obtained through interviews with key people involved in the planning process.

This approach does not focus on the involvement of stakeholders, as required by the evaluability assessment described by Wholey (1983), and also by Rutman (1977). Although the strong emphasis on stakeholder involvement in evaluability assessment increases programme commitment, I did not consider this approach to be the most appropriate for this study. The evaluability assessment of Wholey and Rutman is of great use when the aim is to involve all stakeholders and realign the commitment to a programme to a set of common aims and objectives. The evaluation of the planning of the processes in the case of this study, however,

was product orientated rather than person orientated. The primary aim of the clarification evaluation in this case was to define criteria of merit for an implementation evaluation. Owen and Rogers declare that 'evaluability assessment' devotees have modified the outcomes emphasis towards a greater weight on design clarification as an end in its own right, while the high reliance on stakeholders' views may not enable the clearest articulation of the complexity of the programme's causal links (Owen & Rogers, 1999).

Owen and Rogers (1999, p. 195) refer to the process of clarification evaluation as the 'normative' phase of an evaluation, wherein the logical structure of the programme is established and a comprehensive framework is developed. In the summative phase that follows this, the created model of the programme is tested by empirical means. The summative phase of this evaluation will be described in the chapters that follow.

5.1.1 Methodology

In this section, I describe how the clarification evaluation was operationalised and executed.

5.1.1.1 Secondary analysis of the planning documents

Because of the time frame during which this study was conducted, the process of evaluation of the planning of the curriculum was done retrospectively. For this purpose, a secondary analysis of the planning documents of the curriculum was most useful.

The process of the planning of the new curriculum has already been described in chapter one. The documents analysed for this part of the study included reports of workshops, minutes of meetings of the Committee for Undergraduate Education, a report of a fact-finding mission to three medical schools in the United Kingdom by two members of the planning committee, numerous progress reports of a special task group for the planning of the new curriculum, later named the Curriculum Committee, and an unpublished report on the process of curriculum reform written by Terblanche and Van der Merwe (1996). Preliminary rosters and proposals concerning the possible structure of the new curriculum were also used.

In table 5.1, the main events contributing to the planning process of the curriculum are listed, together with their immediate results and the documents that were generated that served as data sources for this part of the study.

Table 5.1: The planning process of the new curriculum

Date	Event	Activities	Outcome	Output: Documents generated
8 – 9 December 1994	Curriculum exercise at Mon Villa	• Exploration of environment • Strategic decisions • Draft of the profile of the graduates produced	Recommendations accepted by the Faculty Board	Report (Faculty of Medicine, 1994)
4 – 5 December 1995	Environmental exploration: local	• Analysis of feedback from graduates • Recommendations formulated regarding curriculum restructuring	Recommendations accepted by the Faculty Board	Report (Faculty of Medicine, 1995)
17 – 21 June 1996	Environmental exploration: international	Visit to three medical schools in the United Kingdom		Report (Van der Merwe & Terblanche, 1996)
24 January 1997	Curriculum workshop	Formulation of recommendations regarding integrated approach	Recommendations accepted by the Committee for Undergraduate Education	Report (Faculty of Medicine, 1997c)
March 1997	Meetings of Special Task Group of the Curriculum Committee	Formulation of recommendations for the design of an integrated curriculum	Accepted by the Committee for Undergraduate Education	Report (Faculty of Medicine, 1997d)
16 May 1997	Meeting of the Curriculum Committee	Formulation of recommendations regarding the Basic Science component of the new curriculum	Accepted by the Committee for Undergraduate Education	Report (Faculty of Medicine, 1997a)

These events span the time period from the end of 1994 until May 1997, after which the planning process began to focus on the first year of study that was to be implemented at the beginning of 1999. As the clarification evaluation focuses on the principles of the new curriculum, I regard the period from 1994 to 1997 as the effective planning phase of the curriculum as a complete

process, and therefore of great importance for the purposes of this part of the study. However, the planning of the detailed content of the phases continued as the curriculum progressed, with the unfolding of the curriculum to incorporate further cohorts (see table 2.1). This process was still in progress during the data-collection phase of this study, as the late clinical rotations were only implemented during that period.

5.1.1.2 Qualitative data and observation

I conducted unstructured interviews with people involved in the planning process of the new curriculum and, in this way, I was able to confirm facts and my understanding of them in order to clarify some aspects in greater depth than is discernable from the document trail of the planning process.

During the next section, I describe how information from the above data sources was selected to formulate a Logic Model of the process of planning the new medical curriculum.

5.2 ANALYSIS OF THE PLANNING DOCUMENTS IN TERMS OF A LOGIC MODEL
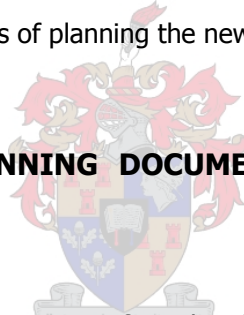
The results of the clarification evaluation were formulated in a form suitable to be incorporated into a Logic Model. The basic components of a Logic Model include aims and objectives, activities, outputs produced by these activities, impacts of the activities in the form of outcomes, and the impact of these outcomes on a described target group (McLaughlin & Jordan, 1999). This will be described in more detail later.

5.2.1 Identifying the aims of the curriculum

The early documents generated by the process of curriculum planning as set out in table 5.1 provided the most useful information for the first step of building an analytical framework for curriculum evaluation. It was during these initial meetings of the Curriculum Planning Committee that the aims of the curriculum were identifiable as a set of strategic decisions made by the committee. As the planning process progressed, attention shifted towards the more detailed planning of the implementation of the curriculum. A unique document outlining the

conceptualised product of the curriculum, the Profile of the Stellenbosch Doctor, was also formulated early during the curriculum-planning phase (refer to section 5.5, where the Profile and the role that it played in curriculum planning will be described in more detail). In this study, the Profile is used to evaluate the congruence of the planning of the curriculum as made explicit by the Logic Model (see section 5.7.2).

At the first meeting of the planning group, the challenges that had to be addressed by the new curriculum were brought to the table. The product of this environmental exploration is described in the report of the first meeting of the curriculum committee (Faculty of Medicine, 1994) and the following factors were identified as the major challenges to be addressed:

1. The explosion of (medical) knowledge and information resulting in an overload of facts.
2. Increasing specialisation.
3. Decreasing resources.
4. Changing student profile.
5. Social changes.
6. A national emphasis on primary care.
7. An emphasis on heath and disease prevention.
8. A shift from a biomedical to a bio-psychosocial model.
9. A change in the disease profile of the community.
10. Increasing demands for accountability, both personal and organisational.

Strategic actions to address these challenges were formulated at this initial meeting. I summarise these strategic actions as they are described by the report of the meeting according to each of the challenges listed above, and analyse them in terms of a Logic Model. Although rewritten and rephrased to suit this purpose, each of these aims can be traced back to the original planning documents.

The original planning documents offer the arguments for what should be achieved by curriculum innovation in the form of statements. I formulated the aims used in this study from these statements. Although not explicitly referenced, each paraphrasing of the aims is derived from the original planning documents. In order for them to be evaluable, I formulated the aims in such a way that a specific target group is addressed.

In the following paragraphs, I briefly describe how each of these aims was formulated.

The first two challenges identified during the environmental exploration and documented in the report of the first meeting of curriculum planners (Faculty of Medicine, 1994) (refer to the ten points listed above) are intrinsically linked. The overload of medical knowledge leads to (and is also the result of) increasing specialisation. It is clear that some way had to be found to help students to deal with the information overload brought about by the explosion of medical information. On the basis of this intention, I formulated the first aim of the curriculum:

To help the student deal with the content load of the curriculum.

It was also proposed that the curriculum must directly address the requirements of general practice, and therefore the content had to be relevant. This process of identifying relevant content is described in the planning documents as the development of a 'core curriculum'. The term 'core curriculum' is translated directly from the original Afrikaans, 'kernkurrikulum', and is used in the literature to refer to the generic content of a curriculum that can be used in different environments or countries. This direct translation could lead to a misinterpretation, namely that the intention is to reduce knowledge, rather than to define those elements of the curriculum that are universal. I will therefore avoid using the direct translation of the word 'kernkurrikulum' in this study, and will rather refer to 'relevant content'.

It is also stated in the early planning documents (Faculty of Medicine, 1994) that clear study guidance in the form of written outcomes had to be presented to the students, and that alternative ways of teaching the students had to be considered in order to help them acquire knowledge in a more independent way.

It was proposed that students had to be guided to learn independently. The term 'self-study' was used in the planning documents, and this term is consistently encountered in the vocabulary of the faculty documents. I formulated the aim of this intention to facilitate self-study as follows:

To help the student take responsibility for his/her own learning.

It was also recognised that educational strategies had to be revised to facilitate better learning. This issue gained importance as the planning of the curriculum progressed. A subsequent workshop (Faculty of Medicine, 1997d) focused on the refinement of an educational model optimally suited to accommodate the strategic choices concerning the new curriculum. During this meeting, it was decided that a significantly integrated approach would be most suitable. This recommended integration included preclinical/clinical integration. A meeting of the curriculum task group led to the formulation of the educational priorities set out in chapter two (section 2.3.2) and is addressed by the following aim:

To educate students in accordance with current educational approaches.

It is stated in the Profile of the Stellenbosch Doctor (Addendum B) that the purpose of the education and training of the medical student is to prepare him/her to function autonomously in the primary health care sector after completion of the year of internship. To deal with the increasing specialisation in medical knowledge, the planners recommended that training should emphasise the role of a basic medical practitioner who is competent to conduct a general practice, but also able to progress to specialisation. General practitioners as role models therefore had to be provided by different means, including the decentralisation of training.

This emphasis by the planning committee on a primary care approach to medicine was also in line with the socio-political events in South Africa during that time. Following the first democratic elections in the same year as the start of the planning process for the 1999 curriculum, the new government focused on the improvement of the provision of health care services at the level of primary care. This approach redirected funds from the tertiary training facilities towards primary health care and marked the beginning of major changes in the health care system that continue to impact on education and training facilities (see, for example, the new heath care plan of the Department of Health of the Western Cape (Department of Health, Western Cape, 2003).

It was recommended in the early planning documents of the curriculum that priority would be assigned to primary health content, while training had to be decentralised to primary and secondary care facilities. In accordance with the priorities of primary care, health and disease prevention implied the importance of social and communication skills. In order to identify disease early, an attitude towards health promotion and prevention of disease had to be cultivated, and the curriculum had to be adjusted to accommodate these demands. Students also had to be trained to function effectively in a multidisciplinary team and to have an integrated approach to patient care.

This emphasis on the training of a medical practitioner suitable for general practice led to the formulation of the third aim:

To prepare the students to function in a primary care setting after graduation.

Two main strategic decisions described in the first report (Faculty of Medicine, 1994) addressed the dwindling resources, especially financial resources, foreseen by the planning committee. The infrastructure for training had to be adapted and training had to be decentralised. Although the report of the first meeting of the committee does not expand on this issue, the aim is clear:

To increase the efficiency of the curriculum in terms of costs and other resources.

To adapt to the social and political demands for a student profile representative of the South African population, it was initially recommended that the promotion criteria be adjusted. Transparency of the selection criteria was identified as an objective, as well as the imperative of the curriculum to address the needs of an inclusive society. This, however, was not mentioned again after the report of the first workshop (Faculty of Medicine, 1994). Apart from the intention to change the selection criteria for the curriculum, effective study guidance was recognised as essential. The challenge of managing an environment where a diversity of ethics, morals and cultures could flourish was mentioned, but no specific plans of how to deal with this could be discerned from these early documents. Measures to accommodate students who are not Afrikaans speaking were also identified as essential. All of these intentions are incorporated under the formulated aim:

To foster and sustain diversity in the learning environment.

The social changes and demands at the time of the first planning workshop in 1994 were obviously influenced by the political climate at that crucial period in South African history. In order to deal with these changes in society, exposure to alternative medicine, including traditional healing, was proposed. Other social changes apart from the cultural were acknowledged as a need to address both first and third world practice in the training of undergraduate medical students. This mix of environments was (and still is) encountered in the South African context, where western medicine is practiced in the more affluent part of society, alongside health problems typical of the developing world, and where there is almost no medical infrastructure in some rural areas. All of these socio-political challenges that were recognised during the planning process of the 1999 curriculum were incorporated in the following two aims:

To be responsive to the current socio-political environment, and also

To equip the student to deal with the changing profile of patients and their diseases as encountered in their intended working environment.

A strategic decision was to educate students according to a bio-psychosocial model, rather than a biomedical model. The bio-psychosocial model entails the early cognisance of patients as holistic beings whose heath is influenced by social and cultural circumstances, and it was recommended that this model should be emphasised throughout the curriculum. This emphasis on the bio-psychosocial model was in line with local and international trends and is one of the most significant and discerning characteristics of the new curriculum as it was originally planned. I recognise this as one of the aims of the curriculum:

To educate and train the student in accordance with a bio-psychosocial model of medicine.

In recognition of the growing national and international culture of accountability, the report of the first planning workshop distinguished between quality assurance and ethical issues to be addressed by a new curriculum. The issue of quality assurance of the curriculum was mentioned in the report of the first meeting (Faculty of Medicine, 1994), but not taken further in the subsequent planning documents. The need to address ethical issues as part of the content of the curriculum was discussed further, according to the reports of the planning documents. I formulate this intention as the final aim of the curriculum:

To educate the student regarding personal accountability.

The above recommendations were presented to the faculty board in the form of strategic decisions (Faculty of Medicine, 1994), all of which were accepted. The next phase of curriculum planning consisted of the final formulation of the Profile of the Stellenbosch Doctor (Addendum B), following feedback and comments from graduates and senior students obtained through a survey that was conducted during 1995 in the form of a questionnaire. The results of the survey were reported in the documents generated by the second big meeting of the planning committee, in 1995 (Faculty of Medicine, 1995). The third and final phase of the planning of the curriculum (from 1996 to 1997) consisted of the identification of changes that were necessary to the previous curriculum in accordance with the strategic choices described above.

5.2.2 Defining the objectives of the curriculum

The above statements of the different aims of the curriculum are broad and not very specific. A goal or aim may accommodate several objectives (Bytheway, 2002). Objectives need to be written with a specific target population in mind, expressing the specific behaviour that is expected to influence this group. The next step in the formulation of a Logic Model for the curriculum was to unpack these aims into more specific objectives, which, in turn, could be linked to specific activities. The objectives that could be derived from the planning documents were numbered and are represented in table 5.2 as they will be used in the next phase of this study (the implementation evaluation of sections of the 1999 curriculum).

Table 5.2: Aims and objectives of the 1999 curriculum as identified from the planning documents

Aims	Objectives
1. To help the student deal with the content load of the curriculum	Objective 1: To present a manageable content load to the student
	Objective 2: To reduce the amount of irrelevant knowledge conveyed to students at the undergraduate level
	Objective 3: To provide the students with relevant outcomes of expected learning
	Objective 4: To provide the students with clear outcomes of expected learning
	Objective 5: To clearly prioritise knowledge so that the student can direct his/her own learning
2. To help the student take responsibility for his/her own learning	Objective 6: To encourage the students to work independently
	Objective 7: To encourage the students to use various learning resources other than notes taken during formal lectures
	Objective 8: To make students aware of the necessity to continuously update their knowledge
3. To educate students in accordance with current educational approaches	Objective 9: To employ various teaching strategies in order to encourage students to have a 'deep approach' to learning
	Objective 10: To optimise access of the students to lecturers
	Objective 11: To develop the problem-solving skills of students

Aims	Objectives
4. To prepare the students to function in a primary care setting after graduation	Objective 12: To present content that focuses on the knowledge required by a primary care physician
	Objective 13: To teach the students about prevention of disease
	Objective 14: To teach the students about rehabilitation
	Objective 15: To teach the students to approach medicine in an interdisciplinary manner, as required by primary health care
	Objective 16: To incorporate general practitioners in the presentation of the curriculum in order to provide a primary care perspective to health care
5. To foster and sustain diversity in the learning environment	Objective 17: To develop the criteria for admission to and selection for the medical programme in order to increase the number of previously disadvantaged students
	Objective 18: To support the learning of previously disadvantaged students
6. To be responsive to the current socio-political environment	Objective 19: To train the student in both state-owned and privately-owned facilities in order to expose the students to the health needs of different sections of society
	Objective 20: To provide a basic knowledge of alternative medicine
7. To equip the student to deal with the changing profile of patients and their diseases as encountered in their intended working environment	Objective 21: To present the student with adequate learning material regarding HIV and it's related diseases
	Objective 22: To present the student with adequate learning material regarding trauma

Aims	Objectives
8. To educate and train the student in accordance with a bio-psychosocial model of medicine	Objective 23: To educate the student about the influence of the environment on health
	Objective 24: To educate the student about the influence of the patient's mental state on health
	Objective 25: To educate the student about the influence of culture on health
	Objective 26: To educate the student about the influence of disease on society
	Objective 27: To educate the student about the broader impact of diseases on the family unit
9. To educate the student regarding personal accountability	Objective 28: To provide the student with a relevant education in the field of ethics
10. To increase the efficiency of the curriculum in terms of costs and other resources	Objective 29: To also use existing facilities outside the main teaching hospital in order to meet the needs of the curriculum
	Objective 30: To use lecturers not employed full time by the university in order to fulfil the needs of the new curriculum

It is important to emphasise that the objectives that were identified and formulated in table 5.2 as dimensions of each of the aims were taken from the planning documents listed in table 5.1. **The process of identifying objectives was limited to what was documented in the planning process.** If I had used a different way to derive the objectives to describe each aim (for instance, a broad exploration of the relevant literature), it might have been possible to formulate objectives other than the ones used in this Logic Model. This is an important point to make, as I cannot claim that the aims are sufficiently described by the objectives identified for each of them.

The next step in the formulation of the Logic Model was the process of linking the planned activities to the identified objectives. The activities were also derived from the planning documents and could be related directly to the objectives identified from the planning

documents. This would not have been logically possible if the objectives were derived through a different method.

In the following sections, I describe how the activities, outputs and projected outcomes that form part of the Logic Model were formulated, although each one is listed specifically in the Logic Model (table 5.3) and not in the text.

5.2.3 Activities that were planned to address the objectives of the curriculum

Although not formulated explicitly, the planning documents contain descriptions of the interventions that were planned. I was able to link these interventions to the objectives that I identified. These activities are incorporated in the Logic Model (table 5.3) and have a close relationship with the outputs of curriculum implementation. As programme logic dictates, each activity can be expected to produce at least one output, and these outputs are formulated in a way that is measurable.

5.2.4 Outputs to be expected from the planned activities

An activity or an intervention, if implemented successfully, should yield some form of a result or a product that can be measured. These measurable results or products of the intervention activities are termed the 'outputs'. The formulation of outputs is the first step in the identification of what needs to be measured in order to evaluate the successful implementation of a programme (United Way of America, 1996).

To illustrate this process, the activity of assigning priority to the content of the programme is taken from the Logic Model. If successfully executed, this activity should result in the students' ability to assign priority to the content of the curriculum. This result can be measured by inquiring about the students' perceptions of their ability to do that.

The expected output is listed in the Logic Model next to the activity to which it is linked. The complete list of activities is included in the Logic Model (table 5.3).

5.2.5 Projected outcomes of the planned activities

The consequences or effects of the interventions or activities are described as the outcomes. In the case of this study, which is an implementation evaluation, the outcomes can be stated only as expected outcomes, as they cannot yet be measured because the graduates of the intervention (the curriculum) have not yet been delivered. Likewise, the longer-term impact of the product to be delivered (the graduate) on the environment (the community, and specifically the health of the community) will not be measurable for some years to come.

The projected outcomes of the planned interventions are documented in the Logic Model (table 5.3).

5.3 PRODUCTS OF THE CLARIFICATION EVALUATION: THE LOGIC MODEL OF THE NEW CURRICULUM

The Logic Model is an analytic tool used by programme evaluators to describe the logical linkages between the programme resources, activities and outputs, the customers reached, and the short-term, intermediate and longer-term outcomes (McLaughlin & Jordan, 1999). Once this model of expected performance is produced, critical measurement areas can be identified. Apart from its use by programme evaluators, the Logic Model is also of great use to programme or project managers and, as such, it has been introduced into business courses and other disciplines outside of the social sciences (Bytheway, 2002; McLaughlin & Jordan, 1999; United Way of America, 1996).

The Logic Model relates to programme theory. Rossi *et al.* (1999) define programme theory as "a set of assumptions about the manner in which the programme relates to the social benefits it is expected to produce, describing the strategy and tactics the programme has adopted to achieve its goals and objectives". Programme theory should explain the elements of the programme and present the logic of how the programme works. The Logic Model presents an articulation of the programme theory, which should ideally be made explicit at the start of a programme and be shared with all stakeholders on a continuous basis in order to ensure maximum cohesion to a set course of action. Used in this way, a Logic Model can build a common understanding of the programme components, such as the available resources and the stakeholders involved, and help to clearly communicate the expected outcomes.

The process of formulating the components of the Logic Model of the planned curriculum was explained in the previous sections of this chapter. These components can now be combined and are presented in table 5.3 as the Logic Model of the planned curriculum.

Table 5.3: The Logic Model of the medical curriculum instituted at the Faculty of Health Sciences of the University of Stellenbosch at the beginning of 1999

Aims and objectives directed at the students as the targets of intervention:

Aims	Objectives	Activities	Outputs	Outcome
To help the student deal with the content load of the curriculum	To present a manageable content load to the student	Controlling the amount of content to be covered in the curriculum	Content presented in the curriculum	Students are able to cope with the amount of content presented in the curriculum
	To reduce the amount of irrelevant knowledge conveyed to students at the undergraduate level. (At the undergraduate level, the majority of content should be directed at the primary level of care)	Reducing the amount of specialised knowledge (described as secondary and tertiary care) in the curriculum	Content of the curriculum consists primarily of primary care knowledge	Less content focus on secondary and tertiary level of care
	To provide the students with relevant outcomes of expected learning	Producing written outcomes of learning that are relevant to what is taught	Study guides	Students are well informed about the expected outcomes of their learning
	To provide the students with clear outcomes of expected learning	Producing written outcomes of learning that are clear	Study guides	Students are clear about the expected outcomes of their learning
	To clearly prioritise knowledge so that the student can direct his/her own learning	Assigning priority to the content of the curriculum	The level of importance of content is clearly indicated	Students can prioritise knowledge

Aims	Objectives	Activities	Outputs	Outcome
To help the student take responsibility for his/her own learning	To encourage the students to work independently in the form of structured and well-guided self-study	Structuring a significant part of the content of the curriculum as well-guided self-study	Clear tasks/assignments to be independently completed	Students are able to work independently
	To encourage the students to use various learning resources other than notes taken during formal lectures	Providing a broad range of learning resources	Lists of resources	Students learn with the aid of various resources
	To make students aware of the necessity to continuously update their knowledge	Developments and changes in the field of medicine are emphasised	Discussions of changes and developments in medicine are included in the content of the curriculum	Students are aware of the dynamic nature of health care
To educate students in accordance with current educational approaches	To employ various teaching strategies in order to encourage students to have a deep approach to learning	Different teaching activities are planned	A variety of teaching activities is presented	Students build their knowledge by participating in various activities
	To optimise access of the students to teachers	Lecturers are approachable and create an interactive atmosphere in the learning environment	A learning environment where the needs of the students enjoy priority	Students feel free to ask questions and it is easy to approach lecturers
	To develop the problem-solving skills of students	Create opportunities in the presentation of the curriculum to teach students problem-solving skills	Part of the curriculum is presented as problems to be solved	Students are able to solve problems

Aims	Objectives	Activities	Outputs	Outcome
To prepare the students to function in a primary care setting after graduation	To present content that focuses on the knowledge required by a primary care physician	Primary care knowledge is emphasised and enjoys priority	The majority of the content of the curriculum consist of knowledge suitable to primary care practice	Students acquire knowledge suitable to practice in a primary care setting
	To teach the students about prevention of disease	Disease prevention is emphasised	The program includes content about prevention of disease	Students acquire sufficient knowledge to prevent disease
	To teach the students about rehabilitation	Rehabilitation is emphasised	The program includes content about rehabilitation	Students acquire sufficient knowledge to rehabilitate patients
	To teach the students to approach medicine in an interdisciplinary manner, as required by primary health care	Integration of different disciplines occurs in the components (modules) of the curriculum	Different departments are involved in the teaching of the modules of which the curriculum consists	Students are capable of a multidisciplinary approach
	To incorporate general practitioners in the presentation of the curriculum in order to provide a primary care perspective to health care	Recruit general practitioners to teach in the curriculum	General practitioners are involved in the presentation of the different modules	Students are provided with the general practitioner's perspective on health care

Aims	Objectives	Activities	Outputs	Outcome
To foster and sustain diversity in the learning environment[32]	To develop the criteria for admission to and selection for the medical programme in order to increase the number of previously disadvantaged students	Review and adjust the criteria of admission to the programme	New admission and selection criteria	The race profile of the students is better aligned with that of the national population
	To support the learning of previously disadvantaged students	Programmes are created to support previously disadvantaged students	The existence of programmes to support previously disadvantaged students	Previously disadvantaged students are successful in the programme
To be responsive to the current socio-political environment	To train the student in both state-owned and privately-owned facilities	To place students in private as well as state-owned institutions for their education and training	Students are trained in both state-owned and privately-owned facilities	Students are familiar with the environments of both state-owned and privately-owned facilities
	To provide a basic knowledge of alternative medicine	A basic background to alternative medicine is presented	The content of the curriculum includes alternative medicine	Students have a basic knowledge of alternative medicine
To equip the student to deal with the changing profile of patients and their diseases as encountered in their intended working environment	To present the student with adequate learning material regarding HIV and its related diseases	Content concerning HIV and its related diseases is presented	The content of the curriculum includes HIV and its related diseases	Students have an adequate knowledge of HIV and its related diseases
	To present the student with adequate learning material regarding trauma	Content concerning trauma is presented	The content of the curriculum includes trauma	Students have an adequate knowledge of trauma

[32] The sociopolitical climate at the time of the curriculum innovation demanded attention to the issue of diversity. The University of Stellenbosch committed itself to redress the unequal access to higher education experienced in the past (University of Stellenbosch, 2000). I do not claim that the list of activities presented here incorporates all the dimensions of the concept of diversity. It only addresses the actions proposed in the planning documents of the curriculum and identified during the process of clarification evaluation.

Aims	Objectives	Activities	Outputs	Outcome
To educate and train the student in accordance with a bio-psychosocial model of medicine	To educate the student about the influence of the environment on health	The influence of the environment on health is addressed	The content of the curriculum includes the influence of the environment on health	Students have an adequate understanding of the influence of the environment on health
	To educate the student about the influence of the patient's mental state on health	The influence of the patient's mental state on health is addressed	The content of the curriculum includes the influence of the patient's mental state on health	Students have an adequate understanding of the influence of the patient's mental state on health
	To educate the student about the influence of culture on health	The influence of culture on health is addressed	The content of the curriculum includes the influence of culture on health	Students have an adequate understanding of the influence of culture on health
	To educate the student about the influence of disease on society	The influence of disease on society is addressed	The content of the curriculum includes the influence of disease on society	Students have an adequate understanding of the influence of disease on society
	To educate the student about the broader impact of diseases on the family unit	The influence of the broader impact of diseases on the family unit is addressed	The content of the curriculum includes the broader impact of diseases on the family unit	Students have an adequate understanding of the broader impact of diseases on the family unit
To educate the student regarding personal accountability	To provide the student with a relevant education in the field of ethics	To present students with relevant knowledge about ethics	Ethics is included in the content of the module	Students are knowledgeable concerning ethics

Aims and objectives directed at other stakeholders as the targets of intervention:

Aims	Objectives	Activities	Outputs	Outcome
To increase the efficiency of the curriculum in terms of costs and other resources	To also use existing facilities outside the main teaching hospital in order to fulfil the needs of the curriculum	The use of external facilities	Education and training also takes place outside the main teaching hospital	Adequate facilities for the presentation of the curriculum, without incurring additional costs
	To use lecturers not employed full time by the university in order to fulfil the needs of the new curriculum	Recruit external lecturers	Part of the curriculum is presented by external lecturers	Lecturers with adequate knowledge and skills present the curriculum, without incurring the additional costs of making permanent appointments

The Logic Model (table 5.3) was presented in two parts: the aims and objectives directed at the students as the targets of intervention, and the aims and objectives directed at other stakeholders as the targets of intervention. As explained in chapter four, the object of analysis of this study is sections/parts of the curriculum. The students are not always the target group to which all the aims, objectives and interventions are delivered. Stakeholders comprise a broader group of involved individuals, including the groups responsible for the implementation of the curriculum. The identification of these specific stakeholders will be discussed in the next section. These stakeholders served as sources of data for the evaluation.

5.4   IDENTIFYING THE STAKEHOLDERS IN THE CURRICULUM

During the process of analysing the planning documents, it was possible to identify the stakeholders involved in the implementation of the identified objectives. Because this study involves the evaluation of the *planning* and *implementation* of the curriculum in medical education and training, the stakeholders who may receive the longer-term benefits of the *outcomes* of the curriculum were excluded here (these longer-term stakeholders will include groups such as the patients, the communities that the graduates will work in and the employers of these graduates). The stakeholders in this context of this study are limited to those parties bearing responsibility for the execution of the objectives, and also those who receive the benefit of an intervention or activity (the target groups).

This identification of the stakeholders in the teaching and learning environment laid the groundwork for the data collection to be done during the implementation evaluation, as these stakeholders represented possible sources of data from which information concerning the implementation of the planned interventions could be learned. The stakeholders included:

- The programme committee, which is responsible for the planning and administration of the curriculum on a macro-level.
- The faculty members, who can be layered into the module chairperson (as the head of the module team) and the lecturers of individual modules. The module chairperson is responsible for the design of each module on a micro-level, while the lecturers are responsible for the delivery of the module to the students.
- The students.

By identifying the target groups at this stage, the sources of data collection for the evaluation of each outcome became explicit. In chapter six (section 6.2.1.3), I describe how the stakeholders were chosen that were best suited to provide information concerning each of the objectives. The stakeholders chosen as sources of data for each of the objectives are indicated in table 6.3.

5.5 THE EXPECTED IMPACT OF THE PROPOSED CURRICULUM: THE PROFILE OF THE STELLENBOSCH DOCTOR

The intention to formulate a profile of attributes of the graduate produced by the Faculty of Medicine of the University of Stellenbosch is documented in the earliest planning documents of the 1999 curriculum.

The attributes of the Stellenbosch doctor were described and grouped into three groups, namely *knowledge*, *skills* and *attitudes*. A proposal for the content of the Profile was already discussed at the first curriculum working session (Faculty of Medicine, 1994), and feedback was gained from students, general practitioners, medical specialists and doctors working as medical officers in provincial hospitals. The Profile was sent out in the form of a questionnaire, and the responders had to indicate how they rated the importance of each attribute on a Likert Scale. After analysing the responses of these groups to the Profile, some adjustments were made (Faculty of Medicine, 1995). At the end of 1995, this process was completed and the Profile was finalised.[33]

The Profile of the Stellenbosch Doctor was distributed to lecturers during all the phases of the implementation of the curriculum. In this way, the document was put forward as a map of the curriculum, or a beacon signifying the destination to be reached in the form of the type of doctor that need to be the end product of all teaching and learning activities. The Profile also became the measuring stick: if an activity did not contribute to the Profile, that activity did not fit into the planned curriculum. In this study, the Profile is used to evaluate the congruence of the planning process of the curriculum described in section 5.7.2.

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[33] A copy of the Profile of the Stellenbosch Doctor is attached to this thesis as Appendix B.

5.6   IDENTIFICATION OF ASPECTS EXCLUDED FROM THIS EVALUATION

In this study, all the aims of the curriculum were evaluated in accordance with the objectives identified for each of them. These objectives were derived from the planning documents of the curriculum, and I do not propose that these objectives exhaustively explore the concept inherent in each aim (see section 5.2.2). For example, the identified objectives address the issue of educating the students in accordance with current educational practices and include 'relevant' educational concepts, but these are not necessarily exhaustive.

Likewise, the objective of fostering and sustaining diversity in the learning environment touches on a subject which, at the time of writing, was receiving a lot of attention at the University, which had committed itself to addressing the inequalities of the past by broadening access to the University (see the document, A Strategic Framework for the Turn of the Century and Beyond (University of Stellenbosch, 2000)). The planning documents of the curriculum in medical education and training did not address a comprehensive view of diversity. The focus remained on the adaptation of admission criteria, with the aim of changing the racial profile of the student population to be more representative of the South African population and providing study guidance for students from academically disadvantaged backgrounds. Therefore, the adaptation of promotion and admission criteria, as well as the existence of study guidance, will be included in the evaluation, but a more comprehensive concept of diversity is admittedly not explored. The *impact* of the activities of changing the admission criteria and providing study guidance is not evaluated by this study, as this would require a different type of evaluation (impact evaluation) and a different unit of analysis (the student population), while the unit of analysis here is components of the curriculum.

Nevertheless, it remains important that creating and sustaining diversity were identified as important attributes of this medical curriculum, and the objectives identified from the planning documents and outlined in the Logic Model will be recognised and considered in this evaluation.

5.7 EVALUATION OF THE PLANNING OF THE CURRICULUM AS MADE EXPLICIT BY THE LOGIC MODEL

The theoretical framework of the 1999 curriculum in medical education and training, as made explicit in the aims identified by the clarification evaluation, was evaluated in two ways:

- The alignment of the framework with current trends in medical education and training and the medical literature published around the time of planning was evaluated by comparing the aims identified for the Stellenbosch curriculum to generic aims for medical education. These were identified from the most influential medical literature published during the same time frame.
- The congruence of the planning of the curriculum was also examined through an exercise that attempted to align the Profile of the Stellenbosch Doctor with the aims of the curriculum formulated during the process of the clarification evaluation. By this process of backwards mapping, it could be established whether the planning of the curriculum remained congruent with its end product as visualised in the Profile.

5.7.1 Evaluating the relevance of the 1999 curriculum as planned

In view of the approach to quality employed by this study (quality as 'fitness for purpose' when a good alignment between the planned and the practised curriculum can be established – see chapter four), the alignment of the planned curriculum with the current literature was judged in order to establish the relevance of this curriculum to the environment in which it was situated. National and regional literature was taken into account in this process. This method is suitable for the retrospective evaluation undertaken here.

5.7.1.1 Method

Four documents published in the time directly preceding the planning of the new curriculum were selected for analysis and comparison with the aims identified by the clarification evaluation. These documents were The Edinburgh Declaration (World Federation for Medical Education, 1988), Tomorrow's Doctor (General Medical Council, 1993) and Boelen's Five Star Doctor (Boelen, 1995), as well as the Cape Town Declaration (World Federation for Medical Education & World Health Organization, 1995), which was included to provide a regional perspective. The

Cape Town Declaration is also a consensus document, which adds to its credibility. The selected documents were briefly discussed earlier in this thesis as part of the background to the curriculum innovation of 1999 (chapter two, section 2.2).

I analysed these four documents to identify the key elements of medical education that were proposed by their authors. These elements were then compared with the aims defined by the process of clarification evaluation for the 1999 Stellenbosch curriculum as originally planned.

5.7.1.2 Results

The results of the comparative exercise are summarised in table 5.4. I identified the following key elements from the documents as the most important elements to be included or considered in a curriculum for medical education and training:
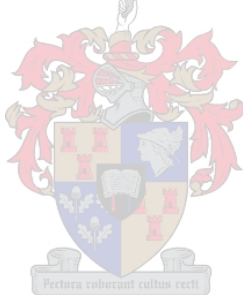
1. A definition of curriculum content.
2. A description of the scientific basis to be incorporated into the curriculum.
3. Integration of subjects within the curriculum.
4. Preventative medicine and health promotion.
5. A focus on primary care.
6. Community-based training.
7. A specification of the method of instruction.
8. Social responsiveness.
9. Ethics.
10. Team work, including management skills.
11. Clinical skills.
12. Continuous education.
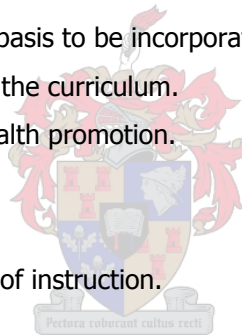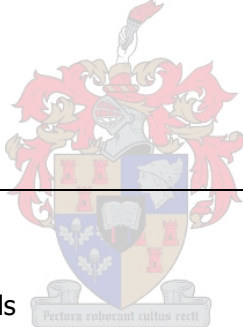
As shown in table 5.4, all of the documents did not contain all the elements identified above, but it was possible to use this analysis as a framework to compare the 1999 Stellenbosch curriculum to the concepts then current in the design of medical curricula.

Table 5.4: Comparison of the 1999 Stellenbosch medical curriculum with the international literature of that time

Key elements	The Edinburgh Declaration (World Federation for Medical Education, 1988)	Tomorrow's Doctor (General Medical Council, 1993)	Boelen's five star doctor (Boelen, 1993)	The Cape Town Declaration (World Federation for Medical Education & World Health Organization, 1995)	The aims defined for the 1999 Stellenbosch curriculum
Definition of Content		A core curriculum should be developed		Specific knowledge defined to include epidemiology, local infections and diseases, maternal and child health, mental health, rehabilitation, diagnostic skills, medico-legal issues, social and cultural anthropology and the humanities. Specific skills defined to include communication skills and computer literacy	To help the student to deal with the content load of the curriculum: this aim includes objectives dealing with the relevance of the content
Scientific basis	Science should be integrated into clinical practice	A firm understanding of scientific methods should be developed		Specific knowledge to promote relevant basic medical sciences. Research should be promoted	
Integration		Vertical course integration should be encouraged	The medical practitioner should respond to the patient's total health needs with integrated preventive, curative and rehabilitative services	Core curricula should be integrated (system orientated, and not discipline orientated)	To prepare the students to function in a primary care setting after graduation: this includes integration of subjects as they will be encountered in the primary care setting

Key elements	The Edinburgh Declaration (World Federation for Medical Education, 1988)	Tomorrow's Doctor (General Medical Council, 1993)	Boelen's five star doctor (Boelen, 1993)	The Cape Town Declaration (World Federation for Medical Education & World Health Organization, 1995)	The aims defined for the 1999 Stellenbosch curriculum
Preventative medicine and health promotion	Emphasis on disease prevention and health promotion		Healthy lifestyles should be promoted by good communication and sensitising individuals and groups to their own health protection	Specific skills defined to include preventive and promotive medicine	To educate and train the student according to a bio-psychosocial model of medicine
Focus on primary care				Specific skills defined to include general practitioner competence. Private practitioners should be involved in medical education and training and education settings should include private facilities. Prominence should be given to general practice in undergraduate training	To prepare the students to function in a primary care setting after graduation
Community-based training	Educational settings should be relevant			A community-based education, progressiveness and a willingness to adapt to local conditions and changing circumstances	To increase the efficiency of the curriculum in terms of costs and other resources: this includes the use of facilities outside the main teaching hospital

Key elements	The Edinburgh Declaration (World Federation for Medical Education, 1988)	Tomorrow's Doctor (General Medical Council, 1993)	Boelen's five star doctor (Boelen, 1993)	The Cape Town Declaration (World Federation for Medical Education & World Health Organization, 1995)	The aims defined for the 1999 Stellenbosch curriculum
Method of instruction	Teachers should be trained as educators	Problem-based learning should be introduced		Emphasis on student-centred, problem-based, patient-orientated teaching and learning strategies	
Social responsive-ness	A curriculum should be based on national health needs, and entrants selected for non-cognitive as well as intellectual attributes		The needs of the individual must be balanced with community needs	The doctor for Africa should be educated, trained and equipped to serve communities in Africa	To be responsive to the current socio-political environment To equip the student to deal with the changing profile of patients and their diseases as encountered in their intended working environment: this aim specified content relating to HIV and trauma To foster and sustain diversity in the student population
Ethics			Optimally using modern technologies, bearing in mind ethical and financial considerations, to the ultimate benefit of the consumer	Ethical awareness, a respect for human rights	To educate the student regarding personal accountability

Key elements	The Edinburgh Declaration (World Federation for Medical Education, 1988)	Tomorrow's Doctor (General Medical Council, 1993)	Boelen's five star doctor (Boelen, 1993)	The Cape Town Declaration (World Federation for Medical Education & World Health Organization, 1995)	The aims defined for the 1999 Stellenbosch curriculum
Team work and management skills	Coordination of medical education with health care services, and multi-professional training		Teamwork within and across health sectors and other socio-economic sectors influencing health is important	Specific knowledge defined to include economics of health care and management of resources; specific skills defined to include managerial skills, and a multi-sector approach fostering work in multidisciplinary teams and community capacity building	To prepare the students to function in a primary care setting after graduation; this includes multidisciplinary teamwork and the role of the physician as a community leader
Clinical skills development	Competency-based learning	Early clinical contact should be the norm, and skills should be developed using 'skills labs', simulated patients, models and ultimately patients		Specific skills defined to include all areas of clinical medicine	Optimal clinical exposure recognised as an important pillar of the training process in the planning documents, but details of the proposed clinical training are not described
Continuous education	Lifelong active learning should be encouraged, continuing medical education				To help the student to take responsibility for his/her own learning

5.7.1.3 Discussion

It was not difficult to recognise the main threads of the international discourse about medical curricula in the aims identified for the 1999 Stellenbosch curriculum, and I was able to link all the aims to the key elements identified from the seminal literature. Some key elements, such as 'social responsiveness', were very well represented in the Stellenbosch curriculum, as illustrated in table 5.4.

However, the following key elements that were present in the literature set out in table 5.4 were not clearly addressed by the aims identified for the 1999 Stellenbosch curriculum, and indeed were not prominent in the broader context of the planning documents:

- basic scientific training,
- the specification of a method of instruction, and
- details concerning clinical skills development.

These three elements are flagged as possible areas of weakness in the 1999 curriculum for medical education and training, because they are not explicitly addressed in the planned curriculum.
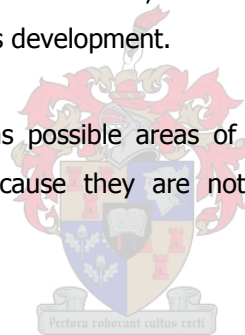
5.7.2 Evaluating the congruence of the planned curriculum with the Profile of the Stellenbosch Doctor

The Profile of the Stellenbosch Doctor was issued as a statement of intent early in the planning process (refer to section 5.5). In this section, logical links will be made between the Logic Model of the curriculum and the Profile in order to demonstrate that congruence exists between the planned curriculum and its intended outcome.

5.7.2.1 Method

In order to evaluate whether the planning of the curriculum was conducted in line with the proposed Profile of the Stellenbosch Doctor, I attempted to match the aims of the new curriculum identified during the process of clarification evaluation to the elements of the Profile of

the Stellenbosch Doctor. It is important to remember that the Profile was drawn up at the onset of the planning process and used as a guide to curriculum implementation.

5.7.2.2 Results

The results of this comparative exercise are summarised in table 5.5.

Table 5.5: The aims of the planned curriculum matched to the intended impact of the planned curriculum as described by the Profile of the Stellenbosch Doctor

Aims of the planned curriculum	Intended impact of the planned curriculum as described by the Profile of the Stellenbosch Doctor		
	Knowledge	**Attitudes**	**Skills**
To help the student deal with the content load of the curriculum	• Basic knowledge of the necessary medically applicable scientific and mathematical concepts • Basic and relevant knowledge of the normal functioning and morphology of the human body and psyche • Relevant knowledge of the abnormal functioning and morphology of the human body and psyche • Knowledge of the recognition and diagnosis of common diseases and abnormalities of the human body and psyche • Basic knowledge of the relevant treatment and rehabilitation options • Knowledge of the appropriate use and limitations of special investigations and diagnostic methods • Knowledge of the basic principles of research methodology		

Aims of the planned curriculum	Intended impact of the planned curriculum as described by the *Profile of the Stellenbosch Doctor*		
	Knowledge	**Attitudes**	**Skills**
To help the student take responsibility for his/her own learning		• An acknowledgement of the limitations of own knowledge and skills	• The ability to effectively utilise relevant technological resources (e.g. computers) in the health environment
To educate students in accordance with current educational approaches			• The ability to integrate, interpret and apply knowledge • The ability to think and act in a problem-solving fashion • The ability to interpret and apply relevant literature
To prepare the students to function in a primary care setting after graduation	• Knowledge of the finances, management and structures of health care	• An empathic disposition towards the patient, their family as well as the community and a willingness to be accessible • The willingness to set a positive example regarding social responsibilities and obligations	• Sufficient skills in diagnostic and therapeutic procedures to be able to function autonomously as a doctor in primary care • The ability to establish and manage a primary health care infrastructure • The ability to function in the broader team context
To increase the efficiency of the curriculum in terms of costs and other resources			
To foster and sustain diversity in the learning environment			• The ability to communicate effectively with patients from different cultural groups in the process of diagnosis and management

Aims of the planned curriculum	Intended impact of the planned curriculum as described by the *Profile of the Stellenbosch Doctor*		
	Knowledge	**Attitudes**	**Skills**
To be responsive to the current socio-political environment	• Basic knowledge of alternative and complementary medicine		
To equip the student to deal with the changing profile of patients and their diseases as encountered in their intended working environment		• A positive disposition towards continuing professional development	
To educate and train the student in accordance with a bio-psychosocial model of medicine	• Knowledge of the maintenance of health and prevention of disease (physical, mental and social) • Knowledge of factors in the community environment that can influence health • Basic knowledge of the interaction between biological, psychological and sociological factors that play a role in health	• A willingness to be involved and to be of service within the broader community	• The ability to function holistically within the context of family and community
To educate the student regarding personal accountability	• Basic knowledge of ethics and legal aspects that are applicable to medicine	• Respect for person and life • A loyal and ethically accountable disposition towards the profession, patients and community • The acceptance of his/her full responsibility within the patient-doctor relationship	

5.7.2.3 Discussion

Two of the attributes described by the Profile could not be linked to any specific identified aims: 'The ability to function effectively under stressful circumstances', and 'The ability to take part in and guide continuous and in-service training as well as community education'. The first attribute is a very general description, applicable not only to primary care, but to any situation that a graduate may find him/herself working in. The second constitutes a double-barrelled attribute: it involves continuous personal education as well as a role to be played in the development of the community. The element of continuous medical education can be linked to the objective of helping the student take responsibility for his/her own learning, while the future role of the graduate in community development can be logically linked to the aim of training the student according to a bio-psychosocial model of medicine.

It should now be clear that the attributes contained in the Profile of the Stellenbosch Doctor can all be logically linked to the aims identified for the curriculum through the process of clarification evaluation, although the weight of the attributes described by the Profile is not distributed evenly across all of the aims (for example: the larger part of the profile addresses the aims of emphasising primary health care and addressing the bio-psychosocial model of medicine). The only objective not directly addressed by the Profile is the efficiency of the curriculum in terms of costs and other resources. This, however, is a managerial issue and not relevant to be reflected in the ultimate Profile of the doctor to be produced by this medical education and training.

5.8 SUMMARY OF THE CHAPTER

This chapter described how the clarification evaluation of the planned curriculum was performed. After a thorough study of the planning documents of the curriculum, and taking cognisance of the institutional culture, a Logic Model was formulated for the curriculum. This Logic Model served as the foundation for the implementation evaluation that is described in the following chapter.

The relevance of the aims identified for the planned curriculum by the process of clarification evaluation was established by comparing these with the key elements of medical curricula

identified in the seminal literature published at the time the planning was undertaken. The congruency of the planning process was also established by aligning the Profile of the Stellenbosch Doctor, as an intended impact of the programme, with the identified aims of the programme.

The results of the clarification evaluation of the planned curriculum enable us to draw some conclusions regarding the relevance of the planning process to the literature of the time, and regarding the congruence of the aims identified for the Logic Model with the Profile of the Stellenbosch Doctor.

It can be regarded as a strength of the planning process for the 1999 Stellenbosch curriculum that the aims identified by the process of clarification could be clearly linked to trends described in the most dominant literature on the subject of medical education and training of the day. However, some deficits in the planning process could also be demonstrated, namely that a lack of explicit attention was paid to the importance of the role of basic scientific training, a specific mode of instruction was not clearly identified, and the issue of clinical skills development was not specifically brought into the planning process at the stage that was studied here. These deficits in relation to the seminal literature of the time should be considered as part of the background planning when advancing to the implementation evaluation, which will be described in the next chapter.

The Profile of the Stellenbosch Doctor can be aligned with the aims of the planned curriculum defined by the clarification evaluation, indicating that the planning process, according to the results of the clarification evaluation, was in line with the intended profile of the graduate. The aim of the efficiency of the curriculum in terms of costs and other resources was not suitable to be incorporated in the profile of the graduate, as this related to a Faculty matter, and can not be described as an attribute of a graduate.

This concludes the clarification evaluation of the planned curriculum. In the next phase of the study, the practised curriculum will be evaluated by means of implementation evaluation.

CHAPTER 6: OPERATIONALISATION OF THE IMPLEMENTATION EVALUATION OF THE PRACTISED CURRICULUM

In this chapter, I shall describe how items for analysis were derived from the Logic Model formulated in the previous chapter, and how methods of and sources for data collection were identified. I shall then explain how the data collection was carried out and discuss the return rate for the questionnaire. This chapter is thus descriptive in nature. The results of the various forms of analysis will be reported in the next chapter.

6.1 DESCRIPTION OF THE METHODOLOGY OF THE IMPLEMENTATION EVALUATION STUDY

Programme evaluation comprises the use of multiple methods of data collection, and all available modes of observation may be utilised (Mouton, 2001, p. 159). These include both structured methods (e.g. questionnaires) and less structured methods (focus group interviews, individual interviews and participation observation). Secondary analysis of documentary sources is usually also used as a method of collecting data.

The strategy employed by this part of the study was to first do a qualitative exploration using personal interviews and focus groups. In this way it was possible to identify the best sources of data and to get a clearer idea of how the data could be gathered most effectively. The data for the evaluation were collected using quantitative methodologies, including questionnaires and secondary analysis of documents.

6.1.1 Defining the unit of analysis

The unit of *analysis* is the curriculum as presented to medical students at the Faculty of Health Sciences of the University of Stellenbosch.[34]

This evaluation does not include the full curriculum. As it is an evaluation of *implementation* and not of *outcomes*, this does not deprive the study of the validity of its methods or conclusions.

In order to explain the parts of the curriculum that were evaluated by this study, it is necessary to explain the structure of the 1999 Stellenbosch curriculum for medical education and training. The curriculum is divided into three theoretical phases (phases I, II and III), and three clinical rotations (early, middle and late).

Phase I	-	Chemistry, Biology, Physics and Data Management
Phase II	-	12 system-based modules
Phase III	-	15 system-based modules
Early clinical rotations	-	6 rotations
Middle clinical rotations	-	8 rotations
Late clinical rotations	-	planning was preliminary at the time of data collection

(See Addendum A for more details on the curriculum structure.)

While the unit of analysis is the curriculum as it is presented in its different phases, the unit of *observation* is the module.[35] As explained in chapter three, the curriculum has an interdisciplinary modular structure. Each module is organised independently by a module chairperson and a module team, who take the responsibility for the planning and presentation of the module, as well as for the assessment of students. The module, therefore, presents an ideal unit of observation. The empirical part of the study focuses on the theoretical phases of the curriculum (phases II and III) and on the early and middle clinical rotations.

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[34] In section 4.2, the importance of this definition of the unit of analysis for this study is discussed.

[35] A module in this curriculum consists of the coherent arrangement of themes relating to a specific organ system, for example the respiratory or the gastrointestinal system. Different disciplines are integrated into these modules and the modules can therefore be described as 'integrated' and 'interdisciplinary'.

Phase I of the curriculum establishes a scientific foundation. The content presented in phase I is organised as discipline-based subjects and does not have the integrated interdisciplinary structure encountered in the other theoretical phases of the programme. The clarification evaluation described in chapter five did not define specific aims addressing basic sciences and clinical skills development in the curriculum. This compromised the evaluability[36] of phase I by the methods of this study. Phase I was therefore excluded from the implementation evaluation.

Practical realities also influenced the fact that the entire curriculum was not evaluated, as the complete six years of the curriculum had not yet been presented when the data were gathered from April 2002 to March 2003 (the first intake of students was to graduate at the end of 2004). The whole curriculum is therefore not evaluated in this study, but, as it is an evaluation of *implementation* and not of *outcomes*, this does not reduce the validity of the methods used or the conclusions drawn.

As the theoretical phases (phases II and III) are of primary importance to address the aims specified in the Logic Model, the evaluation focused on these phases. In the theoretical phases, the knowledge component of the Profile can be suitably addressed, while many of the skills and attitudes can be addressed to a reasonable extent in the clinical phases. Questionnaires for each of the stakeholder groups acting as sources of data (chairpersons, lecturers and students) were compiled and administered specifically for this study.

Apart from the finding that clinical skills development was not well defined in the planning of the curriculum (chapter five), at the stage in which the clarification evaluation was undertaken it was too early to conduct as thorough an implementation evaluation of the clinical phases as could be done of the theoretical phases. As the students are divided into groups for the clinical rotations, all of them had not completed these rotations when the feedback was gathered. This feedback was gathered during the same time period as the data were collected for the theoretical phases.

During the teaching and learning activities of the clinical rotations (this concerns both the early and middle clinical rotations), the students are divided into groups as small as five and, due to their dispersion through the training facilities, are never at the same place at the same time. Clinical training is conducted by a large group of clinicians and other medical personnel who are

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[36] The evaluability of a programme is a precondition for evaluation, and is assessed by the process of evaluability assessment or clarification evaluation. The lack of a definition of programme theory is one of the factors that compromises the evaluability of a programme (Rossi et al., 1999, pp. 154 & 177-179).

not easy to identify or trace. Regarding the early and the middle clinical rotations, tailor-made feedback from students and lecturers was beyond the scope of this project. In order to be able to draw the clinical phases into this evaluation, use was made of the routine student feedback collected for these phases. This data, together with the study guides for the clinical rotations, was used as a secondary source of data for the evaluation of that part of the curriculum.

The late clinical rotations had not yet been implemented during the time frame of data collection for this study (2002 to 2003) and were therefore not included in the evaluation.

6.1.2 Identifying sources of data for the evaluation of the different phases of the curriculum

To increase the validity of the study by data triangulation, data were obtained from the following sources in order to evaluate the theoretical phases of the programme:

- Secondary analysis of documents
- Students
- Lecturers
- Module chairpersons

Table 6.1 identifies the sources of data that were used for the phases of the curriculum that were evaluated by this study.

Table 6.1: Sources of data used for the evaluation of the different phases of the curriculum

Phase of the curriculum	Secondary analysis of documents	Students	Lecturers	Module chairpersons
Phase II	√	√	√	√
Phase III	√	√	√	√
Early clinical rotations	√	√		
Middle clinical rotations	√	√		

A secondary analysis of documents, such as study guides, rosters and examination papers, was very important to supply information regarding background variables and to validate some facts obtained from other sources. The evaluation by the students reflected the practised curriculum from their viewpoint. The lecturers' self-evaluation provided another view of the practised curriculum, while evaluation on the level of module chairpersons represented the overall planning of each module. In this way, a more comprehensive picture of the curriculum as it was implemented could be presented.

6.1.3 The time frame of the evaluation

This is a cross-sectional study. All the modules of the curriculum, excluding phase I and the late clinical rotations, were evaluated once during this time frame. The selected time period allowed all the modules to run one full cycle.

The data were collected during 2002 and 2003. The data had to be collected over a period of at least one year in order to capture a complete spectrum of the implemented curriculum, as the modules are only presented once a year. A typical module runs for approximately four weeks, but modules lasting two or eight weeks are also encountered.[37] The complete set of data represents an *imprint* or cross-section of the curriculum as presented during the period of data collection.

The Faculty of Health Sciences is in a state of transition and a lot of changes are continuously taking place. It therefore is likely that attitudes are changing, even over short periods of time. This study was not designed to follow trends in attitude, but rather to evaluate behaviour as manifested in practice during the time of data collection.

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[37] See Addendum A for an overview of the arrangement of the modules.

6.2   COMPILING THE QUESTIONNAIRES USED FOR THIS STUDY

Tailor-made questionnaires were developed for the gathering of information from module chairpersons, lecturers and students in phases II and III. The standard questionnaires used for student feedback and routinely administered by the Faculty were utilised for the evaluation of the early and middle clinical rotations.

Oppenheim (1992, p. 100) notes that the questionnaire is an important instrument of research and tool for data collection, and that the function of the questionnaire is to measure. Survey methodology is an obvious and practical choice to engage the entire spectrum of role players or stakeholders involved in the implementation of the curriculum and who were identified in section 5.1.2. A survey is a practical tool to reach the largest number of participants in the practice of the curriculum.

The numbers of these participants vary; there are 26 theoretical modules, the number of lecturers participating in these modules varies between three and 30y, while there are roughly 180 students enrolled in each year group. These numbers were higher for the first two years of study because students in dentistry and physiotherapy were also enrolled in some of the modules. As the unit of analysis of this study is the curriculum and the unit of observation is the various *modules* and not the *students*, and as the evaluation is an evaluation of *process* and not of *outcome*, this study did not separate the medical students from the others in the evaluation of these modules.

De Vaus (De Vaus, 1996, pp. 7-9) cautions that surveys look at naturally occurring variations and cannot adequately establish causal connections between variables. The administration of surveys in isolation is therefore not sufficient to provide a meaningful description of social life. The purpose of surveys is to generalise, and this does not provide the context in which beliefs and actions occur. Babbie and Mouton (2001, pp. 263-264) argue that the artificiality of the survey format puts a strain on validity: "*Surveys cannot measure social action: they can only collect self-reports of recalled past action or of prospective or hypothetical action*".

With these constrains in mind, it was important therefore to design the questionnaires with care and to purposely plan the incorporation of generated data into a larger framework of analysis, such as the data matrix provided by the Logic Model. The following sections explain the

processes used to compile the questionnaires that were developed especially for the purpose of this study to evaluate the implementation of phases II and III of the curriculum.

6.2.1 The development of aspects for evaluation

The aspects for evaluation were developed from the Logic Model and specifically from the objectives defined for the recurriculation process described in chapter five. To illustrate how this was achieved, table 6.2 lists each of the aspects next to the objective from which it was developed.

Table 6.2: The aspects to be evaluated as developed from the objectives of the curriculum

Objective identified	Aspects to be evaluated
To present a manageable content load to the student	The content load in each unit of observation[38]
To present relevant knowledge to students at the undergraduate level	The division of content between the various levels of care, i.e. primary, secondary and tertiary
To provide the students with relevant outcomes of expected learning	Perception of the relevance of the outcomes of study provided
To provide the students with clear outcomes of expected learning	Perception of the clarity of the outcomes of study provided
To clearly prioritise knowledge so that the student can direct his/her own learning	Lecturers' prioritisation of knowledge and students' awareness of this
To encourage the students to work independently	The amount of independent learning taking place
To encourage the students to use various learning resources other than notes taken during formal lectures	Resources prescribed and used
To make students aware of the necessity to continuously update their knowledge	Awareness created about changes and developments in the field of medicine
To employ various teaching strategies in order to encourage students to have a 'deep approach' to learning[39]	Division of the presentation of modules between various teaching activities
To optimise the access of the students to lecturers	Approachability of lecturers
To develop the problem-solving skills of the students	Problem-solving tasks set

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[38] The unit of observation in this study is the module.

[39] For a discussion on approaches to learning, see chapter two, section 2.2.2.5

Objective identified	Aspects to be evaluated
To present content that focuses on the knowledge required by a primary care physician	Type of knowledge imparted during the course of a module
To teach the students about the prevention of disease	Presence of aspects of prevention in the content of a module
To teach the students about rehabilitation	Presence of aspects of rehabilitation in the content of a module
To teach the students to approach medicine in an interdisciplinary manner, as required by primary health care	Involvement of various departments in a module
To incorporate general practitioners in the presentation of the curriculum in order to provide a primary care perspective to health care	Involvement of general practitioners in the presentation of a module
To develop the criteria for admission to and selection for the medical curriculum in order to increase the number of previously disadvantaged students	Change in admission criteria and the profile of the student intake
To support the learning of previously disadvantaged students	Development programmes in existence
To train the students in both state-owned and privately-owned facilities in order to expose them to the health needs of different sections of society	Facilities used for education and training
To provide a basic knowledge of alternative medicine[40]	Presence of aspects of alternative medicine in the content of a module
To present the student with adequate learning material regarding HIV and its related diseases	Presence of aspects of HIV and its related diseases in the content of a module
To present the student with adequate learning material regarding trauma	Presence of aspects of trauma in the content of a module
To educate the student about the influence of the environment on health	Presence of aspects of the influence of the environment on health in the content of a module
To educate the student about the influence of the patient's mental state on health	Presence of aspects of the influence of the patient's mental state on health in the content of a module
To educate the student about the influence of culture on health	Presence of aspects of the influence of culture on health in the content of a module
To educate the student about the influence of disease on the family unit and society	Presence of aspects of the influence of disease on the family unit and society in the content of a module
To educate the student about the broader impact of diseases on the family unit	Presence of aspects of the broader impact of diseases on the family unit in the content of a module

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[40] The term 'alternative medicine' refers to homeopathic medicine as opposed to allopathic medicine, and in this context includes traditional healing.

Objective identified	Aspects to be evaluated
To provide the student with a relevant education in the field of ethics	Presence of ethical aspects in the content of a module
To also use existing facilities outside the main teaching hospital in order to meet the needs of the curriculum	Facilities used
To use lecturers not employed full time by the university in order to fulfil the needs of the new curriculum	Lecturers used

I do not claim that the characteristics of the list of identified aspects presented in table 6.2 comprehensively define this curriculum. This list was compiled specifically for the purposes of this study and addresses the original planning of the current medical curriculum at the University of Stellenbosch.

After evaluating the aspects identified above and the indicators that were developed for these aspects to be mutually exclusive, the next step was to identify which of these aspects could be suitably evaluated by survey methodology, and which of the aspects could be evaluated by the study of documents. Data concerning admission criteria, the student population profile and the presence of support programmes were collected from administrative records, planning documents and from the minutes of the meetings of the programme committee.
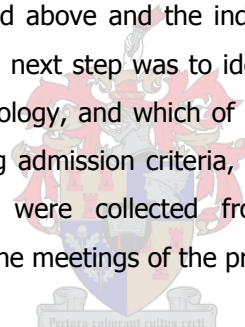
As the various sources of data had been identified previously (see section 5.4), it was now possible to develop indicators to describe each of the aspects that were to be evaluated through the use of questionnaires.

6.2.2 The use of qualitative methods to identify dimensions and performance indicators for the aspects to be evaluated

In section 5.1, I referred to the logical process of evaluation described by Owen and Rogers (Owen & Rogers, 1999, pp. 5-7). According to this process, measurements of performance in the defined criteria of merit are the next step in evaluation, following the selection of the criteria. I now had to translate the criteria to be evaluated (described as aims and objectives) into measurable criteria of performance.

In order to understand each of the identified aspects better, and to increase my contextual knowledge, I first applied a form of qualitative method to examine each aspect more closely. The purpose of this was also to develop a list of indicators that would describe each dimension of the aspects that I wanted to evaluate. A less structured approach such as this is helpful in developing relevant and appropriately worded questions for each participating group (De Vaus, 1996, p. 53).

My approach was to conduct focus group discussions with representatives of each group identified as a source of data (the module chairpersons, the lecturers and the students). This also served to introduce my planned research to the faculty and to the students. During these discussions, I presented the aspects that I wanted to evaluate, which had been developed from the outcomes expected of the curriculum as described earlier. Inputs from these three groups were gathered regarding their different perceptions of the dimensions of these aspects and also the indicators that may describe them. The focus groups were also asked about the possible questions to be formulated in relation to the aspects and that could be included in the questionnaires. In this way, questions were developed that were suitable for each source of data, while the content of these questions described the attributes to be measured for each indicator.

During the focus groups interviews/discussions, the different levels of understanding of the aspects encountered by the different sources of data made it clear that it was necessary to develop separate surveys for each of the three groups. As this study aimed to use efficient methods of gathering data for the purpose of quality assurance, it was considered important to keep the questionnaires as short as possible so as not to overburden the respondents and possibly compromise a good response rate by demanding too much of their time. To do this, the source of data most appropriate for the measurement of each variable was identified. By compiling different questionnaires for each of the sources of data, the questionnaires were made shorter to accommodate only those indicators relevant to the specific source of data.

6.2.3 Selecting appropriate sources of data for each objective

Following the identification of the dimensions of the aspects to be evaluated, I started with the development of the surveys directed at each of these groups. The first step was to select the most appropriate source or sources of data for each aspect to be evaluated. In many cases, I decided that one or more variables measuring an indicator of an aspect could be appropriately

presented to more than one data source for evaluation. This was also part of the process of triangulation of the data. The arguments for choosing the appropriate source of data are briefly summarised in table 6.3.

In general, the arguments used to allocate indicators to data sources related to selecting the source of data that had the best knowledge and experience of a particular aspect, or could make the best judgment about a certain variable. Using more than one source of data strengthens reliability, as the measurements of many of the variables variables were based on the subjective opinion of the source of data. For example, it can be expected that students may rate the attention devoted in a module to the understanding of patients in the social and cultural context differently from the module chairperson, who was involved in the planning of the module, but not present during its presentation.

Lists of variables representing indicators of aspects were compiled to be included in each of the questionnaires developed. These lists were further developed into items directed at the specific target group. The value added by different points of view enhanced the qualitative dimension of the analysis. The questionnaires used in this study are included in this thesis as Addenda C, D and E.
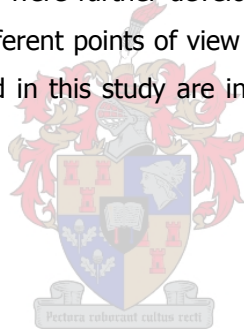
Table 6.3: Stakeholders serving as sources of data for the evaluation of each objective, and the arguments for utilising specific stakeholders to evaluate each objective

Objectives	Module chairpersons	Lecturers	Students	Secondary analysis of documents
Objective 1: To present a manageable content load to the student	√		√	√
Argument: lecturers are only involved with their own contact sessions and may not be aware of the total load of content of the module				
Objective 2: To present relevant knowledge to students at the undergraduate level	√	√		
Argument: students lack the experience to judge the relevance of the content that they are taught				
Objective 3: To provide the students with relevant outcomes of expected learning	√			
Argument: students lack the experience to judge the relevance of the content that they are taught				
Objective 4: To provide the students with clear outcomes of expected learning	√		√	
Argument: Clarity can be judged by both students and chairpersons; lecturers are only involved in the outcomes of their own sessions				
Objective 5: To clearly prioritise knowledge so that the student can direct his/her own learning	√		√	
Argument: This can be judged by module chairpersons, who are assumed to communicate educational principles to their team, and by the students, who experience the implementation of this aspect				
Objective 6: To encourage the students to work independently	√		√	√
Argument: the type of learning activity used for each session is described in the study guide and can therefore be omitted from the lecturer's questionnaire				
Objective 7: To encourage the students to use various learning resources other than notes taken during formal lectures	√		√	
Argument: the perceptions of the chairpersons can be contrasted with what was utilised by the students upon implementation				

Objectives	Module chairpersons	Lecturers	Students	Secondary analysis of documents
Objective 8: To make students aware of the necessity to continuously update their knowledge	√	√		
Argument: The impact of this awareness on the behaviour of the students can only be measured in the longer term. The perceptions of the chairpersons and the behaviour of the lecturers are measured here				
Objective 9: To employ various teaching strategies in order to encourage students to have a 'deep approach' to learning	√	√	√	√
Argument: planning and implementation can be contrasted by using data from all sources in this case				
Objective 10: To optimise access of the students to lecturers			√	
Argument: This objective pertains purely to the students' experience				
Objective 11: To develop the problem-solving skills of students	√			
Argument: this is a generic outcome that should be built into the architecture of the module by the chairpersons. The impact of this on the students' performance should be assessed in the longer term				
Objective 12: To present content that focuses on the knowledge required by a primary care physician	√			
Argument: these aspects had to be addressed in the planning of the module, for which the chairperson is responsible				
Objective 13: To teach the students about prevention of disease	√	√	√	
Argument: the perceptions of the module chairperson, the lecturers involved and the students can be used to evaluate this aspect.				
Objective 14: To teach the students about rehabilitation	√		√	
Argument: the perceptions of the module chairperson, the lecturers involved and the students can be used to evaluate this aspect				
Objective 15: To teach the students to approach medicine in an interdisciplinary manner, as required by primary health care				√
Argument: the involvement of various departments could be researched in the study guides				

Objectives	Module chairpersons	Lecturers	Students	Secondary analysis of documents
Objective 16: To incorporate general practitioners in the presentation of the curriculum in order to provide a primary care perspective to health care	√			
Argument: adequate information regarding this could only be gained from the chairpersons				
Objective 17: To develop the criteria for admission to and selection for the medical curriculum in order to increase the number of previously disadvantaged students				√
Argument: this involved different stakeholders (the selection committee) and documents generated by their meetings could be used for secondary analysis				
Objective 18: To support the learning of previously disadvantaged students				√
Argument: this involved different stakeholders (the programme committee) and documents generated by their meetings could be used for secondary analysis				
Objective 19: To train the student in both state-owned and privately-owned facilities in order to expose the students to the health needs of different sections of society	√			
Argument: adequate information regarding this could only be gained from the chairpersons				
Objective 20: To provide a basic knowledge of alternative medicine	√		√	
Argument: this aspect should occur in planning, the learning content provided by the lecturers and experienced by the students. For brevity's sake, it was omitted from the lecturers' questionnaire				
Objective 21: To present the student with adequate learning material regarding HIV and its related diseases	√	√	√	
Argument: this aspect should occur in planning, the learning content provided by the lecturers and experienced by the students				
Objective 22: To present the student with adequate learning material regarding trauma	√	√	√	
Argument: this aspect should occur in planning, the learning content provided by the lecturers and experienced by the students				
Objective 23: To educate the student about the influence of the environment on health	√	√	√	
Argument: this aspect should occur in planning, the learning content provided by the lecturers and experienced by the students				
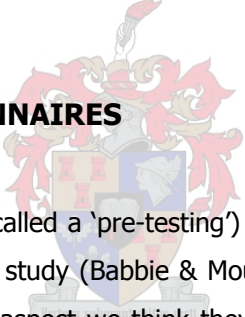
Objectives	Module chairpersons	Lecturers	Students	Secondary analysis of documents
Objective 24: To educate the student about the influence of the patient's mental state on health	√	√	√	
	Argument: this aspect should occur in planning, learning content provided by the lecturers and experienced by the students			
Objective 25: To educate the student about the influence of culture on health	√	√	√	
	Argument: this aspect should occur in planning, learning content provided by the lecturers and experienced by the students			
Objective 26: To educate the student about the influence of disease on society	√	√	√	
	Argument: this aspect should occur in planning, learning content provided by the lecturers and experienced by the students			
Objective 27: To educate the student about the broader impact of diseases on the family unit	√	√	√	
	Argument: this aspect should occur in planning, learning content provided by the lecturers and experienced by the students			
Objective 28: To provide the student with a relevant education in the field of ethics	√	√	√	
	Argument: this aspect should occur in planning, learning content provided by the lecturers and experienced by the students			
Objective 29: To also use existing facilities outside the main teaching hospital in order to meet the needs of the curriculum	√			
	Argument: this had to be planned and executed by chairpersons			
Objective 30: To use lecturers not employed full time by the university in order to fulfil the needs of the new curriculum	√			
	Argument: this had to be planned and executed by chairpersons			

6.2.4 Developing items for analysis from the indicators

For each indicator of a dimension of the aspect to be evaluated, an item was developed to be included in a survey to measure that variable, suitable to the specific source of data as described in table 6.3. The focus group discussions illuminated the differences in understanding of various aspects by the data sources, and it was necessary to phrase some items differently in the questionnaires administered to the various groups in order to promote the clarity of the questionnaires.

A list of items selected for each questionnaire was prepared and pilot tested on each of the three groups (students, lecturers and module chairpersons).

6.3   PILOTING THE QUESTIONNAIRES

It is essential to do a pilot test (also called a 'pre-testing') of a questionnaire on its target group before administering it as part of any study (Babbie & Mouton, 2001). Pilot testing ensures that the variables do indeed measure the aspect we think they are measuring. By ensuring that the subjects interpret the questions correctly, their answers are more reliable and this enhances validity. The pilot testing was extremely useful to facilitate the correct phrasing of the items suitable for each source of data. During pilot testing, some of the items were also further refined. In the following section, the pilot process that was undertaken as part of this study is described.

6.3.1 Pilot testing the questionnaire for the lecturers

An unstructured version of the questionnaire was pilot tested by five lecturers, who were selected for their involvement in both of the theoretical phases of the curriculum to be evaluated (phases II and III). The participants were aware that they were participating in a pilot test of the questionnaire developed for lecturers. I administered the draft questionnaire during an individual interview with each subject. Both question development (the phrasing of questions) and

questionnaire development (including the layout and order of the questions) were addressed during these sessions.

6.3.2 Pilot testing the questionnaire for the students

Piloting of the questionnaires that were specifically developed for this study was executed, and this excluded the standard questionnaires administered by the Faculty to obtain student feedback about the clinical rotations.

Ten fourth-year students were randomly selected from the class list. This group of students was then asked to participate in the pilot test, and all complied. The questionnaire was divided into two sections for maximum in-depth discussion and personal contribution, and piloted during two sessions. Following the completion of the survey, each item was discussed with the group by the researcher.

6.3.3 Pilot testing the questionnaire for the module chairpersons

For the purpose of pilot testing the module chairperson's survey, three of the 27 module chairpersons were asked to complete the draft of the questionnaire. The researcher discussed each item of the questionnaire during a personal interview with each of these chairpersons.

6.3.4 Results of the pilot tests

Pilot testing helped to root out some of the following factors that may possibly have had a negative impact on the reliability of the study:

- Unclear wording: some of the questions were understood differently by the various groups. It was considered important to keep the wording of the question as uncomplicated and to the point as possible.

- Double-barrelled questions: the answers obtained from the pilot study helped to identify double-barrelled questions.

- Leading questions and ambiguous questions: the lecturers especially were able to identify some questions as leading or ambiguous.

- Questions directed to role players without the necessary background to answer them properly: this was the case with some of the questions asked of lecturers and students regarding administrative or managerial issues. These questions were removed from the particular questionnaire.

- A possible prestige bias or social desirability bias (Oppenheim, 1992, pp. 139-140) created the possibility that certain questions could cause respondents to answer in a specific way to provide a more positive reflection of their efforts than what actually was the case. This possibility was occasionally identified by the lecturers taking part in the pilot study. This problem is difficult to address in a single survey, but triangulating the data relating to these variables helped to improve validity.

- Positive suggestions about the format of the surveys, the use of contingency questions and user friendliness were received from the pilot subjects and proved to be extremely sensible and helpful.
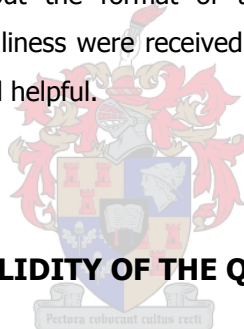
6.4 TAKING CARE OF THE VALIDITY OF THE QUESTIONNAIRES

As the data gathered was mostly descriptive, it was possible to measure multiple items defining the same variable. Because of the nature and design of the study, the items mostly analysed *behaviour*, rather than attitudes or beliefs. External checks of validity were built into the methodology by the triangulation of data, and some of the responses could be confirmed by the secondary analysis of documents such as the study guides. Oppenheim (1992) suggests that internal checks are done by asking the same question again in a different way. This was done in some instances, for example, questions directed to the chairpersons about the levels of care that were represented in their modules were put in two different ways (see the third page of the questionnaire for module chairpersons, which is provided as Addendum C: questions were asked about the level of health care addressed in the modules, with health care defined as the relevance of conditions to the practice of a general practitioner, as well as to the more traditional notions of 'primary', 'secondary' and 'tertiary' health care).

Pilot testing ensured that the indicators measured the aspect intended to be measured (criterion validity), while it also helped to ensure that the answers given by the subjects to the question were reliable (content validity). Following the inputs obtained from the pilot studies, the order of questions in the surveys was adjusted to prevent an ordinal bias or a response set from forming. The possible effect of social desirability was addressed as far as possible by the method of administration of the questionnaires, which will be discussed in the next section. For example: by delivering the lecturers' survey via e-mail and from an address unconnected with the teaching management, it was hoped that responses would be more frank. In keeping with normal faculty practices when obtaining student feedback, and at the request of the students themselves, the student questionnaires were completed anonymously.

6.5   ADMINISTRATION OF THE QUESTIONNAIRES

This section describes how the questionnaires to evaluate phases II and III of the curriculum were administered. The student data used for the evaluation of the clinical rotations was obtained from the routine student feedback (also in the form of questionnaires) obtained by academic services and these results were used as a source for secondary analysis. These questionnaires were administered in the same way as the questionnaires for the evaluation of phases II and III described in this section, and by the same person, as the person at academic services who is responsible for questionnaire administration was employed as a research assistant for this study.

Because of the small number of modules in phases II and III (27), surveys were completed by all module chairpersons of the theoretical modules. Some of the modules in phase III had more than one module chairperson, and this increased the number of respondents to the module chairpersons' questionnaire. Student questionnaires were administered to as many students as possible at the end of each theoretical module. This was in accordance with the way student feedback is normally gathered by the Faculty of Health Sciences.

6.5.1 Sampling of contact sessions for the lecturers' questionnaire

The type of information required from the lecturers focused on their individual handling of the *contact sessions*, and it was necessary to administer the lecturers' survey to a sample of lecturers according to the contact sessions presented by them. In this way, the contact sessions were used as the unit of analysis for the lecturers' questionnaire, and sampling was done using the contact sessions as the unit of sampling, and not the names of the individual lecturers. The same lecturer may therefore have been sampled more than once, but it should be remembered that the information obtained by the questionnaire focused on the behaviour of the lecturer in a specific contact session and not on his/her attitude towards the curriculum or a specific module.

6.5.1.1 Sampling frame

A schematic clarification of the structure of phases II and III of the curriculum is provided as figure 6.1 in order to explain the sampling frame that was used. Figure 6.1 illustrates how the curriculum is structured: the phases consist of modules, and the modules are made up of themes for which there are a number of contact sessions. The number of contact sessions, themes and modules do not represent the reality. The figure merely illustrates how contact sessions serve as building blocks for themes. Themes, in turn, are grouped together to form modules. The modules, in their turn, are arranged in theoretical phases.

Contact Sessions			
Themes			
Modules			
Phase II		Phase III	

Figure 6.1:   A schematic representation of the structure of the theoretical phases of the curriculum

The modules, subdivided into themes and contact sessions, served as a sampling frame. The units of sampling were the contact sessions presented in the modules. The arrangement of these

modules in phases presented a natural stratification that was used in the sampling method employed. All modules of phases II and III of the curriculum that were presented during 2002 and 2003 were considered for sampling, but each module was included only once.

Using the *contact sessions* as a sampling unit ensured that the lecturers responsible for the presentation of more contact sessions had a better chance of being included in the survey, and these lecturers frequently completed more than one questionnaire concerning specific contact sessions.

6.5.1.2 Sample size

In its nature, this is a descriptive case study, and the main considerations taken into account when deciding on a sample size for this study were practical and financial. Administering the survey to two to three lecturers a day over a one-year period was considered the maximum to be practical and sustainable, considering the time frame and budget for this project. As the data were analysed for each phase as a subgroup, a sample size of 100 contact sessions per phase was decided on.

In order to project the number of contact sessions conducted during the data-collection period, the rosters of the corresponding period a year earlier (second semester 2001, first semester 2002) were consulted, and a list of the numbers of contact sessions scheduled for each module was drawn up. Due to changes in the order of modules (phase II) and the incompleteness of the implementation of the new curriculum (phase III), a complete set of modules could not be obtained at that stage. There was complete information on 11 modules in phase II, while I had information on nine modules for phase III. An average number of contact sessions per module was calculated for each phase and multiplied by the number of modules in each phase to arrive at a projection of the number of contact sessions that was expected to be presented during the data-collection period. The results of the projection were as follows:

> Phase II: 741 contact sessions
> Phase III: 1 040 contact sessions

6.5.1.3 Sampling method

In order to obtain a probability sample of 100 contact sessions from each phase, every seventh contact session in phases I and II, and every 10th contact session in phase III, were systematically sampled after a random start.

There is no regular pattern in the sampling frame (the number of contact sessions in a theme varies, as well as the number of themes in modules); therefore periodicity was not expected.

6.5.2 Administration of the questionnaires

All the surveys were prepared in both English and Afrikaans, and the language was checked and a backwards translation was done by a bilingual person with knowledge of medical terms.

6.5.2.1 Administration of the students' questionnaire

A trained research assistant administered this survey at a pre-arranged date and time, usually on the second last day of the module, before the students were too distracted by the impending assessment that follows the conclusion of a module.

The questionnaire was administered to the group of students immediately before or after a lecture. Questions were presented in PowerPoint and answered by the students on a printed evaluation form supplied by the Centre for University Education (Uni-Ed). These forms were suitable for automated scanning.

6.5.2.2 Administration of the lecturers' questionnaire

As all lecturers in the Faculty of Health Sciences have access to the intranet and e-mail, this was considered to be an economic and effective way of distributing the survey. Nichols *et al.*, as cited

in Babbie and Mouton (2001. p. 260), report that e-mail surveys are more efficient than conventional techniques. This mode of questionnaire delivery was also suitable because the lecturers' questionnaire concerned itself with a particular contact session and was relatively short. A higher sample rate was possible using this mode of delivery because of the relative ease with which the questionnaires could be delivered and returned.

The e-mail with the attached survey was sent out as close as possible to the actual date of the contact session (the day before, on the day of the contact session or the day following the contact session). In this way, it was hoped to minimise confounding effects on memory, as it would be easier for the lecturer to recall the contact session, the way it was presented, as well as its contents without consulting his/her diary or class notes. It was also hoped that a higher response rate would be elicited by delivering the survey as close as possible to the event.

6.5.2.3 Administration of the questionnaire for module chairpersons

A questionnaire was presented to the module chairpersons by a trained research assistant. Her brief was as follows:

- To explain the purpose of the research.
- To explain the context and capacity in which the research was being conducted.
- To provide the module chairperson with the following:
  - A letter from the head of the Medical School, supporting the research
  - A module chairperson's self-evaluation survey with the demographic data already completed
  - A set of transparencies: these transparencies explained the research and its context to the students, and warned them about the student survey to be conducted at the end of the module. The module chairperson was requested to present these transparencies at frequent intervals (at least twice) during the course of the module

A date for the collection of the completed survey was settled between the module chairperson and the research assistant during their initial meeting. In this way, the questionnaires for the module chairpersons could be described as self-administered, but sufficient support was provided to ensure optimal completion.

This method of data collection was selected in order to ensure a high response rate, accurate sampling and a minimum of interviewer bias. It also provided the benefit of a degree of personal contact (Oppenheim, 1992, p. 103).

6.5.3 Eliciting responses

The following measures, as advised by Oppenheim (1992, p. 104), were taken to minimise non-response:

- Advance warning: students were asked during an informal session conducted during the piloting phase of the student questionnaire about their preferred way to be alerted about the evaluation of the module. The students suggested that an overhead projection explaining the research should be presented periodically (at least twice) during the module to be evaluated. This was done with the help of the module chairpersons.

- Explanation of selection: where samples were taken (lecturers' survey), the method of sampling was briefly explained in the letter of introduction e-mailed with the attached questionnaire.

- Sponsorship: a supporting letter from the head of the Medical School was included with the module chairpersons' questionnaire. Otherwise, the support of the Faculty was mentioned in the students' overhead and the letter attached to the e-mail survey mailed to lecturers.

- Privacy: the student surveys could be answered anonymously. Standard feedback collected on the clinical rotations by the academic support services of the Faculty was also routinely handled in this way. However, regarding the data collected from lecturers and module chairpersons, the identity of the respondent was inevitably known.

- Confidentiality: the data collected related to a practised social phenomenon (the curriculum) and was not of a personal nature. Despite the fact that this data may not necessarily be considered as sensitive or confidential, the lecturers and module chairpersons were assured in the covering letter accompanying the questionnaires that the information provided would be treated as confidential and that their names would not be linked to the analysed data. However, as one of the many purposes of this study is to enhance curricular practice, the data were collected on the understanding that the Head of the School could use the results of the analysis to further the purpose of improving curricular practice.

- Rapport: As the research assistant employed to facilitate the module chairpersons' survey was well known to the members of the faculty and to the students, she was the ideal person for this task. This helped to establish the credibility of the research. As she is also involved in the routine administration of student feedback by the University's central Division for University Education (Uni-Ed), the students are also familiar with her role and responded positively to her conducting the administration of the group questionnaires.

6.5.4 Dealing with non-response

The research assistant was responsible for collecting the completed surveys from the module chairpersons. This she managed with charm and frequent reminders, and non-response was consequently not an issue in relation to this data source. Completed questionnaires were collected from all module chairpersons.

The response rate from the students depended heavily on the timing of the administration of the questionnaire. During the pilot phase, the time of optimal attendance of lectures by students was established by asking students and lecturers about this. Various factors influence class attendance (a few mentioned by the members of the pilot groups are the lecturer presenting the contact session, the availability of class notes, proximity of the contact session to events such as assessments and public holidays), and attendance is unpredictable. The general consensus was that optimal attendance usually occurs until the third last or second last day of the module. In view of this, contact sessions occurring as close as possible to the end of the module, but not the last session, were selected for the administration of the questionnaire. Nevertheless, class attendance remained unpredictable and this was the cause of the lower response rates for student feedback on some of the modules.

To maximise the response of the lecturers, surveys were administered as close as possible to the date of the contact session presented by the lecturer selected by the method of sampling. If lecturers did not respond to the e-mail survey within one week, a follow-up survey was sent by e-mail, as well as a 'hard copy' of the questionnaire by internal mail.

6.6   THE USE OF SECONDARY DATA

This study depended on the analysis of the results of the standard questionnaires used by the Faculty of Health Sciences to obtain student feedback regarding the clinical rotations. These results were used as a source of secondary data for the evaluation of the clinical rotations. Several other types of documents were also used, the most important being the study guides published for each module.

6.6.1   Analysis of secondary documents

For the implementation evaluation described in this chapter, the study guides published for each module acted as the primary documents used for the secondary analysis. The study guides contain the framework and time schedule of each module and thus provided valuable information. I analysed the lists of lecturers, the departments that they represent and the outcomes of each theme and contact session in order to complete the data set.
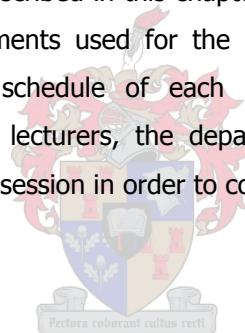
6.6.2   Analysis of standard student feedback questionnaires

The results of the standard student feedback questionnaires were obtained with the necessary permission (from the dean of the Faculty), and the aspects of this feedback that are relevant to the research questions are included in this study. The questionnaires for the clinical rotations were developed specifically for the evaluation of these rotations and were administered during a theoretical session immediately following the clinical rotations. The list of statements contained in this student feedback is included at the end of this thesis as Addendum F. Students were asked to complete the questionnaire in relation to the clinical rotation they had just completed. The questionnaires were scanned and results were captured in Excel. For the purpose of this research, relevant questions were selected from the questionnaires and the results were transferred to a database (Statistical Package for Social Sciences (SSPS) for Windows) for further analysis.

6.7 THE USE OF QUALITATIVE DATA

Qualitative methods were mostly employed in the initial stages of the research, as described previously, with the main object of exploring the field in order to add value to the more quantitative ways of accumulating data for this study. Open questions were included in the questionnaires directed at the lecturers and the module chairpersons. Students were invited to write remarks on the back of the evaluation sheet on which they had completed their answers to the projected questions. They frequently wrote extensive comments concerning the various modules.

6.8 RESPONSE RATES

Tables 6.4 and 6.5 present the response rates obtained for the questionnaires administered to the module chairpersons, the lecturers and the students for the evaluation of the theoretical phases.
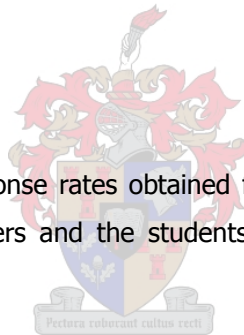
Table 6.4: Response rates for the questionnaires evaluating phase II of the curriculum

Module	Module chairpersons' questionnaire	Lecturers' survey	Student feedback
Phase II			
Uro-genital system	1/1	5/5	168/222 = 75.7%
Behavioural science and ethics	1/1	2/5	149/206 = 72.3%
Cell and tissue	1/1	10/11	211/245 = 86.1%
Haematology and Immunology	1/1	6/6	190/231 = 82.3%
Respiratory system	1/1	8/8	129/216 = 59.7%
Cardiovascular system	1/1	7/7	184/216 = 85.2%
Musculoskeletal system	1/1	6/7	72/158 = 45.6%
Neurosciences	1/1	8/8	82/158 = 51.8%
Gastrointestinal system	1/1	3/4	122/223 = 54.7%
Endocrine system	1/1	2/4	126/218 = 57.8%
Basis of disease processes	1/1	12/14	77/150 = 51.3%
Basis of therapy	1/1	10/14	85/150 = 54%
Total for phase II	**12/12 (100%)**	**79/93 (84.9%)**	**1595/2393 (66.67%)**
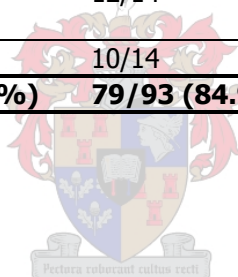
Table 6.5: Response rates for the questionnaires evaluating phase III of the curriculum

Module	Module chairpersons' questionnaire	Lecturers' survey	Student feedback
Phase III			
Infectious diseases and immunology	1/1	7/7	118/149 = 79.2%
Endocrine system	1/1	5/5	118/156 = 75.6%
Reproductive system	1/1	9/10	95/159 = 59.7%
The skin	1/1	3/3	112/149 = 75.2%
Introduction to clinical medicine	1/1	5/5	106/170 = 62.4%
Neurosciences	4/4	8/13	113/158 = 71.5%
Forensic medicine	1/1	2/3	108/159 = 67.9%
Health and disease in the community	2/2	12/22	102/148 = 68.9%
Cardiovascular system	1/1	4/9	118/176 = 70.2%
Respiratory module	1/1	7/8	116/174 = 66.6%
Gastrointestinal system	1/1	6/7	106/163 = 69.3%
Musculoskeletal system	1/1	6/7	79/153 = 51.6%
Uro-genital system	1/1	5/8	110/175 = 62.9%
Haematological system	1/1	6/6	101/153 = 66%
Health management and ethics	2/2	5/7	90/148 = 60.8%
Total for phase III	**20/20 (100%)**	**90/130 (69.2%)**	**1592/2390 (66.61%)**

Twenty-seven modules were evaluated for phases II and III (12 for phase II and 15 for phase III). The only module excluded was an Anaesthesiology module in phase III for which no study guide was available during the time of data collection. As the secondary analysis of documents that served as one of the data sources depended on a study guide for the module, this rendered the module block unsuitable for this evaluation.

For phase II, 84.9% of the lecturers returned the questionnaires, while the return rate for phase III was 69.2%. This presented a total lecturer response for these two phases of 169/223 (75.8%).

Student enrolments were obtained from the official class lists for the years in which a particular module was evaluated. Student enrolments for the various modules differ because the modules were evaluated in two different years (2002 and 2003), while some students were repeating

modules they had failed. Enrolments for many of the phase II modules are higher because of an overlap with the curriculum of dentistry and, less often, physiotherapy. All the students enrolled for a particular module were invited to participate in the survey of the module, as the unit of evaluation is the curriculum and not the students (see chapter four). Out of a possible 2 393 enrolments in phase II, 1 595 (66.67%) students completed questionnaires, and 1 592 out of a possible 2 390 completed questionnaires in phase III. The total response for phases II and III was therefore 3 187 out of a possible 4 783 (66.63%). The range of the student response was between 45.6% and 86.1% of the enrolled number of students, with a mean of 64.7% for phase II and 67.2% for phase III.

Secondary analysis was done of the rosters and study guides for all 27 modules evaluated for phases II and III.

For the clinical rotations, standard student feedback routinely collected by the Faculty was used for secondary analysis. As the clinical rotations divided the class into groups, all of the students had not yet rotated through all of the rotations when this feedback was obtained. Two hundred and forty-five questionnaires were completed for the early clinical rotations, and 201 questionnaires were completed for the middle clinical rotations.
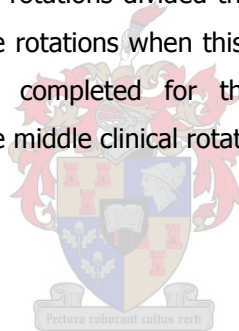
6.9   ANALYSIS OF DATA

Descriptive statistics was used to compare data for the various variables as gathered from the different data sources.

In order to deal with extreme scores when small numbers were encountered, categories were collapsed. This was done particularly for the student data, where students were asked to rate their disagreement or agreement to a statement on a five-point Likert scale. In these events, the two outlying categories (1 and 2, and 4 and 5) were collapsed.

Missing data were handled by adjusting the number of respondents to the number of responses for each variable analysed. The total number of cases may therefore vary from one variable to another.

The huge discrepancies in numbers of the various data sources (students measuring in thousands, lecturers in hundreds and module chairpersons in tens) complicated the analysis of the data. For this reason, data were analysed according to the various sources, and presented in accordance with the structure provided by the Logic Model (chapter seven). In the discussion of the data that follows in chapter eight, the results of the various sources of data are compared. Statistical analysis of significance using the χ^2 test was done where appropriate and where the numbers involved were suitable for this exercise. In the case of the module chairpersons, the number of respondents was too small to test for statistical significance of variance (there were 12 module chairpersons in phase II and 20 in phase III).

The results of the analysis will be presented in the next chapter. A discussion of the results follows in chapter eight.

6.10 SUMMARY OF THE CHAPTER

This chapter explained the operationalisation of the implementation evaluation conducted as the second part of the evaluation of the education and training aspects of the practised curriculum. This followed the clarification evaluation described in chapter five and builds upon the Logic Model as a product of the clarification evaluation.

I described the unit of analysis, as well as the sources of data and the time frame of this study. For the questionnaires developed specifically for this study, I described how qualitative research methods were employed to explore aspects for evaluation developed from the Logic Model of the curriculum and to develop the indicators that could describe these aspects. From these indicators, variables to measure the attributes of the indicators were developed for each questionnaire to be administered to the three different groups acting as sources of data (the module chairpersons, the lecturers and the students).

The pilot testing and administration of the questionnaires were described in this chapter, and the return rates were summarised. I briefly mentioned how the data were analysed using SPSS databases. The results of the analysis of the implementation evaluation will be presented in the next chapter.

CHAPTER 7: PRESENTATION OF THE RESULTS OF THE IMPLEMENTATION EVALUATION OF THE PRACTISED CURRICULUM

In the previous chapter, I described how items for the questionnaires were developed from the framework provided by the Logic Model as a product of the clarification evaluation of the curriculum. I described how these items were incorporated into three different questionnaires that were first pilot tested and then administered to the various sources of data, namely the students, lecturers and module chairpersons. The chapter also described how the results of the standard questionnaires for student feedback obtained by the Faculty of Health Sciences were used as a source of secondary data to evaluate the early and middle clinical rotations.

In this chapter, the framework provided by the 10 aims and 30 objectives identified and incorporated into the Logic Model will be used to present the data. I present the data according to the various sources from which it had been collected:

- Module chairpersons
- Lecturers
- Students
- Data collected by the researcher through secondary analysis of documents

Because only the most appropriate stakeholders were selected for the evaluation of the 30 objectives listed in table 5.2 (see table 6.3 for a description of how these stakeholders were selected), there will be 'gaps' in the data presented for the various sources of data. In chapter eight, the data from all the sources will be collated and analysed to complete the full set of objectives.

7.1 MODULE CHAIRPERSON DATA

Objectives 3, 10, 14, 17 and 18 were not evaluated by the module chairpersons' questionnaire (see table 6.3).

7.1.1 Aim one: to help the student deal with the workload of the curriculum

Objective 1: To present a manageable workload to the student

The module chairpersons assigned the module/part or the module that they were responsible for to categories according to their perception of the workload of the various themes that constitute the modules. Extreme categories were collapsed, and the results are summarised in table 7.1.

Table 7.1: Module chairpersons' views on the workload required from the students in the modules for which they are responsible

Phase of the curriculum	An overload of the modules occurred	The amount of work covered in the module is consistently reasonable	Unsure	Total
Phase II	2	9	1	12
Phase III	12	8		20

Table 7.1 indicates that more phase III module chairpersons (12) were of the opinion that their modules were overloaded with content than phase II module chairpersons (only 2). This may be due to the larger number of disciplines generally involved in the phase III modules (see section 7.1.4.), leading to more lecturers being involved in the module, which may lead to variance in the content load presented by the different lecturers. Factors contributing to the perceived workload in the modules will be explored further in chapter eight.

Objective 2: To present relevant knowledge to students at the undergraduate level

As far as the relevance of the content of study for phases II and III is concerned, it can be argued that different criteria concerning the relevance of specific types of knowledge need to be satisfied. Relevance of content can be defined as the content relevant to the work environment that will be encountered after graduation. The Profile of the Stellenbosch Doctor can be used as a measure of this type of relevance. Relevance of content can also be described as the way that the content of each phase of the curriculum builds upon the previous one, with phase I laying the foundation for the medical studies commencing in phase II, and this, in turn, setting the scene

for the more clinically-orientated phase III. In their turn, the two theoretical phases provide the foundation for the clinical training conducted during the early, middle and late clinical rotations.

Students may find it difficult to judge the relevance of the content of the curriculum presented to them during the course of their undergraduate studies, and therefore the opinions of the module chairpersons can be judged to be of more importance for this objective. Criteria of relevance are problematic to formulate. At the undergraduate level, the majority of content was planned to be directed at the level of primary care (see section 5.2). This is clearly indicated by the stated outcome of the curriculum (See Addendum B: The Profile of the Stellenbosch Doctor):

> *The newly qualified Stellenbosch doctor must possess the necessary knowledge, skills and attitudes to optimally utilise the opportunities available during the intern year in order to be able to function autonomously in the primary health care sector after this period, and must also be equipped with the necessary ability and insight to develop further as practitioner at secondary and tertiary level.*

The relevance of the knowledge content of phases II and III was therefore evaluated according to the levels of care (primary, secondary or tertiary) presented in the various modules, and to the relatedness of content learned to tasks expected to be performed by general practitioners. This way of asking about the same concept in two different ways also helps to ensure the validity of the questionnaires (see chapter six, section 6.4).
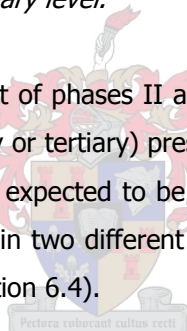
The module chairpersons' judgment of the content of their modules related to level of care was obtained by asking them to allocate the presence of primary, secondary and tertiary content in their modules to percentage categories. Module chairpersons in phase II frequently indicated that they found it difficult to allocate the levels of care to the type of knowledge they were dealing with, but, despite this objection, only one out of 12 was unable to categorise the level of care as requested. The results are summarised in table 7.2.

Table 7.2: Frequencies of the responses of the module chairpersons regarding the content of their modules related to levels of care

		0 – 20%	21 – 40%	41 – 60%	61 – 80%	81 – 100%	Total number of responses
Primary care	Phase II	7	0	1	**1**	**2**	11
	Phase III	4	1	4	**6**	**4**	19
	Total	11 (36.7%)	1 (3.3%)	5 (16.7%)	**7 (23.3%)**	**6 (20.0%)**	30 (100%)
Secondary care	Phase II	**7**	**3**	**1**	0	0	11
	Phase III	**8**	**4**	**2**	4	1	19
	Total	**13 (43.3%)**	**7 (23.3%)**	**3 (10%)**	4 (13.3%)	1 (3.3%)	30 (100%)
Tertiary care	Phase II	**8**	**1**	2	0	0	11
	Phase III	**15**	**3**	1	0	0	19
	Total	**23 (76.6%)**	**4 (13.3%)**	3 (10%)	0	0	30 (100%)

The following criteria were used to interpret this data:

- The desired situation should be that the majority of content **(>60%)** of the modules should be presented at the level of primary care,
- Less of the content should focus on the secondary level of care **(<60%)**, and
- The minority of the content should be devoted to tertiary care **(<40%)**.

(In Table 7.2, the responses falling in the ranges considered appropriate to the level of care are typed in **bold**.)
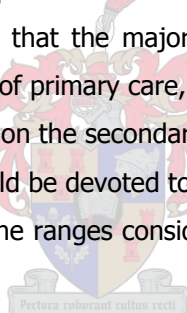
Although the standard that was applied for the interpretation of this data was very lenient (it can be argued that the curriculum needs an even stronger focus on primary care), it can be seen from table 7.2 that only 3/11 module chairpersons indicated a >60% predominance of primary care knowledge in phase II, while 10/19 achieved this objective in phase III. All of the 11 chairpersons in phase II indicated less than 60% representation of secondary care, while only 14/19 modules in phase III was rated to have an acceptable level of secondary care content according to the criteria used here. Two of the 11 phase II chairpersons and one of the phase III chairpersons reported more than 40% content relating to the tertiary level of care, which falls outside the criteria used here for an acceptable level of tertiary care content.

To obtain more information on the relevance of the content presented during the theoretical phases of the curriculum, module chairpersons were also asked indicate the extent to which the following conditions were dealt with in their modules:

- Conditions that must be diagnosed and treated by a general practitioner.
- Conditions that a general practitioner must be able to recognise and refer.
- Conditions requiring specialist diagnosis and treatment.
- Conditions requiring specialist diagnosis and treatment, but GP support.

The priority of the content relating to these categories could be assigned to five categories, ranging from 1 = no representation to 5 = very well represented. The results of this are presented in table 7.3. Percentages and not numbers are used in this table, despite the fact that the numbers we are dealing with here are small. This was done to facilitate the interpretation of the table by using a standard based on percentages.

Table 7.3: Module chairpersons' representation of the content of the modules of the theoretical phases of the curriculum across different categories of conditions

Content category	Phase of the curriculum	1 (No emphasis)	2	3	4	5 (Very well represented)
1) Conditions that must be diagnosed and treated by a general practitioner	Phase II (n=12)	**41.7%**	8.3%	8.3%	**41.7%**	
	Phase III (n=19)	5.3%		5.3%	**42.1%**	**47.4%**
2) Conditions that a general practitioner must be able to recognise and refer	Phase II (n=12)	33.3%	16.7%	33.3%	16.7%	
	Phase III (n=19)	5.3%			**47.4%**	**47.4%**
3) Conditions requiring specialist diagnosis and treatment	Phase II (n=12)	**50.0%**	25.0%	25.0%		
	Phase III (n=19)	21.1%	15.8%	**57.9%**	5.3%	
4) Conditions requiring specialist diagnosis and treatment, but general practitioner support	Phase II (n=12)	**50.0%**	25.0%	25.0%		
	Phase III (n=19)	21.1%	5.3%	**47.4%**	26.3%	

Percentages higher than 40% are bold typed

Table 7.3 indicates that:

- '*Conditions that must be diagnosed and treated by a general practitioner*' rated as well represented (4 and 5 on the Likert scale) by 41.7% of the phase II chairpersons and 89.5% of the phase III chairpersons.

- '*Conditions that a general practitioner must be able to recognise and refer*' rated as well represented (4 and 5 on the Likert scale) by 16.7% of the phase II chairpersons and 94.8% of the phase III chairpersons.

- '*Conditions requiring specialist diagnosis and treatment*' rated as well represented (4 and 5 on the Likert scale) by 0% of the phase II chairpersons and 5.3% of the phase III chairpersons.

- '*Conditions requiring specialist diagnosis and treatment, but GP support*' rated as well represented (4 and 5 on the Likert scale) by 0% of the phase II chairpersons and 73.7% of the phase III chairpersons.

The activity of relating content to the functions required from medical practitioners can be regarded as similar to the request to provide information regarding the level of care content, summarised in table 7.2. As expected, similar trends are noticeable in the two tables, confirming the validity of the data.

For this evaluation, the ideal would be to achieve high percentages at the upper end of the scale (4 or 5) for the first two and the last activity (*conditions that must be diagnosed and treated by a general practitioner, conditions that a general practitioner must be able to recognise and refer, and conditions requiring specialist diagnosis and treatment, but general practitioner support*), and high percentages at the lower end of the scale for the third activity (*conditions requiring specialist diagnosis and treatment*).

Evaluated against the above standards, phase III was relevant with regard to the first, second and third activities, but too much attention was focused on the third activity (*Conditions requiring specialist diagnosis and treatment*). Phase II was relevant considering the first activity, but did not focus sufficiently on the second and fourth activities.

Objective 3 (To provide the students with relevant outcomes of expected learning) was not evaluated in the module chairpersons' questionnaire (see table 6.3).

Objective 4: To provide the students with clear outcomes of expected learning

Module chairpersons were asked to rate the clarity and explicitness of the study guidelines that are provided. The results of these two dimensions of the guidelines are summarised in tables 7.4 and 7.5.

Table 7.4: Module chairpersons' rating of the clarity of the study guidelines provided for their modules

Clarity of the study guidelines	Phase of the curriculum		Total
	Phase II	Phase III	
Poor	0	0	0
Acceptable	1	1	2
Uncertain	0	1	1
Better than average	1	10	11
Exceptional	10	8	18
Total	12	20	32

Table 7.5: Module chairpersons' rating of the explicitness of the study guidelines provided for their modules

Explicitness of the study guidelines	Phase of the curriculum		Total
	Phase II	Phase III	
Poor	0	0	0
Acceptable	1	2	3
Better than average	1	12	13
Exceptional	10	5	15
Total	12	19	31

These two tables indicate overall satisfaction by the module chairpersons regarding the clarity and explicitness of the study guidelines provided for the modules in their care.

Objective 5: To clearly prioritise knowledge so that the student can direct his/her own learning

The module chairpersons were asked whether, in their opinion, knowledge in the module was clearly prioritised as 'must know', 'should know' and 'may know or interesting to know'. These results are summarised in table 7.6.

Table 7.6: Module chairpersons' perceptions regarding the prioritisation of knowledge in the theoretical phases of the curriculum

Phase of the curriculum	Knowledge prioritised as 'must know', 'should know' and 'interesting but not required'			Total
	Disagree	Agree	Agree strongly	
Phase II	0	3	9	12
Phase III	1	8	9	18
Total	1	11	18	30

Table 7.6 indicates that, in general, the module chairpersons in phase II were satisfied that the content of their modules had been prioritised (17 of the 18 who responded to this question agreed that content was prioritised in their modules). In chapter eight (8.1.1), the views of the chairpersons on this matter will be compared to the views of the students.
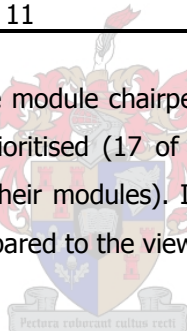
7.1.2 Aim two: to help the student take responsibility for his/her own learning

Objective 6: To encourage the students to work independently

The planning of the curriculum clearly indicates that, in order to encourage the students to work independently, the conventional teaching method of presenting what is to be learned in the form of lectures in the classroom has to be changed (see chapter five). The students have to be guided to undertake independent study or 'self-study' (the preferred terminology used in the faculty documents).

To establish whether this had been successfully achieved for phases II and III, various sources of data were consulted. Module chairpersons were asked to represent the number of self-study

sessions[41] in their module as a percentage of the total number of sessions[42] allocated to the module. The results of this are represented in table 7.7.

Table 7.7: Module chairpersons' estimates of the percentage of self-study in their modules in relation to other learning activities in total

Phase of the curriculum	% of self-study sessions relative to other forms of learning activities					Total
	0-10%	11-20%	21-40%	41-60%	>60%	
Phase II	8	0	**3**	0	**1**	12 (100%)
Phase III	8	**5**	**5**	**2**	0	20 (100%)

The number of modules or sections of modules containing >10% of self-study sessions is typed in bold

The chairpersons were also asked to rate their overall perception of the representation of self-study in the modules for which they were responsible. These results are presented in table 7.8.

Table 7.8: Module chairperson's perceptions of the presence of self-study in their modules

	Phase of the curriculum		Total
	Phase II	Phase III	
Not represented at all	1	6	7
Poorly represented	5	8	13
Suitably represented	6	4	10
Majority of content	0	1	1
Total	12	19	31

Table 7.7 shows that phase III module chairpersons report more positively on the percentage of self-study required in their modules than the chairpersons in phase II (12/20 report more than 10% self-study in phase III, while 4/12 of chairpersons in phase II report more than 10% self-study). In spite of this, table 7.8 shows that 14/19 phase III chairpersons feel that self-study is underrepresented in their modules, compared to 6/12 of phase II chairpersons. This may indicate

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[41] Self-study was operationally defined as learning that was expected to take place on an individual and independent basis. The minimum guidance expected from lecturers was to describe the outcomes of the learning that had to take place.

[42] A session is a 45-minute period. The standard practice for the medical curriculum is that each day is divided into eight sessions.

a positive disposition of module chairpersons towards the idea of independent study and a desire to make more use of this type of activity in their modules.

In chapter eight, these opinions will be compared to the views of the students and the actual time allocation for self-study in the modules as derived from the analysis of the timetables provided for the modules.

Another aspect relating to self-study support in the modules is the development or acquisition from an external source of specific self-study packages. Module chairpersons were asked about the availability of such packages in their module.

- In phase II, eight of the 12 chairpersons indicated that self-study packages had been developed or acquired from external sources.
- In phase III, eight of the 20 chairpersons indicated that self-study packages had been developed or acquired from external sources, while two were unsure if this was the case. Ten chairpersons indicated that no self-study packages were used in their module.

This indicates that attention had been paid to the availability of study material specifically designed for independent study in many of the modules of the theoretical phases, and that the trend to develop self-study activities in phase II was more advanced than in phase III. These results are similar to the responses to the question relating to the amount of self-study occurring in the module and the availability of self-study packages, which confirms the validity of the responses.

Objective 7: To encourage the students to use various learning resources other than notes taken during formal lectures

To further explore the learning opportunities afforded the students, the various resources used in the modules were evaluated. The module chairpersons were asked to specify the type of resources that were prescribed for each of the modules. The number of different resources prescribed for the theoretical phases of the curriculum is graphically illustrated in figure 7.1. On average, a greater number of resources was prescribed for phase III (the mean number of resources prescribed for phase II was 4.58, while it was 5.4 for phase III). The prescribed resources included the study guides, notes taken by students in the class, handouts provided by lecturers, prescribed textbooks, other textbooks, and course-specific computer programmes, internet sites, articles in journals and video material.
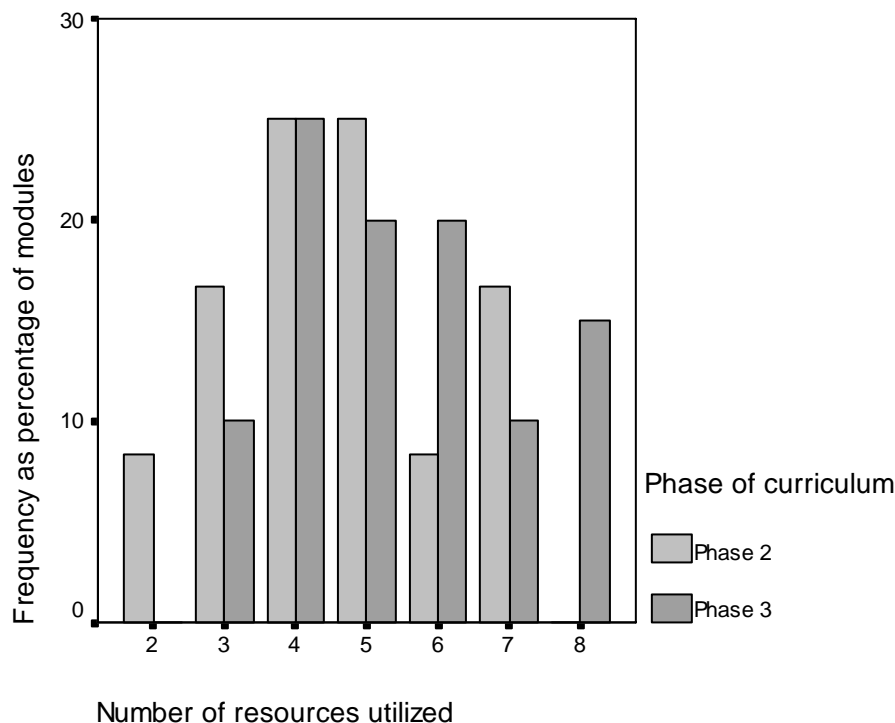
Figure 7.1: The number of resources prescribed for the modules in the theoretical phase of the curriculum

To further evaluate the objective to encourage learners to utilise different resources, module chairpersons were asked about the development of the students' skills in the use of information sources during the module by indicating their agreement with the statement, '*During this module, students will acquire additional skills in the use of information sources*'.

- Seven out of the 12 module chairpersons in phase II indicated that the information skills of the students were consciously developed in their modules. Two were uncertain and three indicated that the students would not acquire additional information skills during the course of their modules.

- For phase III, 10 out of 19 chairpersons who answered this question indicated that information skills were developed during the course of their modules. Two were uncertain and two disagreed.

This indicates that the development of information skills was incorporated into the majority of modules, although no information regarding the way in which this was achieved was obtained.

Although a larger percentage of phase III module chairpersons disagreed with the statement, it should be taken into account that the phase III modules are presented later in the course of study and that the question was phrased to look for the development of 'new' skills, not the use or application of possible existing skills.

Module chairpersons also had to report if any specific multimedia packages were acquired or developed for the module.

- Eight of the 12 module chairpersons in phase II reported that multimedia packages were available for their modules.
- Eight of the 20 module chairpersons in phase III reported the availability of multimedia packages specific to the module/part of the module for which they were responsible.

This again indicates an effort on behalf of the organisers of the modules (lecturers and chairpersons) to incorporate the use of alternative resources in the learning material provided. This follows on the previously observed trend in phase II of paying a little more attention to the development of independent learning activities. The students' use of these resources will be examined further on.

Objective 8: To make students aware of the necessity to continuously update their knowledge

To increase the students' awareness of the necessity to continuously update their knowledge and promote their professional development throughout their careers, it is important to emphasise throughout the presentation of the curriculum that medical science changes and develops. To find out whether opportunities to do this were taken advantage of, module chairpersons were asked to present their perceptions about the extent to which such changes and developments were stressed in the modules under their care. The results are displayed in table 7.9.

Table 7.9: Module chairpersons' perceptions regarding the representation in their modules of aspects of medical science that are subject to change and development

Phase of the curriculum	Changes and development in medical science are addressed in this module			Total
	Disagree	Uncertain	Agree	
Phase II	5	1	6	12
Phase III	7	1	11	19

It is clear from table 7.9 that aspects of medical science that are subject to change and development are addressed in many of the modules, although not in more than 50% of them.

7.1.3 Aim three: To educate students in accordance with current educational approaches

Objective 9: To employ various teaching strategies in order to encourage students to have a 'deep approach' to learning

The chairpersons were asked to indicate whether they perceived various teaching activities to be poorly or well represented. During discussions with module chairpersons (see chapter five), the teaching activities were defined as formal lectures, group work (facilitated and unfacilitated[43]), self-study, and a final category described as 'interactive sessions' that were described as sessions consisting of tutorials, discussions, case studies or practical sessions. These different activities were lumped together in a single category because of the different practices in the various modules. The common factors of all of the activities are an emphasis on problem-oriented teaching and more individual attention being paid to the students.

The results for the activities in phases II and III are shown in tables 7.10 – 7.14:

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[43] For this study, facilitated group work was described as group work for which a very clear structure was provided and during which a lecturer would usually be present as facilitator, or would at least have a scheduled session with the group to provide feedback and review the process. Unfacilitated group work was described as less structured, and the students were expected to work on their own, as a group, but without a facilitator.

Table 7.10:   Module chairpersons' perceptions of the importance of formal lectures in the modules

Phase of the curriculum	Formal lectures					Mean	Total
	Not represented at all	Poorly represented	Suitably represented	Majority of content	Over represented		
Phase II	2	0	5	4	1	3.17	12
Phase III	0	1	7	7	2	3.59	17
Total	2	1	12	11	2	3.38	31

Table 7.11:   Module chairpersons' perceptions of the importance of facilitated group work in the modules

Phase of the curriculum	Facilitated group work					Mean	Total
	Not represented at all	Poorly represented	Suitably represented	Majority of content	Over represented		
Phase II	0	2	7	3	0	3.17	12
Phase III	2	3	11	3	0	2.79	19
Total	2	5	17	6	0	2.98	31

Table 7.12:   Module chairpersons' perceptions of the importance of unfacilitated group work in the modules

Phase of the curriculum	Unfacilitated group work					Mean	Total
	Not represented at all	Poorly represented	Suitably represented	Majority of content	Over represented		
Phase II	1	5	4	2	0	2.58	12
Phase III	5	6	5	3	0	2.32	19
Total	6	11	9	5	0	2.45	31

Table 7.13: Module chairpersons' perceptions of the importance of self-study in the modules

Phase of the curriculum	Self-study					Mean	Number of responses
	Not represented at all	Poorly represented	Suitably represented	Majority of content	Over represented		
Phase II	1	5	6	0	0	2.42	12
Phase III	6	8	4	1	0	2	19
Total	8	13	10	1	0	2.21	31

Table 7.14: Module chairpersons' perceptions of the importance of interactive sessions in the modules

Phase of the curriculum	Interactive sessions					Mean	Number of responses
	Not represented at all	Poorly represented	Suitably represented	Majority of content	Over represented		
Phase II	0	1	9	0	0	3.09	11
Phase III	2	7	8	1	0	2.44	18
Total	2	8	17	1	0	2.8	29

These tables (7.10 to 7.14) illustrate the various learning activities incorporated into the modules of phases II and III (the clinical phases). The importance of formal lectures is again noted, as well as the perception that self-study could have been better utilised in the modules. Facilitated group work appears to be encountered more frequently in the theoretical framework than unfacilitated group work.

Objective 11: To develop the problem-solving skills of students

Module chairpersons were asked about the attention given in their modules to the development of the problem-solving skills of the students. As students progress through the curriculum, it can be expected that their problem-solving skills should progressively develop in order for them to be able to deal with clinical problems in diagnosis and treatment. The results of the chairpersons' views regarding the contribution of their modules towards this goal are presented in table 7.15.

Table 7.15: Module chairpersons' perceptions of the development of problem-solving skills in the theoretical modules

Phase of the curriculum	Problem-solving skills were developed			Total
	Disagree	Uncertain	Agree	
Phase II	3	2	7	12
Phase III	7	2	10	19
Total	10	4	17	31

Interestingly, more chairpersons in phase III (7/19) than in phase II (3/12) indicated that their modules did *not* provide an opportunity for the development of problem-solving skills. This contradicts the assumption that attention to the development of problem-solving skills will increase as the students progress through the curriculum.

7.1.4 Aim four: To prepare the students to function in a primary care setting after graduation

Objective 12: To present content that focuses on the knowledge required by a primary care physician
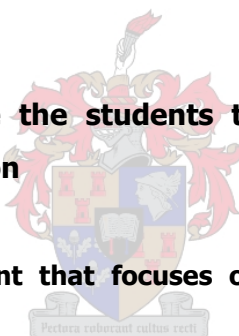
The type of knowledge required by a primary care physician or a general practitioner is spelled out in the Profile of the Stellenbosch Doctor (see Addendum B). The items concerning knowledge were taken from the Profile and used in the questionnaire on the theoretical phases completed by the module chairpersons in order to determine the presence of this type of knowledge. It is in the theoretical phases that this part of the Profile can be expected to be addressed. Module chairpersons were asked to comment on the representation of these various types of knowledge in the module under their care on a scale from 1 to 5, with the following categories: *1 = Not represented at all, 2 = Poorly represented, 3 = Suitably represented, 4 = Comprises the majority of content of the module, and 5 = Overrepresented.* The results are summarised in table 7.16. The mean responses for phases II and III are presented in descending order.

Table 7.16: Module chairpersons' ratings of the representation in the theoretical modules of the various types of knowledge contained in the Profile of the Stellenbosch Doctor

Knowledge type as specified by the Profile of the Stellenbosch Doctor	Mean response phase II (n=12)	Mean response phase III (n=20)	Mean response phase II and phase III (n=32)
Knowledge of normal functioning of the human body and psyche	4.00	3.26	3.55
Knowledge of medically relevant basic scientific concepts	4.27	3.11	3.53
Knowledge of abnormal functioning of the human body and psyche	2.92	3.42	3.23
Knowledge of normal morphology	3.67	2.89	3.20
Knowledge required to recognise and diagnose common diseases and abnormalities of the human body and psyche	2.00	3.63	3.03
Knowledge of abnormal morphology	2.50	3.22	2.93
Knowledge of the maintenance of health and prevention of disease	2.33	3.26	2.90
Knowledge of treatment	2.08	3.11	2.71
Knowledge of health-related community and environmental factors	2.08	3.11	2.71
Knowledge of relevant ethical aspects	2.08	3.00	2.65
Knowledge of special investigations	1.83	3.00	2.55
Knowledge of medically relevant mathematical concepts	2.42	2.53	2.48
Knowledge of special diagnostic methods	2.00	2.74	2.47
Knowledge of relevant legal aspects	1.67	2.63	2.26
Knowledge of health-related sociological factors	1.75	2.47	2.19
Knowledge of rehabilitation	1.58	2.42	2.1
Knowledge of health-related psychological factors	1.83	2.26	2.1
Knowledge of basic principles of research methodology	1.83	1.79	1.81
Knowledge of the finances, management and structure of health care	1.33	2.11	1.8
Knowledge of alternative and complementary medicine	1.50	1.83	1.70

The shaded area indicates the type of knowledge that received an average rating of below 2.5.

According to this table, only four types of knowledge were represented better in phase II than in phase III. They are, in descending order according to the rating they received from the module chairpersons:

- knowledge of medically relevant basic scientific concepts,
- knowledge of the normal functioning of the human body and psyche,

- knowledge of normal morphology and
- knowledge of basic principles of research methodology

The mean rating for the first three types of knowledge that were better represented in phase II than in phase III was higher than the highest rating for any type of knowledge in phase III. From this one can assume that these three types of knowledge were very heavily emphasised in phase II. Such an observation is in accordance with what can be expected, taking into account the nature of the subjects presented in phase II and the fact that this phase fulfils the function of providing a foundation of preclinical sciences for the more clinical phase III.

Of concern are the types of knowledge that are not well represented in phase II and phase III. This will be further discussed in chapter eight.

To further explore the preparation of the students for the primary care setting, I refer back to table 7.2 in section 7.1.1. This table shows the frequency with which chairpersons indicated the representation of the three levels of care in their modules. Concerning primary care specifically, the content of phase II is relevant to primary care at low frequencies (7/11 of the modules were in the 0 to 20% category) and there is also not such a high representation of primary care in the higher frequencies for phase III as one may hope to achieve (8/19 modules had <60% of their content devoted to primary care). This will be discussed further in chapter eight.
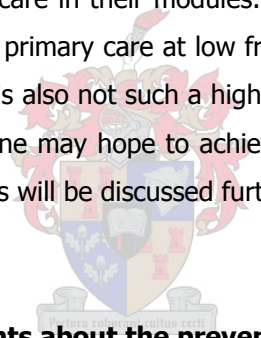
Objective 13: To teach the students about the prevention of disease

Module chairpersons were asked to rate the emphasis on aspects of the prevention of disease according to the following categories: No emphasis, little emphasis, unsure, significant emphasis or a very strong emphasis. The two extreme categories were then collapsed to provide the data presented in table 7.17.

Table 7.17: Module chairpersons' indications of the emphasis on preventative medicine in the theoretical modules
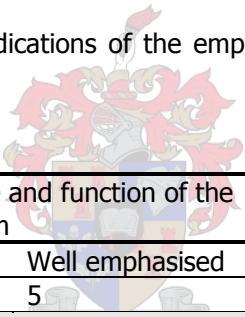
Phase of the curriculum	Emphasis on preventative medicine		Number of respondents
	Poorly emphasised	Well emphasised	
Phase II	5	7	12
Phase III	4	16	20
Total	9	23	32

Phase II concentrates on normal morphology and physiology and some basic pathology, and certain aspects of therapy are introduced. Phase III deals more directly with disease and treatment, and therefore it may be expected that the aspect of preventative medicine is not as well emphasised in phase II as in phase III (see Addendum A for an overview of the modules in the curriculum).

Objective 15: To teach the students to approach medicine in an interdisciplinary manner, as required by primary health care

Module chairpersons were asked about the emphasis on the role and function of the multidisciplinary team in the module (by module chairpersons) and in the individual contact sessions (by lecturers). The results of this are presented in table 7.18.

Table 7.18: Module chairpersons' indications of the emphasis on the role and function of the multidisciplinary team

Phase of the curriculum	Emphasis on the role and function of the multidisciplinary team		Number of respondents
	Poorly emphasised	Well emphasised	
Phase II	7	5	12
Phase III	3	17	20
Total	10	22	32

A progression in the introduction of the interdisciplinary approach can be discerned from table 7.18, with module chairpersons in phase III reporting a better emphasis on this aspect of care.

Objective 16: To incorporate general practitioners in the presentation of the curriculum in order to provide a primary care perspective to health care

In order to calculate the involvement of general practitioners in the theoretical phases of the curriculum, each module chairperson was asked to report the number of contact sessions presented by a general practitioner in each of the modules of phases II and III. The results are presented in table 7.19.

Table 7.19: Number of contact sessions presented by a general practitioner

Phase of the curriculum	Total number of sessions presented	Number of sessions presented by a general practitioner
Phase II	744	4
Phase III	1062	27
Total	1806	31

The range of the number of sessions presented by general practitioners was between 0 and 3 for phase II and between 0 and 15 for phase III. A standard for the involvement of general practitioners was not set in the planning documents. However, it is obvious that the number of sessions presented by general practitioners may not be adequate to facilitate the achievement of the aim of preparing students to function in a primary care setting.

7.1.5 Aim six: To be responsive to the current socio-political environment

Objective 19: To train the student in both state-owned and privately-owned facilities in order to expose the students to the health needs of different sections of society

Module chairpersons were asked to report if any of the contact sessions in their modules were conducted in privately-owned institutions. This was not reported to occur in any of the modules.

Objective 20: To provide a basic knowledge of alternative medicine[44]

Module chairpersons were asked to indicate the number of contact sessions in which there was exposure to alternative medicine, and this was then calculated as a percentage of the total contact sessions in the module. None of the module chairpersons in phase II reported any sessions dealing with the subject of alternative medicine, while only two module chairpersons in phase III reported contact sessions in their modules dealing with alternative medicine (4.2% of the contact sessions in one module and 12.6% of the contact sessions in the other).

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[44] Alternative medicine in the context of this study was regarded as medical knowledge and practices that fall outside "western" or allopathic medicine. It would therefore include homeopathic as well as traditional ("African") medicine.

7.1.6 Aim seven: To equip the student to deal with the changing profile of patients and their diseases as encountered in their intended working environment
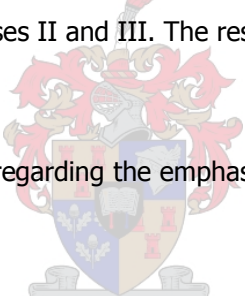
Two types of conditions were identified as important to this aim, namely HIV and trauma. These conditions are represented in the following two objectives:

Objective 21: To present the student with adequate learning material regarding HIV and its related diseases.

Objective 22: To present the student with adequate learning material regarding trauma.

The module chairpersons were asked about the emphasis on HIV and its related diseases and on trauma in each of the modules of phases II and III. The results are summarised in table 7.20.

Table 7.20: Chairpersons' responses regarding the emphasis on HIV and its related diseases and on trauma in the theoretical modules

Phase of the curriculum	Emphasis on HIV and its related diseases			Number of respondents
	Little or no emphasis	Covered	Thoroughly emphasized	
Phase II	5	0	7	12
Phase III	5	1	14	20
Total	10	1	21	32
	Emphasis on trauma			
Phase II	3	0	9	12
Phase III	5	0	14	20
Total	8	0	21	32

These results will be compared to the perceptions of the other data sources and discussed further in the next chapter.

7.1.7 Aim eight: To educate and train the student according to a bio-psychosocial model of medicine

Different dimensions of what is understood by the bio-psychosocial model were formulated in chapter five, and the following objectives describe the aim of educating the Stellenbosch medical student according to a bio-psychosocial model:

Objective 23: To educate the student about the influence of the environment on health.

Objective 24: To educate the student about the influence of the patient's mental state on health.

Objective 25: To educate the student about the influence of culture on health.

Objective 26: To educate the student about the influence of disease on society.

Objective 27: To educate the student about the broader impact of diseases on the family unit.

Module chairpersons were asked about the emphasis on the identified dimensions of the bio-psychosocial model. These results are presented in table 7.21.

Table 7.21: Module chairpersons' responses regarding the emphasis on the identified dimensions of the bio-psychosocial model in the theoretical modules of the curriculum

Phase of the curriculum	Emphasis on the influence of environment on health			Number of respondents
	Little or no emphasis	Covered	Thoroughly emphasised	
Phase II	6	0	6	12
Phase III	2	2	15	19
Total	8	2	21	31
	Emphasis on the influence of the patient's mental state on health			
Phase II	6	1	6	12
Phase III	3	0	16	19
Total	9	1	22	31
	Emphasis on health in a cultural context			
Phase II	7	0	5	12
Phase III	4	1	15	19
Total	11	1	20	31
	Emphasis on the broader impact of diseases on society			
Phase II	8	0	4	12
Phase III	4	1	15	20
Total	12	1	19	32
	Emphasis on the broader impact of diseases on the family unit			
Phase II	8	0	4	12
Phase III	3	2	15	20
Total	11	2	19	32

The results of the data described in table 7.21 will be integrated with data obtained from the other sources and discussed in chapter eight.

7.1.8 Aim nine: To educate the student regarding personal accountability

Objective 28: To provide the student with a relevant education in the field of ethics

In order to obtain their perspective on the provision made for the students to learn about the ethical aspects of medicine during the theoretical phases of the curriculum, module chairpersons were asked about the emphasis placed on ethical aspects in each of the modules of phases II and III. The results are presented in table 7.22.

Table 7.22: Module chairpersons' responses regarding the emphasis on ethical aspects in the theoretical modules

Phase of the curriculum	Emphasis on ethical aspects			Total
	Little or no emphasis	Covered	Thoroughly emphasised	
Phase II	5	0	7	12
Phase III	2	1	17	20

Table 7.22 indicates that, in general, the subject of ethics is 'thoroughly emphasised' in phase III (which is more clinically orientated than phase II), much in line with where one would expect this to be most appropriately presented. However, there is an awareness amongst some of the phase II module chairpersons of the need to incorporate ethical aspects into the curriculum, as 7/12 indicated that ethics was well covered in their modules.

7.1.9 Aim ten: To increase the efficiency of the curriculum in terms of costs and other resources

Objective 29: To also use existing facilities outside the main teaching hospital in order to fulfil the needs of the curriculum

As set out in chapter five, the first indication in the planning documents that outside facilities should be used was to propose the use of existing facilities outside the medical campus to cater for the needs of the new curriculum as far as possible, rather than to re-equip existing teaching

facilities. Although the students had already been rotating through a number of peripheral hospitals as part of their clinical rotations in terms of the previous curriculum, the theoretical aspects of their training had been confined to the main teaching complex at Tygerberg Hospital. In order to determine whether this was changing in the presentation of the theoretical phases of the new (1999) curriculum during the period of data collection, module chairpersons were asked to report whether any of the contact sessions in their modules were conducted off campus. None of the phase II chairpersons reported that this was done in their modules, while the use of outside facilities was reported by three module chairpersons in phase III as comprising 8%, 10% and 15% of the total number of sessions in their modules respectively.

Objective 30: To use lecturers not employed full time by the university in order to fulfil the needs of the new curriculum

The second way in which the planning documents indicated that the aim of a cost- and resource-efficient curriculum could be met was to propose using lecturers not employed officially by the university (an outside lecturer) to supplement the skills and knowledge of the staff. This was foreseen as being necessary because of the requirements of the new curriculum to cover areas of education and training not incorporated into the previous curriculum (for example, Health Management, which forms part of one of the phase III modules[45]). Module chairpersons were asked to report the number of contact sessions in their modules conducted by external lecturers. Their responses are summarised in table 7.23.

Table 7.23: Number of contact sessions conducted by lecturers not officially employed by the University of Stellenbosch (outside lecturers) in the theoretical phases of the curriculum

Phase of the curriculum	Total number of sessions	Number of sessions conducted by an outside lecturer
Phase II	744	7
Phase III	1062	163
Total	1806	170

This table demonstrates a clear increase of the use of outside lecturers from phase II to phase III. This can be explained by the fact that many of the 'new' aims of the 1999 curriculum, in contrast to the previous curriculum, logically had to be addressed during the more clinical

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[45] See the overview of the curriculum provided as Addendum A.

modules, creating an additional demand for skills and expertise that could not be met by the resident staff.

7.2   LECTURER DATA

As in the case of the module chairpersons, this section contains data concerning phases II and III of the curriculum (the theoretical phases). The data were collected using surveys developed especially for this research, as explained in chapter six. Objectives 2, 8, 13, 15 and 21 to 28 were evaluated by the lecturers' questionnaire (see table 6.3).

It is of importance to note that, in this section, the unit of analysis is the *contact session*, and not the complete module, as the lecturers were asked to answer the questions according to the contact session that they presented, as selected by sampling. Contact sessions were sampled for inclusion in the study according to the method described in chapter six (section 6.5.1).

7.2.1 Aim one: To help the student deal with the workload of the curriculum

Objective 2: To present relevant knowledge to students at the undergraduate level

Lecturers were asked to rate the frequency of the type of content presented in the contact session that they presented, according to the following categories:

- Conditions that must be diagnosed and treated by a general practitioner.
- Conditions that a general practitioner must be able to recognise and refer.
- Conditions requiring specialist diagnosis and treatment.
- Conditions requiring specialist diagnosis and treatment, but general practitioner support.

The priority of content related to these categories could be assigned to five categories, ranging from 1 = no representation to 5 = very well represented. The results of the lecturers' responses are presented in table 7.24.

Table 7.24: Lecturers' representations of the content of the modules of the theoretical phases of the curriculum across different categories of conditions

Content category	Phase of the curriculum	1 (No emphasis)	2	3	4	5 (Very well represented)
Conditions that must be diagnosed and treated by a general practitioner	Phase II (n=75)	**53.3%**	6.7%	8.0%	8.0%	24.0%
	Phase III (n=84)	13.1%	11.9%	11.9%	13.1%	**50.0%**
Conditions that a general practitioner must be able to recognise and refer	Phase II (n=75)	**58.7%**	9.3%	10.7%	10.7%	10.7%
	Phase III (n=85)	17.6%	11.8%	16.5%	12.9%	**41.2%**
Conditions requiring specialist diagnosis and treatment	Phase II (n=75)	**64.0%**	16.0%	6.7%	5.3%	8.0%
	Phase III (n=84)	38.1%	17.9%	13.1%	9.5%	21.4%
Conditions requiring specialist diagnosis and treatment, but GP support	Phase II (n=75)	**64.0%**	12.0%	9.3%	6.7%	8.0%
	Phase III (n=84)	35.7%	16.7%	20.2%	14.3%	13.1%

Percentages higher than 40% are bold typed

In phase II, the lecturers generally assigned a low content percentage to all five types of activities, and there is no clear dominance by any one type of activity. This can be related to observations made by some of the phase II lecturers in the free comment section of the questionnaire, namely that it is difficult to assign the work that they present to these categories, as the content of phase II is not very clinically orientated.

For phase III, a high percentage (>40%) of lecturers reported a high frequency for the first two activities. A total of 21.4% of the lecturers reported '*Conditions requiring specialist diagnosis and treatment*' to be very well represented, which causes concern, as this type of knowledge should be represented at a very low frequency according to the principles of the curriculum.

7.2.2 Aim two: To help the student take responsibility for his/her own learning

Objective 8: To make students aware of the necessity to continuously update their knowledge

Lecturers were asked about the representation of concepts relating to the changes and developments in medical science in the particular contact session selected to be included in the study. The results are displayed in table 7.25.

Table 7.25: Lecturers' perceptions of the representation of aspects of changes and developments in medical science addressed in the contact sessions

Phase of the curriculum	Changes and development in medical science are addressed in this module			Total
	Disagree	Uncertain	Agree	
Phase II	73.3%	0	26.6%	75
Phase III	40.7%	0	59.3%	86
Total	60.15%	0	42.95%	161

Table 7.25 indicates that the aspects in medical science that are subject to change and development were more clearly highlighted in phase III than in phase II. This corresponds with the views expressed by the module chairpersons, and will be discussed further in chapter eight.

7.2.3 Aim four: To prepare the students to function in a primary care setting after graduation

Objective 13: To teach the students about the prevention of disease

Lecturers were asked to indicate whether disease prevention was included in the content of the contact session that was sampled for evaluation. The results are summarised in table 7.26.

Table 7.26: Lecturers' emphasis on disease prevention in the contact sessions that were sampled

Phase of the curriculum	Emphasis on disease prevention			Number of respondents
	Little or no emphasis	Covered	Thoroughly emphasised	
Phase II	69.9%	1.4%	28.7%	73
Phase III	36.8%	1.1%	62%	87
Total	51.9%	1.3%	46.9%	160

According to table 7.26, disease prevention receives attention in both the theoretical phases, but remarkably more so in phase III. Once again, this trend can be expected. Because not all contact sessions can be expected to appropriately address issues of prevention, the total percentage of just under 50% of the lecturers declaring that this topic was covered in the contact sessions that were sampled indicates that this objective received adequate attention from the lecturers.

Objective 15: To teach the students to approach medicine in an interdisciplinary manner, as required by primary health care

Lecturers were asked about the emphasis on the role and function of the multidisciplinary team in the module (by module chairpersons) and in the individual contact sessions (by lecturers). The results of this are presented in table 7.27.

Table 7.27: Lecturers' emphasis on the role and function of the multidisciplinary team in the contact session that they conducted

Phase of the curriculum	Emphasis on the role and function of the multidisciplinary team			Number of respondents
	Little or no emphasis	Covered	Thoroughly emphasised	
Phase II	79.7%	10.8%	9.5%	74
Phase III	44.8%	18.4%	36.8%	87
Total	60.9%	14.9%	24.2%	161

As may be expected from the more clinical orientation of phase III, a greater emphasis on the role and function of the multidisciplinary team was achieved here by the lecturers than in phase II.

7.2.4 Aim seven: To equip the student to deal with the changing profile of patients and their diseases as encountered in their intended working environment
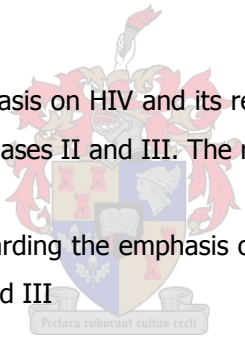
Two conditions were identified as important to this aim, namely HIV and trauma. These conditions are represented in the following two objectives:

Objective 21: To present the student with adequate learning material regarding HIV and its related diseases

Objective 22: To present the student with adequate learning material regarding trauma

Lecturers were asked about the emphasis on HIV and its related diseases and on trauma in each of the contact sessions sampled for phases II and III. The results are summarised in table 7.28.
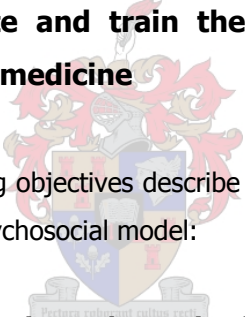
Table 7.28: Lecturers' responses regarding the emphasis on HIV and its related diseases and on trauma in the modules of phases II and III

Phase of the curriculum	Emphasis on HIV and its related diseases			Number of respondents
	Little or no emphasis	Covered	Thoroughly emphasised	
Phase II	81.1%	13.5%	5.4%	74
Phase III	60.9%	17.2%	21.8%	87
Total	70.2%	15.5%	14.3%	161
	Emphasis on trauma			
Phase II	74.3%	14.9%	10.8%	74
Phase III	69.8%	15.1%	15.1%	86
Total	71.9%	15.0%	13.1%	160

It is extremely difficult to construct a quantitative standard for this criterion. According to table 7.28, HIV and its related diseases were not well emphasised in phase II (81.1% reported little or no emphasis on this topic in the contact sessions that they presented). A greater emphasis on HIV and its related diseases was reported by lecturers conducting the sampled contact sessions in phase III. The emphasis on trauma was slightly higher in phase II compared to the emphasis on HIV, while the reverse was true for phase III (less emphasis on trauma than on HIV). The importance of these two conditions cannot be contrasted against each other. The percentage of contact sessions in which these two aspects of disease were addressed is low in the face of the extent of the problems caused by HIV and trauma in the communities where the graduates will work. Whether students received adequate education on and training in these subjects to fulfil the requirements of the environment in which they are going to practise will be more suitably evaluated by a longer term assessment of the outcomes of the curriculum.

7.2.5 Aim eight: To educate and train the student according to a bio-psychosocial model of medicine

As listed in section 7.1.7, the following objectives describe the aim of educating the Stellenbosch medical student according to a bio-psychosocial model:

Objective 23: To educate the student about the influence of the environment on health
Objective 24: To educate the student about the influence of the patient's mental state on health
Objective 25: To educate the student about the influence of culture on health
Objective 26: To educate the student about the influence of disease on society
Objective 27: To educate the student about the broader impact of diseases on the family unit
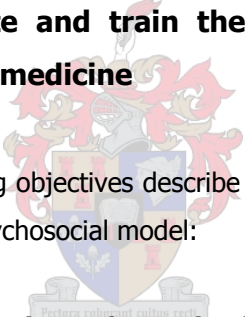
Lecturers were asked about the emphasis they placed in the sampled contact sessions that they presented on the identified dimensions of the bio-psychosocial model. These results are presented in table 7.29.

Table 7.29: Lecturers' responses regarding the emphasis on the identified dimensions of the bio-psychosocial model in the contact sessions of the theoretical phases of the curriculum

Phase of the curriculum	Emphasis on the influence of environment on health			Number of respondents
	Little or no emphasis	Covered	Thoroughly emphasised	
Phase II	72.0%	14.7%	13.3%	75
Phase III	37.9%	27.6%	34.5%	87
Total	53.7%	21.6%	24.7%	162
	Emphasis on the influence of the patient's mental state on health			
Phase II	82.7%	10.7%	6.7%	75
Phase III	52.9%	20.7%	26.4%	87
Total	66.7%	16.0%	17.3%	162
	Emphasis on health in a cultural context			
Phase II	85.3%	0	14.7%	75
Phase III	51.7%	1.1%	47.1%	87
Total	67.3%	0.6%	32.1%	162
	Emphasis on the broader impact of diseases on society			
Phase II	85.3%	6.7%	8.0%	75
Phase III	44.8%	33.3%	21.8%	87
Total	63.6%	21.0%	15.4%	162
	Emphasis on the broader impact of diseases on the family unit			
Phase II	82.1%	7.7%	6.4%	75
Phase III	46.1%	23.6%	27.0%	86
Total	62.9%	16.2%	17.4%	161

The results of the data presented in table 7.29 will be integrated with the data collected from the other sources and discussed in chapter eight.

7.2.6 Aim nine: To educate the student regarding personal accountability

Objective 28: To provide the student with a relevant education in the field of ethics

Lecturers were asked about the emphasis on ethical issues in each of the contact sessions in phases II and III that were sampled for the study. The results are presented in table 7.30.

Table 7.30: The emphasis lecturers place on the ethical aspects of medicine during the contact sessions sampled for this study

Phase of the curriculum	Emphasis on ethical aspects			Number of respondents
	Little or no emphasis	Covered	Thoroughly emphasised	
Phase II	79.7%	14.9%	5.4%	74
Phase III	46.5%	30.2%	23.3%	86
Total	61.9%	23.1%	15.0%	160

Table 7.30 indicates a progression in the emphasis placed on ethical aspects by the lecturers from phase II to phase III. The lecturers' emphasis on these topics will be contrasted with the perceptions of the chairpersons and students in chapter eight.

7.3 STUDENT DATA

Data were collected from students in phases II and III by means of a questionnaire specifically designed for the purposes of this study (see chapter six). The aims and objectives that were included in the student questionnaire are set out in table 6.3.

For the early and middle clinical rotations, student feedback data collected by the academic support services of the university was used for secondary analysis. The late clinical rotations did not form part of this study, as these rotations were not yet implemented at the time of data collection.

For the theoretical phases, statistical differences were calculated for the students' responses relating to phases II and III. A P value of <0.01 was considered to indicate a statistically significant difference. The two phases differed significantly concerning most of the aspects evaluated. The significant differences also reflect on the large sample size contained in this section of the data (responses from 1 595 students in phase II and 1 592 students in phase III).

7.3.1 Aim one: To help the student deal with the workload of the curriculum
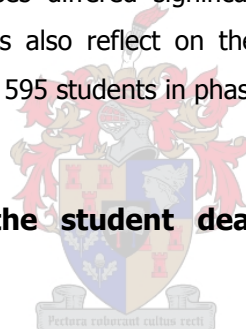
Objective 1: To present a manageable workload to the student

For phases II and III, students were asked to indicate their agreement with the statement that it was possible for them to cope with the amount of work presented during the module. Their responses are summarised in table 7.31.

Table 7.31: Students' responses to the statement that they can cope with the amount of work presented during the modules of phases II and III

Phase of the curriculum	It is possible to cope with the amount of content presented in this module			Number of students
	Disagree	Uncertain	Agree	
Phase II	30.2%	21.1%	48.6%	1631
Phase III	37.5%	17.5%	44.9%	1582
Total	33.9%	19.3%	46.8%	3213

Statistics: $\chi^2 = 26.393$; p < 0.01

Although there was a statistically significant variance between the responses of students in phases II and III, the responses of the students are more similar for phase II and for phase III than the responses of the module chairpersons concerning the same objective. The chairpersons in phase III were clearly more concerned about the content load of the curriculum (see section 7.1.1) than the chairpersons of phase II. This will be discussed further in chapter eight.

For the clinical rotations, the aim is to enhance the students' practical skills and not to broaden their theoretical knowledge. When students were asked to rate their agreement with the statement that the amount of work presented during the module (clinical rotation) was manageable, the responses as summarised in table 7.32 were obtained.

Table 7.32: Students' perceptions regarding the fairness of the amount of work they were expected to do in the early and middle clinical rotations

Phase of the curriculum	The amount of work* you are expected to do is manageable			Number of students
	Disagree	Uncertain	Agree	
Early clinical rotations	8.7%	16.2%	75.1%	241
Middle clinical rotations	7.5%	18.1%	74.4%	199
Total	8.2%	17.0%	74.8%	440

*'work' is used here instead of 'content', as this is more suitable to the clinical rotations, where students are practicing skills and performing tasks in a clinical situation

Statistics: $\chi^2 = 3.192$; $p > 0.05$. This does not indicate a statistically significant difference between the two rotations

Objective 2: To present relevant knowledge to students at the undergraduate level

This objective was not evaluated by the students' questionnaire developed for phases II and III (see table 6.3). The relevance of these modules was established by looking at the levels of care (primary, secondary and tertiary) represented in the content of these modules, as well as the appropriateness of the content to the activities of general practitioners. Students are not expected to be able to judge relevance according to these criteria, as they lack the necessary experience. Information on this was obtained from the module chairpersons and lecturers (see sections 7.1.2 and 7.1.2).

As part of the student feedback obtained for the clinical rotations, the students were asked to rate their agreement with the statement that the '*Application in practice of skills acquired is clear*' on a Likert scale of 1 to 5 (1 indicating 'disagree strongly' and 5 indicating 'agree strongly'). The results are set out in table 7.33.

Table 7.33: Results of student perceptions regarding the application in practice of skills acquired during the clinical rotations

Phase of the curriculum	Application in practice of skills acquired is clear			Number of students
	Disagree	Uncertain	Agree	
Early clinical rotations	2.9%	8.2%	89%	244
Middle clinical rotations	4.1%	6.1%	89.8%	197
Total	3.4%	7.3%	89.3%	441

Statistics: $\chi^2 = 1.803$; p >0.05

From table 7.33, it can be deduced that the students had a positive perception concerning the relevance of the skills they were acquiring in the early as well as the middle clinical rotations to their future work requirements (with no statistical difference).

In order to help the student cope with the workload (the first aim of the 1999 curriculum), the planning documents provided for written outcomes of expected learning to be supplied, according to the criteria of objectives 3 and 4:

Objective 3: To provide the students with relevant outcomes of expected learning
Objective 4: To provide the students with clear outcomes of expected learning

For phases II and III, the students were asked to rate the relevance of the outcomes[46] of expected learning provided in the study guides on a scale of 1 to 5 (1 indicating 'disagree strongly' and 5 indicating 'agree strongly'). Their responses are summarised in table 7.34.

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[46] The relevance of the outcomes was to be judged against what they perceived as 'the curriculum'.

Table 7.34: Students' opinions regarding the relevance of the study guide to the content of the module as presented by the lecturers in the theoretical phases

Phase of the curriculum	Relevance of the study guide to the content of the module as presented by the lecturers			Number of students
	Disagree	Uncertain	Agree	
Phase II	7.6%	15.8%	76.7%	1630
Phase III	21.6%	23.9%	54.5%	1574
Total	14.4%	19.8%	65.8%	3204

Statistics: $\chi^2 = 217.048$; p < 0.01

Table 7.34 demonstrates that the students were clearly less satisfied with the relevance of the written objectives of learning to the presentation of the curriculum in phase III than in phase II.

For phases II and III, students were also asked to rate the clarity of the study guidelines, as presented in table 7.35.

Table 7.35: Students' opinions regarding the clarity of the objectives in the study guides for the theoretical phases

Phase of the curriculum	The objectives in the study guide are clearly set out and easy to understand			Number of students
	Disagree	Uncertain	Agree	
Phase II	8.3%	21.4%	70.4%	1631
Phase III	19.6%	32.3%	48%	1580
Total	13.8%	26.8%	59.4%	3211

Statistics: $\chi^2 = 202.390$; p < 0.01

The same trend is found here as that which can be observed for the students' perceptions concerning the relevance of the written objectives described in table 7.34.

The student feedback for the clinical rotations asked the question in the following form: *'Objectives contributed to meaningful study'*. Students had to indicate their responses on a Likert scale of 1 to 5. The results are summarised in table 7.36.

Table 7.36: Students' opinions regarding the contribution of the written objectives to meaningful study in the early and middle clinical rotations

Phase of the curriculum	Objectives contributed to meaningful study			Number of students
	Disagree	Uncertain	Agree	
Early clinical rotations	12.7%	26.7%	60.5%	243
Middle clinical rotations	17.6%	25.1%	57.3%	199
Total	15%	26%	59%	442

Statistics: $\chi^{2} =$ 10.031; p =0.04 (This does not satisfy the criteria for statistical significance used in this study)

For the clinical rotations, only 59% of the students agreed that the objectives they received contributed to meaningful study. The implications of the low ratings of student satisfaction with the clarity and relevance of the study objectives specifically in phase III as compared to phase II, and the low perception of the contributions of the study objectives provided for the clinical rotations on the achievement of the objectives during curriculum implementation will be further discussed in chapter eight.

Objective 5: To clearly prioritise knowledge so that the student can direct his/her own learning

The students were asked about their perceptions of the prioritisation of the content of the modules by rating their agreement with the following statement, '*The content of this module was clearly prioritised as 'must know', 'should know' and 'may know'*. Their responses are summarised in table 7.37.

Table 7.37: Students' opinions regarding the prioritisation of knowledge in the theoretical phases of the curriculum

Phase of the curriculum	Knowledge prioritised as 'must know', 'should know' and 'interesting but not required'			Number of students
	Disagree	Uncertain	Agree	
Phase II	35.4%	25.2%	68.9%	1627
Phase III	53%	25.1%	21.9%	1561
Total	44%	25.2%	30.9%	3188

Statistics: $\chi^{2} =$163.415; p < 0.01)
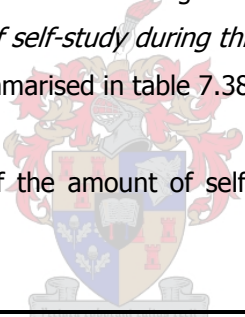
When comparing the results from the two theoretical phases for this variable, table 7.37 indicates a clear difference (apart from the statistical significance demonstrated). The students in phase III clearly had a very negative perception of the prioritisation of the content of the modules in this phase. This may contribute to their inability to cope with the workload with which they were presented.

7.3.2 Aim two: To help the student to take responsibility for his/her own learning

Objective 6: To encourage the students to work independently

The concept of independent work was linked to self-study, as explained earlier in section 7.1.2. For phases II and III, the students' perceptions of the quantity of self-study involved in the modules was obtained by asking them to rate their agreement with the following statement on a scale of 1 to 5: *'You had to do a lot of self-study during this module'* (1 = disagree strongly, 5 = agree strongly). These results are summarised in table 7.38.

Table 7.38: Students' perceptions of the amount of self-study in the various modules of the theoretical phases

Phase of the curriculum	Perception that quantity of self-study was 'a lot'			Number of students
	Disagree	Uncertain	Agree	
Phase II	11.6%	9.1%	79.3%	1634
Phase III	28.8%	13.2%	58%	1571
Total	20.1%	11.1%	68.8%	3205

Statistics: χ^2 =249.6; p < 0.01

The students' perceptions reported here will be compared in chapter eight to the perceptions of the module chairpersons and the amount of self-study sessions as reported in the schedules of the modules, and further discussed in that context.

To establish the students' perceptions of the importance of self-study in relation to other learning activities, students in phases II and III were asked to rate their agreement with the following statement, '*If you **only** attended the lectures, and studied **only** the notes provided by the lecturer or notes you made in class yourself, you would still be able to do well in the exam.'*

Their responses to this question are summarised in table 7.39.

Table 7.39: Students' perceptions of the importance of self-study in the theoretical phases of the curriculum

Phase of the curriculum	Success in examination is independent of self-study			Number of students
	Disagree	Uncertain	Agree	
Phase II	32.8%	22.3%	45%	1630
Phase III	26.5%	33.9%	39.7%	1547
Total	29.7%	28.0%	42.3%	3177

Statistics: χ^2 =72.316; p < 0.01

The students' perceptions regarding the importance of self-study in the modules will be compared to the module chairpersons' account of the amount of self-study in the modules and the analysis of the study guides regarding the number of self-study sessions in each module. This will be done in chapter eight.

Another important aspect of self-study, apart from the amount of it, is the guidance given for self-study to be undertaken. Student perceptions regarding this were obtained for phases II and III. Students were asked to rate their agreement with the statement, *'Self-study was clearly set out and well guided'*, on a scale of 1 to 5 (1 = disagree strongly, 5 = agree strongly). These results are summarised in table 7.40.
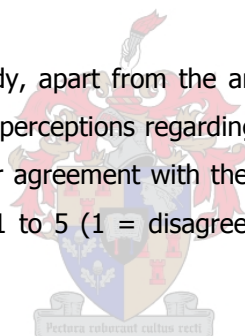
Table 7.40: Students' perceptions concerning the guidance of self-study in the theoretical phases of the curriculum

Phase of the curriculum	Student perception of the guidance of self-study			Number of students
	Disagree	Uncertain	Agree	
Phase II	11.8	21.9%	65.3%	1633
Phase III	23.7%	29.9%	46.4%	1579
Total	18.2%	25.8%	56%	3212

Statistics: χ^2 = 160.41; p < 0.01

It is obvious from table 7.40 that the students had a more positive perception regarding the guidance for self-study in phase II.

For the clinical rotations, data concerning self-study specifically were not gathered, but the independence of study was evaluated by asking the students to rate their agreement with the

following statement, '*The main responsibility to achieve the objectives of this module lies with the student*'. The responses of the students to this question are summarised in table 7.41.

Table 7.41: Students' perceptions regarding their responsibility to work independently in the early and middle clinical rotations

Phase of the curriculum	The main responsibility to achieve the objectives of this module lies with the student			Number of students
	Disagree	Uncertain	Agree	
Early clinical rotations	3.3%	11.6%	85.1%	242
Middle clinical rotations	2%	10.6%	87.4%	199
Total	2.7%	11.1%	86.1%	441

Statistics: χ^2=2.665 and p=0.651, indicating no statistically significant variance between the students' responses in the two phases

It is clear from table 7.41 that the students in both of the evaluated clinical rotations were aware of their responsibility to work independently in these parts of the curriculum.

Objective 7: To encourage the students to use various learning resources other than notes taken during formal lectures
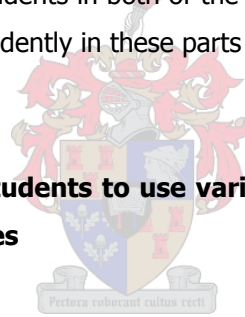
The students were supplied with a list of possible resources (including text books, journal articles, websites, etc.) and asked to indicate which resources in the list they used for each module. The mean number of used resources indicated by the students was 4.93 (standard deviation of 1.78, n = 1638) for phase II and 4.68 (standard deviation of 1.761 and n = 1589) for phase III. Figure 7.2 illustrates the use of various learning resources by the students in the theoretical phases.

A statistically significant difference in the students' use of various learning resources other than lecture notes was found between phases II and III (χ^2=84.186; p < 0.01).
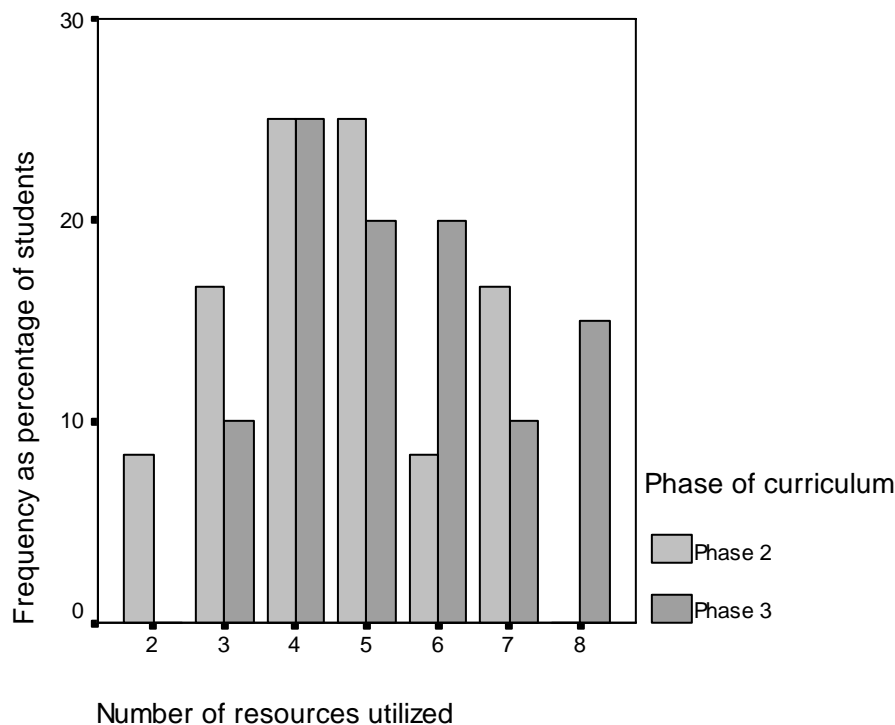
Figure 7.2: The use of various resources as reported by the students in the theoretical phases of the curriculum

The information provided by module chairpersons regarding the number of resources recommended for the module was correlated with the student reports of their actual use of various resources. This correlation will be reported and further discussed in chapter eight.

7.3.3 Aim three: To educate students in accordance with current educational approaches

Objective 9: To employ various teaching strategies in order to encourage students to have a 'deep approach' to learning

To find out how important students considered the role of the formal lecture, students were asked to indicate their agreement/disagreement with the statement, '*Most of the work was covered in formal lectures*', on a scale of 1 to 5 (1 = disagree strongly, 5 = agree strongly). Table 7.42 summarises their responses to this question.

Table 7.42: Students' perceptions regarding the role that formal lectures play in the presentation of the theoretical phases of the curriculum

Phase of the curriculum	Student perception of the representation of most of the work as formal lectures			Number of students
	Disagree	Uncertain	Agree	
Phase II	15.7%	12.9%	71.4%	1633
Phase III	18.3%	20.9%	60.8%	1581
Total	17%	16.8%	66.3%	3214

Statistics: χ^2 =90.291; p < 0.01

This table indicates that, in both the phases, the students had the perception that formal lectures played a dominant role in the modules. Their perceptions will be compared to those of the module chairpersons in chapter eight.

In order to compare the use of various teaching strategies with the way that students learn, students were asked to indicate how they spend their time acquiring knowledge in the various modules. They were asked to assign a percentage value to the time they spend on a specific activity as part of the total time they spend on their learning. The results as analysed for both phase II (figure 7.3) and phase III (figure 7.4) are displayed in the form of pie charts.

Working on computers

3.0%

Individual work

41.3%

Lectures

46.7%

Group work

9.0%
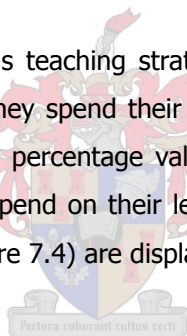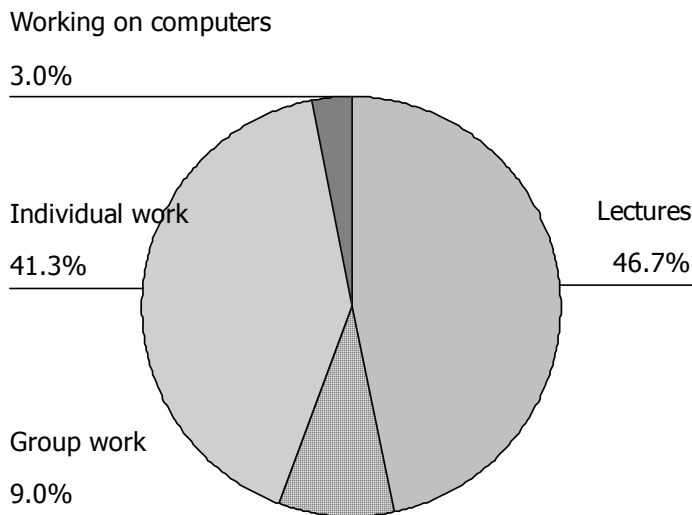
Figure 7.3: The contribution of various learning activities to the students' learning in phase II.

Working on computers

3.3%

Individual work

40.4%

Lectures

48.6%

Group work

7.7%
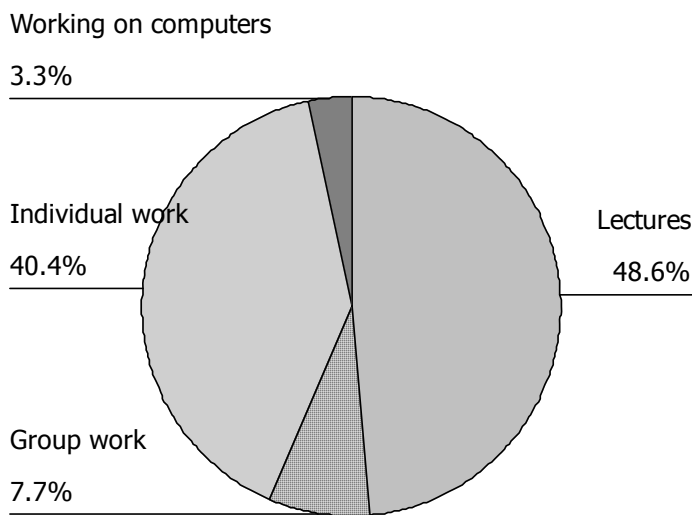
Figure 7.4: The contribution of various learning activities to the students' learning in phase III.

According to figures 7.3 and 7.4, there appears to be little difference between the way that the students spend their time on learning activities in phase II and phase III. On the basis of this, one may expect the learning activities presented during the two phases to be similar, but we have already established in section 7.1.3 that this was not the perception of the module
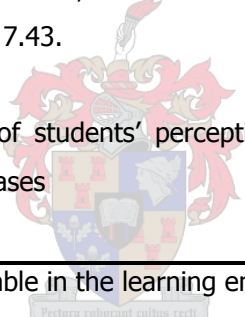
chairpersons. In section 7.4.1, the various learning activities presented will be analysed from the rosters of the modules.

Gibbs states that it is only when you get to a ratio of class time to independent study time of about 1:3 the class contact becomes less dominant in a learning environment (Gibbs, 1999, p. 42). It is obvious from the two figures above that the students do not spend enough time on independent learning or individual work to achieve this objective.

Objective 10: To optimise the students' access to lecturers

During the focus groups described in chapter six, the students proposed that their level of 'comfort' in the learning environment was reflected in their willingness to approach a lecturer to ask questions. In order to evaluate this, students were asked to indicate their agreement/disagreement with the statement, '*You felt comfortable to ask questions in the class'*. These results are summarised in table 7.43.

Table 7.43:   Results of the survey of students' perceptions of their comfort in the learning environment during the theoretical phases

Phase of the curriculum	Students are comfortable in the learning environment			Number of students
	Disagree	Uncertain	Agree	
Phase II	15.6%	21.3%	63.1%	1639
Phase III	14.8%	13.6%	71.5%	1583
Total	15.2%	17.5%	67.3%	3222

Statistics: χ^2 =70.395; p<0.01

Students also indicated the accessibility of lecturers in the modules by indicating their opinion on the statement, '*It is easy to gain access to the lecturers when you have a problem to discuss'*. These results are summarised in table 7.44.

Table 7.44: Students' perceptions regarding the accessibility of lecturers in the theoretical phases of the curriculum

Phase of the curriculum	The accessibility of lecturers in the theoretical phases of the curriculum			Number of students
	Disagree	Uncertain	Agree	
Phase II	7.4%	32%	60.4%	1640
Phase III	15.3%	40.5%	43.8%	1589
Total	11.3%	36.2%	52.2%	3229

Statistics: $\chi^2 = 174.546$; p<0.01

From these two tables, it emerges that, although students are comfortable to ask questions in phase III (71.5% of students agree that they are), students in this phase register an uncertainty about the accessibility of the lecturers (40.5% are uncertain and only 43.8% agree that lecturers are accessible in phase III). This may reflect on the division of duties between service and teaching that the teaching staff in phase III are subjected to, as set out in chapter two. In phase II, the students' responses to their willingness to ask questions follow a more similar pattern to their perception of the accessibility of the staff.

As far as the clinical rotations are concerned, students were asked about the staff's willingness to assist them, and the level of adequacy of supervision that they experienced during the clinical rotations. The results of this are summarised in tables 7.45 and 7.46.
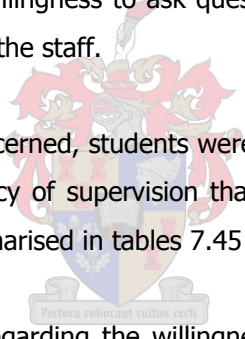
Table 7.45: Students' perceptions regarding the willingness of staff to assist them during the early and middle clinical rotations

Phase of the curriculum	The willingness of staff to assist students during the clinical rotations			Number of students
	Disagree	Uncertain	Agree	
Early clinical rotations	8.6%	12.3%	79.1%	244
Middle clinical rotations	9.5%	14.5%	76%	200
Total	9.1%	13.3%	77%	444

Statistics: $\chi^2 = 9.413$; p=0.052, which indicates no statistical differences between the groups in the early and the middle clinical rotations

Table 7.46: Students' perceptions regarding the level of supervision provided by the staff during the early and middle clinical rotations

Phase of the curriculum	The willingness of supervision provided by the staff during the clinical rotations			Number of students
	Disagree	Uncertain	Agree	
Early clinical rotations	7.9%	17.9%	74.2%	240
Middle clinical rotations	14.5%	13.5%	72%	200
Total	10.9%	15.9%	73.2%	440

Statistics: $\chi^2 = 9.598$; p=0.048, indicating a statistically significant difference at a confidence interval of 95%

As described in tables 7.44 and 7.45, 77% of the students in the early and middle clinical rotations considered the staff willing to assist them, while 73.2% of these students considered the supervision during the clinical rotations that were evaluated to be adequate. These results will be discussed further in chapter eight.
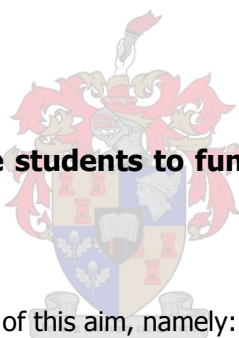
7.3.4 Aim four: To prepare the students to function in a primary care setting after graduation

Two objectives were identified as part of this aim, namely:

Objective 13: To teach the students about prevention of disease
Objective 14: To teach the students about rehabilitation

To obtain the students' views on whether prevention of disease was emphasised during the modules, they were asked to indicate their agreement with a statement that emphasis was placed on preventative medicine during the course of the module according to the following Likert scale: *1= Disagree strongly, 2 = Disagree, 3 = Uncertain, 4 = Agree* and *5 = Agree strongly.* The students were also asked to indicate their agreement with the statement, '*Rehabilitation was discussed where relevant (for example the benefits of physiotherapy in certain conditions)'.* The results of the students' answers to these two questions are summarised in table 7.47.

Table 7.47: Students' perceptions of the representation of preventative medicine and rehabilitation in the theoretical phases of the curriculum

Phase of the curriculum	Emphasis on preventative medicine			Number of students
	Disagree	Uncertain	Agree	
Phase II	40.7%	29.4%	29.9%	1607
Phase III	19.4%	18.0%	62.6%	1578
Total	30.1%	23.8%	46.1%	3185
	Emphasis on rehabilitation			
Phase II	54.1%	30%	15.8%	1482
Phase III	31.4%	20.7%	48%	1576
Total	42.4%	25.2%	32.5%	3058

Table 7.47 illustrates that, as may be expected, the students in phase II (a more basic phase leading up to phase III, which is much more clinically orientated) indicated a lower emphasis on preventative medicine than the students in phase III (29.9% of students in phase II compared to 62.6% of students in phase III considered it to be thoroughly emphasised). Rehabilitation was not well emphasised during either phases II or III, as 15.8% and 48% of students respectively considered the emphasis on rehabilitation as thorough.
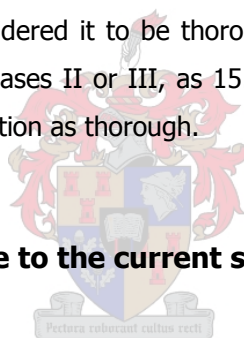
7.3.5 Aim six: To be responsive to the current socio-political environment

Objective 20: To provide a basic knowledge of alternative medicine

The students were also asked to report their perceptions of the representation of alternative medicine by indicating to what extent they agree/disagree with the statement, '*Some of the contact sessions or study material contained aspects of alternative medicine, for example homeopathy or traditional medicine'.* They had to indicate their responses on a Likert scale of 1 to 5 (*1= Disagree strongly, 2 = Disagree, 3 = Uncertain, 4 = Agree* and *5 = Agree strongly). The* results are summarised in table 7.48.

Table 7.48: Students' perceptions of the representation of alternative medicine in phases II and III of the curriculum

Phase of the curriculum	The modules contained aspects of alternative medicine			Number of students
	Disagree	Uncertain	Agree	
Phase II	75.6%	16.6%	7.8%	1622
Phase III	67.8%	17.4%	14.8%	1578
Total	71.8%	17%	11.3%	3200

Statistics: χ^2 = 134.10; p<0.01

Again, the progression of this type of more clinical knowledge can be seen from phase II to phase III, although the positive responses are very low (7.8% of students indicated that alternative medicine was covered in the modules of phase II, while 14.8% of the students indicated that this type of knowledge was presented during phase III). This confirms the module chairpersons' report in section 7.1.5 that there was little exposure to alternative medicine during phases II and III.
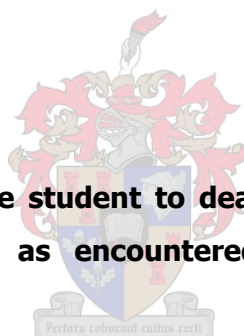
7.3.6 Aim seven: To equip the student to deal with the changing profile of patients and their diseases as encountered in their intended working environment

During the planning of the 1999 curriculum, two types of conditions were identified as important to this aim, namely HIV and trauma. These conditions are represented in the following two objectives:

Objective 21: To present the student with adequate learning material regarding HIV and its related diseases

Objective 22: To present the student with adequate learning material regarding trauma

Students were asked about their perceptions of the emphasis on HIV and its related diseases and on trauma in each of the modules of phases II and III. The results are summarised in table 7.49.

Table 7.49: Students' perceptions of the emphasis on HIV and its related diseases and on trauma in the modules of phases II and III

Phase of the curriculum	Emphasis on HIV and its related diseases			Number of respondents
	Disagree	Uncertain	Agree	
Phase II	72.9%	13.7%	14.4%	1572
Phase III	25.5%	13.2%	61.3%	1584
Total	49.1%	13.4%	37.4%	3156
	Emphasis on trauma			
Phase II	45.5%	25.5%	29%	1539
Phase III	23.1%	17.9%	59%	1583
Total	34.1%	21.7%	44.2%	3122

These results will be compared with the viewpoints of the module chairpersons and lecturers and discussed in chapter 8 (section 8.1.5).
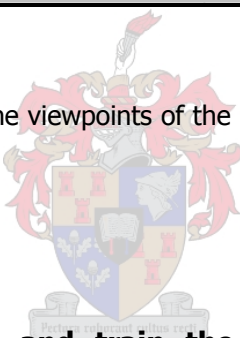
7.3.7 Aim eight: To educate and train the student according to a bio-psychosocial model of medicine

As listed in sections 7.1.7 and 7.2.5, the following objectives describe dimensions of the aim of educating the Stellenbosch medical student according to a bio-psychosocial model:

Objective 23: To educate the student about the influence of the environment on health

Objective 24: To educate the student about the influence of the patient's mental state on health

Objective 25: To educate the student about the influence of culture on health

Objective 26: To educate the student about the influence of disease on society

Objective 27: To educate the student about the broader impact of diseases on the family unit

Students were asked how they perceived the attention paid to the objectives listed above. In their questionnaire, objectives 26 and 27 were combined due to a space restriction imposed by the form's suitability for automatic scanning and to accommodate the large number of students included in this study. The results of this part of the student questionnaire, dealing with the bio-psychosocial model of patient care, are presented in table 7.50.

Table 7.50: Students' responses regarding their perceptions of the emphasis placed on the identified dimensions of the bio-psychosocial model in the contact sessions of the theoretical phases of the curriculum

Phase of the curriculum	Emphasis on the influence of the environment on health			Number of respondents
	Disagree	Uncertain	Agree	
Phase II	49.4%	25.8%	24.9%	1602
Phase III	15.5%	21.5%	63%	1574
Total	32.5%	23.7%	43.7%	3176
	Emphasis on the influence of the patient's mental state on health			
Phase II	58.2%	23.4%	18.4%	1558
Phase III	23.3%	18%	58.7%	1581
Total	40.6%	20.7%	38.7%	3139
	Emphasis on health in a cultural context			
Phase II	66.3%	19.9%	13.8%	1549%
Phase III	40.2%	24%	45.8%	1572%
Total	48.1%	21.9%	29.9%	3121
	Emphasis on the broader impact of diseases on the family unit and society			
Phase II	64%	21.8%	14.1%	1551
Phase III	21.9%	20.4%	57.6%	1576
Total	42.8%	43.1	36.1%	3127

In table 7.50, the progression in emphasis on the listed aspects from phase II to phase III is again obvious. The students' perceptions will be compared to those of the lecturers and module chairpersons in chapter eight.

7.3.8 Aim nine: To educate the student regarding personal accountability

Objective 28: To provide the student with a relevant education in the field of ethics

Students were asked about their perceptions of the emphasis on ethical matters in each of the modules of phases II and III, indicating their responses on a Likert scale of 1 to 5 (*1= Disagree strongly, 2 = Disagree, 3 = Uncertain, 4 = Agree* and *5 = Agree strongly*). The results were summarised by collapsing the two extreme categories and are presented in table 7.51.

Table 7.51: Students' perceptions of the emphasis on ethical matters in the theoretical modules of the curriculum

Phase of the curriculum	Emphasis on ethical aspects of medicine			Number of respondents
	Disagree	Uncertain	Agree	
Phase II	65%	25.6%	9.4%	1392
Phase III	23.7%	19.2%	57.2%	1564
Total	43.1%	22.2%	34.7%	2956

Statistics: χ^2 = 904.29; p<0.01
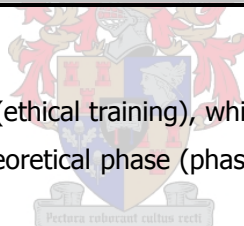
Once again, emphasis on this aspect (ethical training), which is considered important to the 1999 curriculum, was better in the later theoretical phase (phase III), where the curriculum content is presented in a more clinical context.

This concludes the presentation of the results of the analysis of the responses to the questionnaires. As I have indicated frequently, the interpretation and discussion of these results will follow in chapter eight.

7.4   SECONDARY ANALYSIS OF DOCUMENTS

As the fourth source of data, I analysed the study guides and the timetables of the modules evaluated during the period of data collection. These study guides contain details regarding the lecturers presenting the module, the schedule or roster for the module, as well as the study aims and objectives for each contact session.

7.4.1   Aim two: To help the learner take responsibility for his/her own learning

Objective 6: To encourage the students to work independently

Data concerning the amount of independent study or self-study was collected from module chairpersons and students, and are presented in the previous sections of this chapter. In order to get a picture of how self-study was represented according to the schedule for the module, I counted the sessions allocated to self-study as indicated in the study guides and presented them as a percentage of the total number of structured contact sessions. The results are summarised in table 7.52.

Table 7.52: Percentage of self-study sessions as analysed from the timetables provided for the modules in the theoretical phases of the curriculum

Phase of the curriculum	% of self-study sessions as relative to other forms of learning activities					Total
	0-10%	11-20%	21-40%	41-60%	>60%	
Phase II	3	4	4	1	0	12 (100%)
Phase III	10	4	0	1	0	15 (100%)

This data will serve as a basis for the comparison of the module chairpersons' and the students' perceptions of the volume and importance of self-study presented in the different modules. This will be discussed in chapter eight.

7.4.2 Aim three: To educate students in accordance with current educational approaches

Objective 9: To employ various teaching strategies in order to encourage students to have a 'deep approach' to learning

In order to obtain information about the representation of teaching activities in the modules of phases II and III, the study guides were studied and the contact sessions designated to specific teaching activities were analysed. The types of teaching activity were sorted into five categories for each of the sessions:

- Formal lectures
- Facilitated group work
- Unfacilitated group work
- Self-study
- Interactive sessions (Tutorials, discussions, case presentations or practicals)

The results of the analysis of the study guides for the modules of phases II and III are displayed in the form of pie charts in figure 7.5 and figure 7.6:

Interactive sessions
25.4%

Formal lectures
42.7%

Self-study
20.7%

Facilitated group
8.9%

Unfacilitated group
2.4%
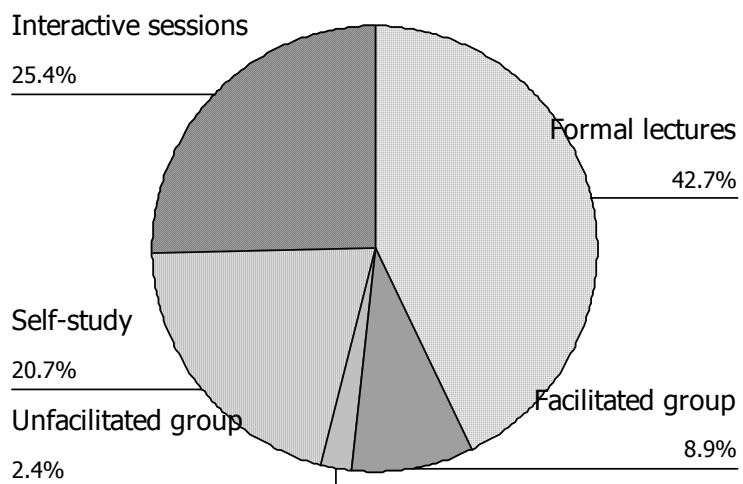
Figure 7.5: Teaching activities in phase II
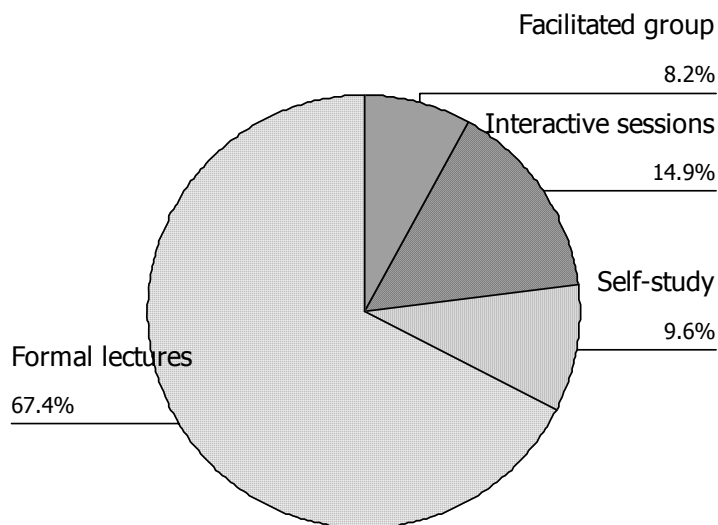
*Work in an unfacilitated group was omitted from this chart as it constituted only 0.1% of contact sessions in this phase.

Figure 7.6: Teaching activities in phase III

These two figures (7.5 and 7.6) illustrate how the learning activities in the two theoretical phases of the curriculum were planned. The figures confirm the perceptions expressed by the students and the chairpersons, and lend validity to data concerning, for example, the important role still played by the formal lecture, particularly in phase III. Student and module chairperson data concerning the amount of self-study organised in the modules are also made credible by this source of data, but there are marked differences in experience that will be further discussed in chapter eight. Merely analysing the schedules of the modules as depicted in the figures above, however, is not sufficient to predict what is really happening in the practised curriculum.

It is of interest here to compare the average number of structured contact sessions per day for the two phases depicted in the figures. For the 12 modules in phase II, the average number of structured contact sessions per day was six (a contact session is a period of 45 minutes scheduled for a specific learning activity). For the 15 modules evaluated for phase III, the average number of structured contact sessions per day was 4.65. The practice of including self-study sessions in the scheduled roster was not consistent throughout the phases and even not consistent in the various modules. The number of structured contact sessions therefore cannot be taken as a simplified measure of the amount of study, including independent study, necessary

to be successful in a module, as the students' perceptions of the amount of self-study are not inversely proportional to the amount of structured contact sessions for a particular module.

7.4.3 Aim four: To prepare the students to function in a primary care setting after graduation

Objective 15: To teach the students to approach medicine in an interdisciplinary manner, as required by primary health care

According to the implicit theory of the curriculum (chapter five), the theoretical part of the curriculum (phases II and III) has to be presented in an interdisciplinary way in order to be successful in teaching the students an interdisciplinary approach to medicine.

To evaluate this, the number of disciplines involved in each of the modules was calculated from the study guides. To illustrate the way that different disciplines were involved in the two phases of the theoretical part of the curriculum, the number of disciplines involved in each of the modules was calculated and graphically represented in figure 7.7.
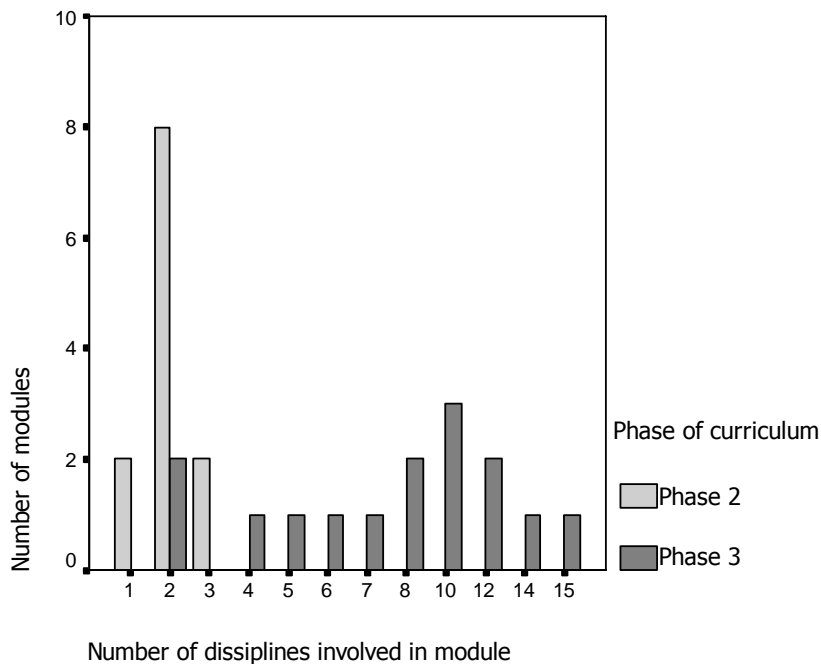
Figure 7.7: The number of disciplines involved in the presentation of the various modules in the theoretical phases of the curriculum

Figure 7.7 indicates that the nature of the modules in phase III was much more interdisciplinary than those in phase II (the mode for phase II is 2, and for phase III the mode is 10). This is an important issue, as it has an implication for many of the other variables evaluated as part of this study. For instance, chairpersons may be less aware of how lecturers are presenting contact sessions in the modules for which they are responsible, especially when the lecturers involved in a single module originate from as many as 15 different departments.

7.4.4 Aim five: To foster and sustain diversity in the student population

Objective 17: To develop the criteria for admission to and selection for the curriculum in medical education and training in order to increase the number of previously disadvantaged students

The Selection Committee of the Faculty of Health Sciences adapts its guidelines on a yearly basis, and specific adaptations have been made to fulfil the national demand for racial representation. For the relevant years of data collection (2002 and 2003), statistics (according to the minutes of a meeting of the Selection Committee held on 30 May 2003) regarding admission to the mainstream[47] medical curriculum are represented in table 7.53.

Table 7.53: Racial distribution of students admitted to the first year of the curriculum in medical education and training in 2002 and 2003

Year	Number of students admitted to the first year of the curriculum in medical education and training*				
	Black	Coloured	Asian	White	Total
2002	8 (4.8%)	39 (23.4%)	26 (15.6%)	94 (56.3%)	167 (100%)
2003	18 (9.9%)	41 (22.5%)	25 (13.7%)	98 (53.8%)	182 (100%)

*This excludes students who had to repeat the first year due to not meeting the promotion criteria, and students admitted to the academic support programme.

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[47] See section 7.2.6.2 below for an exposition of mainstream and Academic Development Programme students.

Although the criteria for selection had been adjusted to accommodate more students from previously disadvantaged communities in the curriculum for medical education and training, immediate redressing of the student profile was not possible due to the profile of the applications received. For example, of the 1 404 students who applied to the programme in 2003, the racial distribution was as follows: 53.7% white, 15.3% coloured, 16.5% Asian and only 14.5% black. There were also a high number of students from disadvantaged communities who were not able to fulfil the minimum criteria for selection. For 2003, 14 of the 145 non-white students who were selected did not attain the minimum standards required for university admission in their final school exit results. Three of these students were admitted to the academic support programme, which is described below, while the selection of 11 of these students had to be cancelled. Forty-seven of the selected non-white group cancelled their application after selection. According to the report compiled annually by the faculty regarding the selection statistics of the students admitted for medical education and training, these cancellations were mainly due to language issues, financial problems and attaining admission to institutions closer to their parental homes.

It is clear that the redress of the student profile is a complex problem. Although it was receiving attention at the time of data collection[48], a more active recruitment of students from previously disadvantaged communities will be necessary to fulfil the possibilities created by changing admission criteria.

Concerning gender equality, the admission criteria were revised to reflect the gender profile of the students applying for admission (Faculty of Health Sciences, 2002). The results of this adjustment are displayed in table 7.54.

Table 7.54: Gender distribution of students admitted to the first year of the medical programme in 2002 and 2003

Year	Number of students admitted to the first year of the medical curriculum		
	Female	Male	Total
2002	98 (58.7%)	69 (41.3%)	167 (100%)
2003	109 (59.9%)	73 (40.1%)	182 (100%)

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[48] The Faculty of Health Sciences hosts an annual recruitment programme during the July school holidays, bringing students from disadvantaged communities to the Tygerberg campus. The programme familiarises them with both the campus and the teaching and training programmes offered in Health Sciences by the University of Stellenbosch.

During the two years that fell into the period of data collection for this study, some progress towards the objective of increasing the number of previously disadvantage students had therefore been made. Although the gender distribution of the student population is roughly representative of the makeup of the population, the race representation still requires adjustment in order to be more representative.

Objective 18: To support the learning of previously disadvantaged students

To support the learning of so-called 'previously disadvantaged' students (students coming from schools in black or coloured residential areas still suffering from the longer-term effects of the educational disadvantages of the Apartheid era), an Academic Development Programme (ADP) ('Akademiese Ontwikkelingsprogram' or AOP in Afrikaans) was developed and instituted alongside the 1999 curriculum for medical education and training. According to the Calendar of the Faculty of Health Sciences (Cilliers, 2003), this programme offered an extended first year of study that included additional subjects to support the learning of students coming from a disadvantaged school background. These subjects included Biology, Chemistry, Physics and Communication at first-year level, to supplement the mainstream subjects of Biology, Chemistry and the Cell and Tissue module that also needed to be completed during the first year of the ADP programme. During the second year, students in this programme did mainstream Physics and Data Management, but also had to do an additional supportive Data Management module. Later in the second year ADP programme, they join the mainstream first-year students in the first modules of phase II of the medical programme.

Table 7.55: Number of students admitted to the academic support programme in 2002 and 2003

Year	Number of students admitted to the academic support programme				
	Black	Coloured	Asian	White	Total
2002 part I	7	10	1		18
2002 part II	1	11	1		13
2003 part I	6	9			15
2003 part II	7	10	1		18

At the time of data collection, data concerning the performance of these year groups of students upon re-entry into the mainstream of the medical programme were still being processed. This data will be required in order to evaluate the effectiveness of the academic support programme offered by the Faculty of Health Sciences, and the effectiveness should be further researched in

order to inform future practices. A tutor mentor programme and a language support programme were also in existence during the time of data collection.

7.5 SUMMARY OF THE CHAPTER

In this chapter, the data collected according to the methodology set out in chapter six were presented according to the four sources from which they had been collected, namely:

- The chairpersons of the theoretical phases of the modules.
- The lecturers in the theoretical phases of the modules.
- The students in the theoretical phases of the modules, as well as the students in the early and middle clinical rotations.
- Secondary analysis of the study guides and other documents containing data regarding student selection, admission and support.

In the next chapter, the data collected from the various sources will be collated and further analysed in order to accomplish the alignment of the evaluated sections of the practised curriculum with the planned curriculum according to the conceptual basis for this study outlined in chapter five.
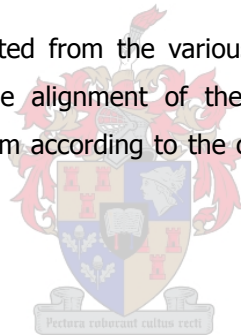
CHAPTER 8: DISCUSSION OF RESULTS

In the previous chapter (chapter seven), the results of the questionnaires administered to the module chairpersons, lecturers and students in the theoretical phases were presented, as well as the secondary analysis of the standard student feedback obtained for the early and the late clinical rotations.

These results will be collated and discussed in this chapter. A 'curriculum scoreboard' will then be presented to illustrate the degree of alignment (or non-alignment) of the planned and the practised curriculum.

To provide a more qualitative dimension to some of the conclusions reached regarding specific objectives, I will present relevant examples in this chapter of the free responses obtained from the students. Space was provided for free responses on the form used for student feedback on the clinical phases, while some students also responded to the invitation to write comments on the back of the answer sheets used in the evaluation of the theoretical phases.

I present the chapter according to the framework for data collection described in chapter five and also used in the previous chapter. This allows me to progressively reduce the extent of the data back to the format of the Logic Model. A judgment will also be made about the extent to which each curriculum objective has been met.

8.1 COLLATION AND ASSESSMENT OF DATA GATHERED FROM THE VARIOUS SOURCES

8.1.1 Aim: To help the student to deal with the content load of the curriculum

Objective 1: To present a manageable content load to the student

This objective was evaluated by determining the perceptions of both the module chairpersons and the students. Since lecturers were usually only responsible for certain contact sessions, they were not in a position to judge the workload of a module as a whole. The perceptions of the chairpersons and students can be summarised as follows:

Chairpersons' views:	Students' views:
Phase II: 2/12 described an "overload" of content (16.6%)	Phase II: 48.6% of the students indicated that they were able to cope with the work in the module
Phase III: 12/20 described an "overload" of content (60%)	Phase III: 44.9% of the students indicated that they were able to cope with the work in the module
	Clinical rotations: 74.8% of the students agreed that the amount of work they had to do was 'fair'

It is clear from this that more than 50% of the students in both phase II and phase III expressed problems with coping with the workload presented during the theoretical phases of the curriculum. Comparing the perceptions of the module chairpersons and the students, it is noteworthy that the module chairpersons of the phase II modules have an over-optimistic view of the ability of their students to cope with the amount of work presented to them.

The problems that students experienced in coping with the content load of the theoretical phases are illustrated by some typical examples of frequently encountered responses:

"I really think that there has to be more time allocated for us to study the work. **There is not enough time!"**

"The module is, however very interesting but I just wish there was more time to appreciate it."

The following conclusions could be reached:

- The module chairpersons of phase II are more optimistic about the content load than their students, while the chairpersons of phase III are aware of or anticipate the problems their students are experiencing with the content load presented in their modules.
- The majority of students feel that they are not able to cope with the content load presented during the theoretical phases of the curriculum.
- The students are better able to cope with the content load presented in the early and middle clinical rotations.

Assessment:

The evidence collected by this study does not suggest that the objective of presenting a manageable content load for the students has been met in the theoretical phases of the curriculum.

Objective 2: To present relevant knowledge to students at the undergraduate level

It may be difficult for students to evaluate the relevance of knowledge for practice, as they are not yet in a position to judge this (see table 6.3). For this reason, the students' perceptions regarding this objective were not obtained in the questionnaires developed for the *theoretical phases*, and only the module chairpersons and lecturers were asked about the practical relevance of the theoretical phases. The students' perceptions regarding the relevance of the skills they acquired in the *clinical phases* were obtained and analysed.

Chairpersons' views:

Level of care covered by content:

For phase II, the data did not indicate a clear dominance of content relating to any specific level of care. This can be explained by the nature of phase II, which lays the foundation for the more clinical phase III. In phase III, content relating to primary care was dominant, although a relatively high representation of secondary and tertiary type care remained.

Relevance to general practitioner activities:

The chairpersons of phase II reported a low frequency of content relevant to the specific activities required of a general practitioner, which is in line with the explanation given above concerning the orientation of phase II, which is not specifically clinical. In general, the chairpersons of phase III reported a high frequency of content relevant to specific general practitioner activities, but the one activity listed that does not agree with the spirit of the 'Profile of the Stellenbosch doctor', namely '*Conditions requiring specialist diagnosis and treatment*', received a rating of 3 or more on the 5-point Likert scale by 23/31 of the chairpersons.

Lecturers' views:

Relevance to general practitioner activities:

Lecturers in phase II could not clearly assign priority to the content of their modules according to the classification of content used in this study, which is relative to the level of care that it represents. '*Conditions that must be diagnosed and treated by a general practitioner*' were rated as well represented (4 and 5 on the Likert scale) by 63.1% of phase III lecturers. '*Conditions that a general practitioner must be able to recognise and refer*' were rated as well represented (4 and 5 on the Likert scale) by 54.1% of phase III lecturers. '*Conditions requiring specialist diagnosis and treatment*' were rated as well represented (4 and 5 on the Likert scale) by 30.9% of phase III lecturers. '*Conditions requiring specialist diagnosis and treatment, but GP support*' were rated as well represented (4 and 5 on the Likert scale) by 27.4% of phase III lecturers. This indicates a relatively good spread of content across the various tasks, with the most emphasis being placed on the practice of primary care.

Students' views:

In the clinical rotations, 89.38% of students agreed that the skills that they required were applicable to the practice.

The students' perceptions regarding the relevance of the content of the theoretical modules were not evaluated.

There are five main conclusions to be drawn from this:

- The content presented in phase II provides the foundation for the more clinically-orientated phase III and can therefore not easily be classified by the module chairpersons and lecturers according to the criteria used in the questionnaires.

- There is a clear progression from phase II to phase III regarding the amount of content presented that can be designated to a primary level of care. This may be explained by the content of phase II containing more basic knowledge, while the content of phase III consists primarily of clinical knowledge. It is more appropriate for the content of phase III to be categorised into levels of care.

- The attention to primary care is still less than would be expected according to the Profile of the Stellenbosch Doctor, and significant emphasis on secondary as well as tertiary care still occurred in both phases II and III. Lecturers report the content to be more focused on primary care than do the chairpersons.

- The content as appropriate to general practitioner activity also becomes more focused in phase III, with the task that is not appropriate, namely '*Conditions requiring specialist diagnosis and treatment*', selected as irrelevant for both phases II and III by the majority of chairpersons and lecturers.

- The majority of students (89.38%) perceive the skills required in the clinical rotations as relevant to what they expect they will be practising after graduation.

Assessment:

The module chairpersons and the lecturers of phase III focused on content applicable to the primary level of care and the basic activities required from a general practitioner. However, a significant part of the content in both phases II and III is still devoted to the higher levels of care. This may contribute to the problems reported by students relating to coping with the content load of the curriculum.

Objective 3: To provide the students with relevant outcomes of expected learning

The relevance of the study guidelines to the curriculum was assessed by enquiring after the students' views on this aspect:

Students' views:

Of the students in phase II, 76.7% had a high (4 and 5 on the Likert scale) opinion of the relevance of the outcomes provided in the study guide to the content of the module as presented by the lecturers, while only 54% of the phase III students rated the relevance of the study guides as high.

For the clinical rotations, only 60.5% of the students evaluating the early clinical rotations and 57.3% of the students evaluating the middle clinical rotations had a positive perception of the contribution of the written objectives to meaningful study.

The students had a more favourable perception of the phase II written objectives for expected study. The objectives of study for phase III and the clinical rotations received a poor rating. This is reflected in the free responses about the clinical rotations obtained from students, for example:

"The role of the student in the ward is not clear. It will be helpful if students are told in advance what is expected of them – what they are allowed to do, and not allowed to do, and what they should do. This should concern the execution of procedures, examination of patients etc.…"

Assessment:

The relevance of the outcomes of expected learning to the actual learning experience should be improved, with special attention being paid to phase III and the clinical rotations.

Objective 4: To provide the students with clear outcomes of expected learning

Both the module chairpersons and the students in phases II and III were asked about their perceptions of the clarity of the study outcomes. This aspect was not specifically assessed for phase I and the clinical rotations.

Chairpersons' views: Eleven out of 12 of the phase II chairpersons had a positive opinion of the clarity of the study objectives, and 18/20 of the phase III chairpersons declared to have the same positive opinion.	**Students' views:** A total of 70.4% of the students agreed that the study objectives of phase II were clearly explained/ formulated, while only 48% of the students in phase III agreed that this objective was achieved.

There is not a clear correlation between the chairpersons' and the students' views concerning the clarity of the study outcomes of phases II and III, with phase II achieving higher ratings from the students. This also coincides with the students' ratings of the relevance of the written study outcomes to the content of the module as presented by the lecturers, as discussed in 7.2.1.3.

Assessment:
Although the module chairpersons are generally satisfied with the clarity of the study objectives, the students do not describe the written outcomes of study as clearly formulated, especially for phase III.

Objective 5: To clearly prioritise knowledge so that the student can direct his/her own learning

Both the module chairpersons and students of phases II and III were asked about their perceptions of the prioritisation of the content in the modules. This objective was not specifically evaluated for the clinical rotations.

Chairpersons' views:	Students' views:
Nine out of 12 chairpersons in phase II were of the opinion that the content is adequately prioritised.	In phase II, 68.9% of the students agreed that the content is adequately prioritised.
Nine out of 20 chairpersons in phase III were of the opinion that that the content is adequately prioritised.	Only 21.9% of the phase III students agreed that the content is adequately prioritised.

There was agreement between the students' and the module chairpersons' views concerning the prioritisation of the content of phases II and III, with phase III displaying clear problems in this regard. It is clear from the above that the students were not sure about what they needed to learn in phase III, but were more confident about this in phase II. This is also reflected in some of the free responses obtained from the students in phase III, for example:

"The content load is very high, and it is difficult to remember everything because the lectures continue till very late, making it difficult to go over the whole day's work and to revise other work. It will be good if some of the work is more emphasised, so that you can remember the more important work and apply it."

Also, a more straightforward response: "*Make it more clear what we actually need to know."*

Assessment:

The content of the modules was not clearly prioritised, especially in phase III.

8.1.2 Aim: To help the student take responsibility for his/her own learning

Objective 6: To encourage the students to work independently

For phases II and III, the lecturers and students were asked about the amount of self-study sessions structured as part of other teaching activities. The students were also asked if they considered the self-study that occurred to be adequately guided, and whether they regarded the self-study as important to their success in the modules.

Self-study as a student activity is not as relevant in the clinical rotations, as the primary focus of these rotations is the acquisition of skills.

Chairpersons' views:

Six out of 12 of the phase II module chairpersons were of the opinion that their modules contained an adequate amount of self-study, while only 4/19 of the phase III chairpersons had the same opinion. Six out of 19 of the phase III chairpersons declared that self-study sessions were not represented in their modules at all.

Self-study packages had been developed for 66.7% of the phase II modules and for 40% of the phase III modules.

Students' views:

In phase II, 79.3% of the students agreed that there was 'a lot' of self-study in the modules, while 58% of the students in phase III categorised the self-study as 'a lot'.

In phase II, 65.3% of students felt that the self-study was well guided, while only 46.4% of the phase III students felt the same.

A total of 45% of the students in phase II rated the self-study as not important for success in the examination, while 39.7% of the phase III students rated self-study as unimportant.

In general, the concept of self-study was not well accepted by the students, who placed a great emphasis on the availability of notes covering all aspects of the work that they were required to learn. The following example taken from the free feedback of the students illustrates this point:

"We hate all the self-study, because we spend hours trying to find the answers in our books. We don't learn anything this way. All we do is scan the notes for the answers and not bother reading it all. So we spend wasted hours here doing self-study, where we can rather be here and study."

The following can be concluded from the above:

- Self-study sessions occurred more frequently in phase II than in phase III.
- The guidance of self-study was better achieved in phase II.
- The importance of self-study, however, remains controversial amongst the students and seems to be better appreciated in phase III than in phase II.

Assessment:

It is clear from all three sets of data that the learning activity of self-study is better utilised in phase II than in phase III. However, the self-study is not particularly well guided, and students do not regard it as very important for success in the examination.
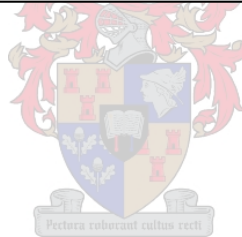
Objective 7: To encourage the students to use various learning resources other than notes taken during formal lectures

Both the module chairpersons and the students in phases II and III were asked about the variety of learning resources (including text books, journal articles, websites, handouts and other resources) utilised during the module. The respondents ticked the resources they prescribed or used for study from a possible list of different resources (including an option for 'other'), and the mean number of resources utilised was calculated for both the students and the module chairpersons of the two theoretical phases evaluated.

Module chairpersons' views:	**Students' views:**
For phase II, the mean number of resources prescribed was 4.58, while for phase III it was 5.4.	The mean number of resources used indicated by the students in phase II was 4.93 and in phase III it was 4.68, with a statistically significant difference in the students' use of the resources (see section 7.3.2).

The number of learning resources prescribed by chairpersons is relatively equal to the utilisation of these resources by the students. In general, various learning resources are utilised. This evaluation is quantitative and does not inform us about which of these prescribed resources were used by most of the students, or the extent to which such resources are utilised.

It was obvious from the study of the free responses of the students written on the back of their feedback forms that the lack of availability of notes in the form of handouts dominated their disgruntlement with some of the modules:

"No notes!!!! Had to spend half of the time looking for what we must learn. This is not an effective way of studying. Would be nice if all lectures are made available in advance in the same format in which the class is presented. Wait – I have to go looking for notes again!"

And in the instances where good notes were available, the students expressed their appreciation:

"Thank you for the good notes. Excellent system to provide the notes in advance."

Assessment:

Various learning resources are presented and utilised in the theoretical phases of the curriculum. The students remain very dependent on formal lectures and detailed notes handed out to them.

Objective 8: To make students aware of the necessity to continuously update their knowledge

The module chairpersons and lecturers were asked about the awareness of the changes in knowledge and practices in the field of medicine that they create in the modules and contact sessions for which they are responsible.

Module chairpersons' views:	Lecturers' views:
Six out of 12 phase II module chairpersons agreed that this receives adequate attention in their module.	In phase II, 26.6% of the sampled lecturers emphasised this aspect in the contact sessions.
Eleven out of 19 phase III module chairpersons agreed that this receives adequate attention in their module.	In phase III, 59.3% of the sampled lecturers emphasised this aspect in the contact sessions.

Changes in medicine may be more relevant to some modules and contact sessions than to others. An awareness of aspects of medicine that will need to be updated during the course of their careers was presented to the students, but this study did not evaluate whether the outcome of this was effective.
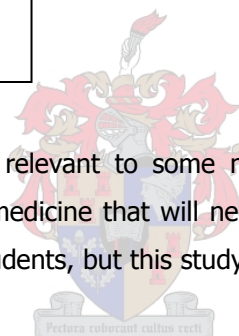
Assessment:

An acceptable level of awareness of the need to emphasise changes and the need for students to continuously update their knowledge is created by both the module chairpersons and the lecturers. This level of awareness increases from phase II to phase III. This trend is in line with the perception that clinical knowledge is more dynamic than the knowledge required in the basic subjects, for example anatomy, which form an important component of phase II.

8.1.3 Aim: To educate students in accordance with current educational approaches

Objective 9: To employ various teaching strategies in order to encourage students to have a 'deep approach' to learning

The theoretical phases (phases II and III) were evaluated in terms of the various teaching opportunities that were utilised.

Chairpersons' views:

Five out of 12 chairpersons in phase II and 9/19 chairpersons in phase III considered formal lectures to represent the majority of learning opportunities, or to be overrepresented. In general, facilitated group work and interactive sessions were perceived to be mostly suitably represented, but unfacilitated group work was not utilised a lot.

Students' views:

Students were asked about their perceptions of the representation of 'most' of the work as formal lectures. Interestingly, 20.8% of students in phase III were unsure, and fewer students in this phase than students in phase II considered this statement to be true (60.8% in phase III compared to 70.4% in phase II). This dominance of lecture-based teaching may be an indication that students do not spend enough time on individual work to develop a deep approach to learning.

Secondary analysis of the study guides:

According to the schedules in the study guides, formal lectures comprise 42.7% of learning activities in phase II and 67.3% of learning activities in phase III. Other learning activities in phase II are represented in the following way: facilitated group work 8.9%, unfacilitated group work 2.4%, self-study sessions 20.7% and interactive sessions 25.4%.

Other learning activities in phase III are represented in the following way: facilitated group work 8.2%, unfacilitated group work 0.1%, self-study sessions 9.6% and interactive sessions 14.8%.

The students' perceptions about the type of learning activities in which most of the content of the modules is presented are in contrast with the actual findings, considering the amount of content covered in self-study settings. This may be an indication of the uncertainty and ambiguity that students are experiencing regarding the importance of self-study in the theoretical phases.

Assessment:

Learning activities other than formal lectures have been much more successfully incorporated into phase II (57.3% of activities are not formal lectures) than into phase III (32.7% of activities are not formal lectures). The module chairpersons had an accurate perception of the representation of learning activities in their modules, but students were confused about the importance of the different learning activities.

Objective 10: To optimise the students' access to lecturers

This objective was evaluated by student feedback alone. Questions were formulated to evaluate the 'friendliness' of the learning environment and to determine whether students experienced a level of comfort in the classroom situation and their perceptions of the availability of lecturers. For the clinical rotations, students were asked about the assistance of staff and the level of supervision they experienced.

Students' views:

Students felt more comfortable in the learning environment created for phase III (71.5% of the students in phase III agreed that they were comfortable in the classroom compared to 63.1% of students in phase II).

However, the lecturers in phase III were viewed as less accessible to the students (43.8% of students in phase III compared to 60.4% in phase II were sure of the accessibility of their lecturers).

Regarding access to lecturers during the clinical phases: 77% of students agreed that the staff were generally willing to assist them and 73.2% of the students agreed that the level of supervision that they experienced was adequate.

From the student evaluations, it can be concluded that the two factors evaluated for phases II and III are not dependent: students may experience a comfortable learning environment without having good access to lecturers. The discrepancy in the negative answers of the students regarding the availability of the lecturers in the two phases (7.4% in phase II versus 15.3% in phase III) may be explained by the fact that the lecturers in phase III are mostly clinicians on a shared contract with the provincial administration and the university (see chapter two). Their involvement with clinical service and the limited time they have to devote to education and training may be reflected in the large percentage of students who are 'unsure' regarding their availability to answer questions (40.5%). The large percentage of students in both phases indicating uncertainty regarding this issue (32% in phase II and 40.5% in phase III) may possibly be due to the fact that these students do not attempt to approach lecturers outside of formal contact sessions and therefore feel that they cannot comment on this matter.

Assessment:

More aspects of the learning environment need to be studied, but these results indicate that, although the learning environment was generally experienced as comfortable, students' perceptions regarding the accessibility of students to lecturers was not high in phase III (43.8%). Supervision and assistance during the clinical rotations satisfied more than 70% of the students.

Objective 11: To develop the problem-solving skills of students

This objective was evaluated by using only one source of data, namely the module chairpersons. Although the lecturers were asked about the type of learning activity involved in the sessions they presented, this did not yield information specific to the development of the problem-solving skills of the students.

> **Module chairpersons' views:**
>
> Seven out of 12 of the module chairpersons in phase II and 10/19 module chairpersons in phase III agreed that problem-solving skills were adequately developed in their modules. However, 5/12 chairpersons in phase II and 9/19 in phase III were uncertain or negative about the development of problem-solving skills in their modules.

The module chairpersons' assessments of the development of problem-solving skills should be seen in relation to the type of learning activities that were presented to the students. Formal lectures do not provide adequate opportunity for the development of thought (Bligh, 2000, pp. 20 & 232), and section 7.2.3.1 confirms that the opportunity for the development of these skills may have been better in phase II, where less teaching time was spent on formal lectures.

> **Assessment:**
>
> Module chairpersons were aware of some shortfalls in the development of the problem-solving skills of students. On the other hand, a clear progression towards more theoretical problem-solving activities could not be indicated from phase II to phase III.

8.1.4 Aim: To prepare the students to function in a primary care setting after graduation

Objective 12: To present content that focuses on the knowledge required by a primary care physician

Module chairpersons of the theoretical phases II and III were asked to evaluate the representation in their modules of knowledge content relevant to primary care, as described in the Profile of the Stellenbosch Doctor.

Chairpersons' views:

Eight of the 20 topics of knowledge content listed as relevant to primary care in the 'Profile of the Stellenbosch Doctor' received an average of less than 3 when rated on a Likert scale of 1 to 5 (1 = not represented to 5 = overrepresented). These knowledge types are the following: knowledge of medically relevant mathematical concepts, special diagnostic methods, relevant legal aspects, health-related sociological factors, rehabilitation, health-related psychological factors, basic principles of research methodology, finances, management and structure of health care, and complementary medicine.

The student feedback obtained regarding the early and middle clinical rotations does not provide any information regarding the objective of presenting content focusing on the knowledge required by a primary care physician, and one could argue that the clinical rotations should rather be evaluated to establish whether relevant *skills and attitudes* are acquired by the students in these parts of the curriculum.

The results of the evaluation of objective 3 give an indication of the representation of the content of the curriculum focusing on primary care. This, taken into conjunction with the chairpersons' evaluation of the specific types of knowledge (see above) leads to the following conclusions:

- The content of phase III is more relevant to primary care than that of phase II. There was a progression in the focus on primary care in the content of the modules from phase II to phase III.
- According to the module chairpersons' feedback, a significant number (8/20) of the items of knowledge content described by the Profile of the Stellenbosch Doctor was

underrepresented in the theoretical phases. Considering the items that were identified as underrepresented, it is unlikely that these deficits could be covered later in the clinical rotations.

Assessment:

Although a progression in primary care-type knowledge from phase II to phase III could be demonstrated, gaps in the knowledge relevant to a primary care physician as described by the 'Profile of the Stellenbosch doctor' were identified in these theoretical phases of the curriculum.
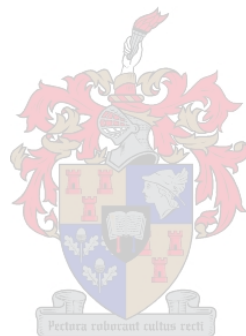
Objective 13: To teach the students about the prevention of disease

This objective was evaluated from the perspective of the module chairpersons, the lecturers and the students.

Chairpersons' views:

A clear progression could be demonstrated from phase II to phase III. Of the chairpersons, 7/12 in phase II and 16/20 in phase III declared that the prevention of disease was well represented in their specific modules.

Lecturers' views:

Of the lecturers in phase II, 30.1% indicated that disease prevention was covered or thoroughly emphasised in the contact sessions sampled, and 63.1% gave the same response for the sampled sessions in phase III.

Students' views:

The same progression was found from phase II to phase III concerning the students' perceptions of the representation of preventative medicine. In phase II, 29.9% of students agreed that preventative medicine was emphasised in the modules, while 63.3% of students in phase III agreed.

The progression achieved in this objective during the theoretical phases is logical and expected, as phase III builds clinical theory and knowledge upon the primarily basic medical science foundation presented in phase II.

A statistically significant difference between the perceptions of the three sources of data for phases II and III combined could be demonstrated (Kruskal-Wallace $p<0.01$), and the relations of these perceptions are graphically illustrated in figure 8.1.
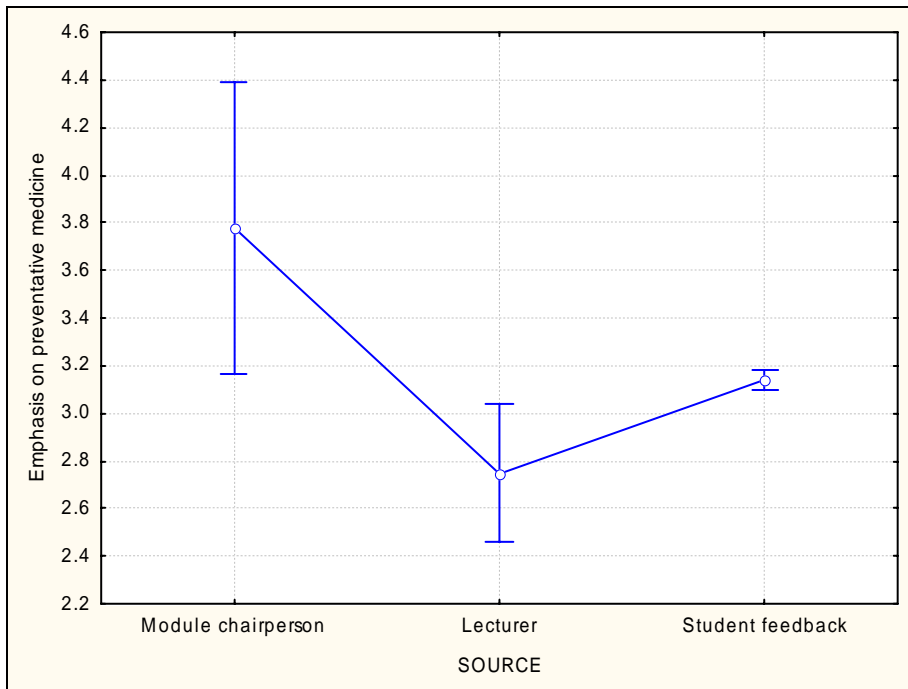
Figure 8.1: Alignment of the views of chairpersons, lecturers and students concerning emphasis on preventative medicine in the theoretical phases of the curriculum. Averages are displayed, and the error bars depict 95% confidence intervals for the averages.

Assessment:

The module chairpersons considered the emphasis placed on the prevention of disease to be higher in their modules than the rating given by the lecturers presenting the contact sessions in the modules and by the students. This objective was better achieved in phase III than in phase II, indicating a progression in this aspect of medicine through the theoretical phases of the curriculum.

Objective 14: To teach the students about rehabilitation

This objective was evaluated as part of the questionnaire administered to the students.

> **Students' views:**
>
> Only 15.8% of students in phase II and 48% of students in phase III agreed that rehabilitation was emphasised during the modules of phase II.

Compared to the students' responses to the emphasis on preventative medicine (objective 13), there was less emphasis on rehabilitation, even in phase III.

> **Assessment:**
>
> According to the perceptions of the students, rehabilitation was not clearly emphasised in the theoretical phases of the curriculum. A progression in the achievement of this objective could also not be demonstrated as clearly from phase II to phase III as was found in the achievement of previous objectives relating to clinical aspects of medicine.

Objective 15: To teach the students to approach medicine in an interdisciplinary manner, as required by primary health care

Two aspects of this objective were evaluated: the multidisciplinary team approach to medicine, and the integration of various disciplines in the modules.

The emphasis in the modules of phases II and III on the role of the interdisciplinary team approach to medicine was evaluated by inquiring after the module chairpersons' perceptions. The lecturers were also asked whether the sessions that they presented had a focus on this approach.

The number of disciplines involved in the teaching of the various modules in the theoretical phases was also calculated from the study guides. The interpretation of this data is limited by the fact that it does not reflect the qualitative contribution of the various disciplines to the modules.

Module chairpersons' views:

Five out of 12 chairpersons in phase II and 17/20 chairpersons in phase III indicated that the role of the multidisciplinary team was well emphasised in their modules.

Lecturer's views:

A total of 79.7% of the lecturers in phase II did not emphasise the multidisciplinary team approach in their sessions. The responses of the lecturers in phase III were more variable and 44.8% did not emphasise the role of the multidisciplinary team.

Secondary analysis of the study guides:

In phase II, a maximum of three different disciplines were involved in the modules (the mode of this distribution was 2), while between three and 15 disciplines contributed to the presentation of the modules in phase III (the mode of this distribution was 10).

The module chairpersons' perceptions of the emphasis on the role of the multidisciplinary team in their modules were higher than that reported by the lecturers. It is also clear that emphasis on the multidisciplinary team was more dominant in phase III. The emphasis on a multidisciplinary approach to medicine can arguably be considered more relevant to the clinical modules.

The effect of the large discrepancy in the number of disciplines involved in the two phases of the theoretical modules should be considered when interpreting some of the data concerning other objectives. This difference in the modules may, for example, make it more difficult to maintain good communication between the lecturers of the modules in phase III because of the large number of departments involved. This may make it more difficult for a module chairperson to regulate the implementation of a module.

Assessment:

An emphasis on an interdisciplinary approach to medicine was achieved better in phase III than in phase II, which is considered appropriate in the light of the clinical content of the modules in phase III. This finding correlates with the quantitative calculation of the number of disciplines involved in the modules of phase III. The objective of presenting the programme in an interdisciplinary manner was achieved in phase III, but less so in phase II.

Objective 16: To incorporate general practitioners in the presentation of the curriculum in order to provide a primary care perspective to health care

For the theoretical phases, the module chairpersons were asked to indicate the number of sessions in their modules presented by general practitioners. The study guides for the clinical rotations make it clear that the early and middle clinical rotations are presented by departments of which the teaching staff is made up of medical specialists and specialists-in-training (registrars). Some departments employ medical officers (qualified doctors without specialised training in a specific discipline), but as they only work in one specialised department, they can strictly speaking not also be regarded as general practitioners.

> **Chairpersons' views:**
> In total, the chairpersons indicated that general practitioners presented only 31 of the 1 806 contact sessions structured for the two theoretical phases.

During the planning process of the 1999 curriculum in medical education and training, the argument was put forward that general practitioners should be included in the curriculum in order to increase the relevance of content to general practice and to avoid an overload of specialised knowledge. If this argument is valid, the specialisation of the lecturers presenting the sessions may lie at the root of the incomplete implementation of some of the other objectives of the 1999 curriculum, more specifically objective 2, '*To present relevant knowledge to students at the undergraduate level*', and objective 12, '*To present content that focuses on the knowledge required by a primary care physician*'.

Problems associated with specialist teaching were expressed by some the free text responses of the students, of which the following is an example:

> "*There were many excellent lecturers and they wish to excite interest in their field. The result is that we are overwhelmed with a lot of extra knowledge, which is good, but unnecessary. Therefore we are confused, because they do not necessarily concentrate in what is in the outcomes.*"

> **Assessment:**
> General practitioners present an almost insignificant number of the contact sessions in the theoretical blocks, and the majority of the early and middle clinical rotations are conducted in a departmental setting staffed by specialists and specialists-in-training (and not by general practitioners).

8.1.5 Aim: To foster and sustain diversity in the student population

Objective 17: To develop the criteria for admission to and selection for the medical programme in order to increase the number of previously disadvantaged students

The main emphasis here was to determine whether the admission criteria had been adjusted in order to meet the condition of changing the profile of the students admitted to the programme. The impact of the changed criteria (whether the student admission profile is actually changing) cannot be adequately evaluated by the data for 2002 and 2003. A longer evaluation period will be required to evaluate this.

Secondary analysis of selection criteria and admission statistics for 2002 and 2003:

The selection criteria were updated during both of the years of data collection to allow more students from previously disadvantaged communities to be eligible for selection for the programme. The low number of these applicants who qualified for selection for the programme constituted a barrier to the impact that a change in selection criteria could effect.

Of interest is the gender profile of the students (58.7% female in 2002, 59.9% female in 2003). This follows international trends in medicine, as well as in certain other career-orientated programmes (Hill, 2004).

Assessment:

It is possible that the change in admission criteria proposed as part of the planning of the curriculum may not be sufficient to change the racial profile of the students up to the level of being representative of the South African population, and that additional measures need to be considered to attain this goal.

Objective 18: To support the learning of previously disadvantaged students

An academic support programme was implemented together with the implementation of the 1999 curriculum. This programme basically extended the first year of students needing academic support to two years, and students in this programme re-entered the 'mainstream' of the curriculum as second-year students after two years of study. A tutor-mentor programme and language support programmes were also in place to support learning.

Assessment:

Academic support programmes were operational during the period of data collection, but data supporting an evaluation of the success of this programme, including an assessment of the performance of the students upon re-entry into the 'mainstream' programme following completion of the extended tract, were not available at the time of writing this thesis. In general, the issue of supporting the learning of academically disadvantaged students was receiving attention, but the impact of these efforts warrants evaluation at a later stage.
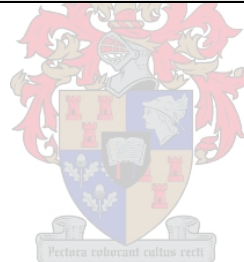
8.1.6 Aim: To be responsive to the current socio-political environment

Objective 19: To train the student in both state-owned and privately-owned facilities in order to expose the students to the health needs of different sections of society

Data concerning the use of facilities not owned by the university or state were collected from the module chairpersons. No such use was reported.

Assessment:

This objective was not met.

Objective 20: To provide a basic knowledge of alternative medicine

Module chairpersons and students were asked to provide data regarding the inclusion of aspects of alternative medicine into the knowledge content of the curriculum.

Module chairpersons' views:

No chairpersons in phase II and only two module chairpersons in phase III reported the inclusion of aspects of alternative medicine in their modules.

Students' views:

A total of 7.8% of students in phase II and 14.8% of students in phase III confirmed that they received content dealing with aspects of alternative medicine during the course of the modules.

The perceptions of the students confirm the module chairpersons' report regarding the presence of some content dealing with alternative medicine, although at a very low level.

Assessment:

The module chairpersons reported that aspects of alternative medicine were introduced into some modules (only two) of the more clinically-orientated theoretical phase of the curriculum (phase III). The feedback obtained from the students confirmed this low level of implementation of this objective.

8.1.7 Aim: To equip the student to deal with the changing profile of patients and their diseases as encountered in their intended working environment

Objective 21: To present the student with adequate learning material regarding HIV and its related diseases

HIV and its associated diseases were recognised as an emerging challenge to health care during the planning stages of the 1999 curriculum (see chapter five) and included as a specific objective for the implementation of the curriculum.

Chairpersons, lecturers and students were asked about the inclusion of this topic in the content of the curriculum.

Chairpersons' views:
Seven out of 12 chairpersons in phase II and 15/20 chairpersons in phase III stated that HIV and its related diseases were covered in their modules.

Lecturers' views:
Of the contact sessions sampled in phase II, 18.9% contained content relating to HIV and its related infections, and 29.1% of the contact sessions sampled in phase III contained content on the subject.

Students' views:
A total of 14.4% of students in phase II agreed that HIV and its related diseases received emphasis in this phase, while 61.3% agreed that emphasis was placed on this topic in phase III.

Figure 8.2 illustrates the alignment between the views of the various sources of data concerning phases II and III of the curriculum. There is statistical significance between the views of the three sources of data (Kruskal-Wallace $p<0.01$).
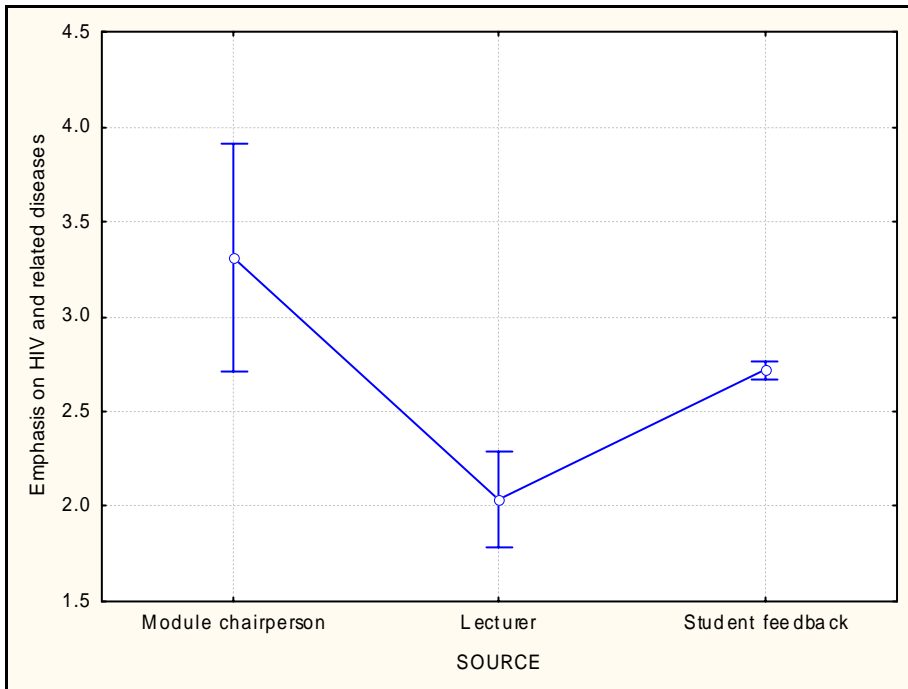
Figure 8.2: Alignment of the views of chairpersons, lecturers and students on the emphasis placed on HIV and its related diseases in the theoretical phases of the curriculum. Averages are shown, and the error bars denote a 95% confidence interval for the mean.

Module chairpersons overestimated the emphasis on HIV and its related diseases compared to what lecturers declared to have actually presented in the contact sessions. Students expressed a greater awareness of emphasis on the topic than what was declared by the lecturers.

> **Assessment:**
> Emphasis on HIV and its related diseases could be illustrated in both of the theoretical phases (with the greater emphasis occurring in phase III). However, no alignment could be illustrated between the module chairpersons' planning of the module, the actual delivery of the module by the lecturers, and the learning experiences of the students.

Objective 22: To present the student with adequate learning material regarding trauma

The perceptions of the chairpersons, the lecturers presenting the sampled contact sessions and the students concerning the emphasis placed on trauma in the various modules of the theoretical phases were compared.

Chairpersons' views:
Nine out of 12 chairpersons in phase II and 14/20 chairpersons in phase III stated that trauma was covered in their modules.

Lecturers' views:
Of the contact sessions sampled in phase II, 25.7% contained content relating to trauma, and 30.2% of the contact sessions sampled in phase III contained content on the subject.

Students' views:
A total of 29% of students in phase II agreed that trauma received emphasis in this phase, while 59% agreed that emphasis was placed on this topic in phase III.

A statistically significant difference existed between the views of the chairpersons, lecturers and students (Kruskal-Wallace $p<0.01$) on the presence of this aspect in phases II and III of the curriculum. The alignment between these various views is graphically illustrated in figure 8.3.
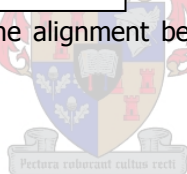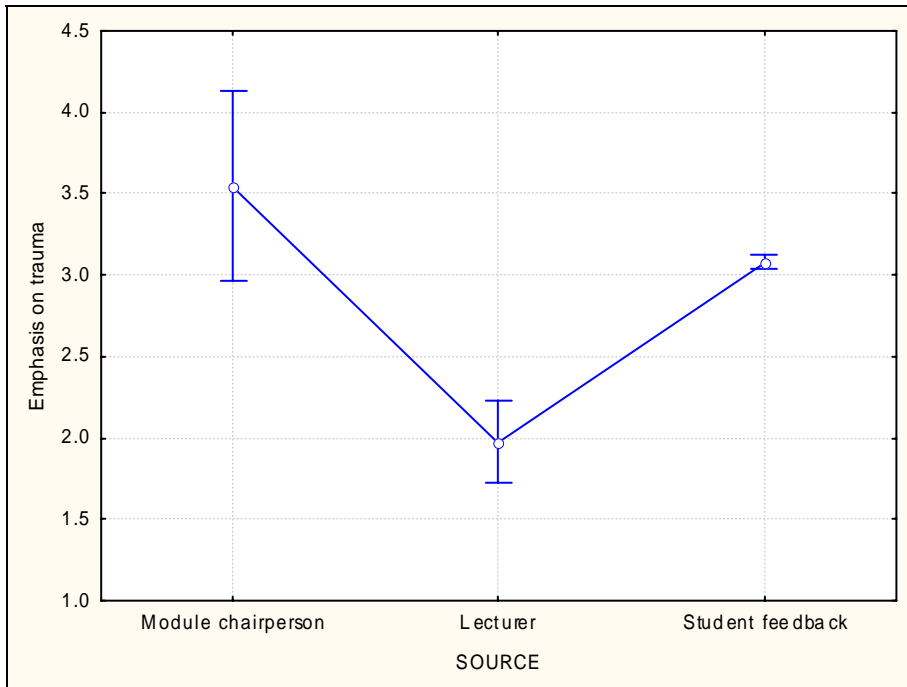
Figure 8.3: Alignment of the views of chairpersons, lecturers and students concerning emphasis placed on trauma in the theoretical phases of the curriculum. Averages are shown, and the error bars depict a 95% confidence interval for the mean.

As in the case of the previous objective (the emphasis on HIV and its related diseases), the module chairpersons expressed a more positive perception about the emphasis on trauma in the modules than the lecturers. The students' perception of the emphasis placed on trauma is greater than that of the lecturers, but still falls short of the perception of the module chairpersons.

Assessment:

The results show that trauma was emphasised in both of the theoretical phases, and more so in phase III (as can be expected). The extent to which such an emphasis was achieved remains debatable, as an alignment could not be established between the module chairpersons' planning of the module and the presentation of the module by the lecturers.

8.1.8 Aim: To educate and train the student according to a bio-psychosocial model of medicine

Data relating to the dimensions of the bio-psychosocial model identified in chapter five were obtained from chairpersons, lecturers and students. These dimensions are represented by the following objectives:

- **Objective 23: To educate the student about the influence of the environment on health**
- **Objective 24: To educate the student about the influence of the patient's mental state on health**
- **Objective 25: To educate the student about the influence of culture on health**
- **Objective 26: To educate the student about the influence of disease on society**
- **Objective 27: To educate the student about the broader impact of diseases on the family unit**

The results obtained from the three data sources can be summarised and compared as follows:

Chairpersons' views (see table 7.21)**:** Although some of the module chairpersons in phase II declared an emphasis on the dimensions contained in objectives 23 to 27, there was a clear progression to phase III, with the majority (16 or more of the 20 module chairpersons) declaring these objectives to be either covered or thoroughly emphasised in their modules.	**Lecturers' views** (see table 7.29)**:** The dimensions of the bio-psychosocial model were better represented in the contact sessions in phase III than in phase II. For phase II, the percentage of lecturers reporting the sampled contact sessions to contain aspects of the dimensions of the bio-psychosocial model dropped below 20%. More than 50% of the lecturers in phase III indicated attention to each of these dimensions in the combined sessions presented in phase III.

Students' views (see Table 7.49)**:**

Students reported a better representation of dimensions of the bio-psychosocial model in phase III than in phase II. Health in a cultural context was slightly less represented than the other dimensions in both phases II and III.

Student data regarding objectives 26 and 27 were combined into a single item in the questionnaire. Unfortunately, this made it impossible to compare the answers obtained from the three groups on these two objectives. For all the other objectives forming part of this aim, a statistically significant difference could be indicated in the perceptions of the three data sources for phases II and III combined (Kruskal-Wallace $p<0.01$ in the case of objectives 23, 24 and 25).

Graphic representations of each of these comparisons are presented in figures 8.4, 8.5 and 8.6.

Figure 8.4: Alignment of the views of chairpersons, lecturers and students concerning emphasis placed on the influence of the environment on health in the theoretical phases of the curriculum. Averages are shown and the error bars depict a 95% confidence interval for the mean.
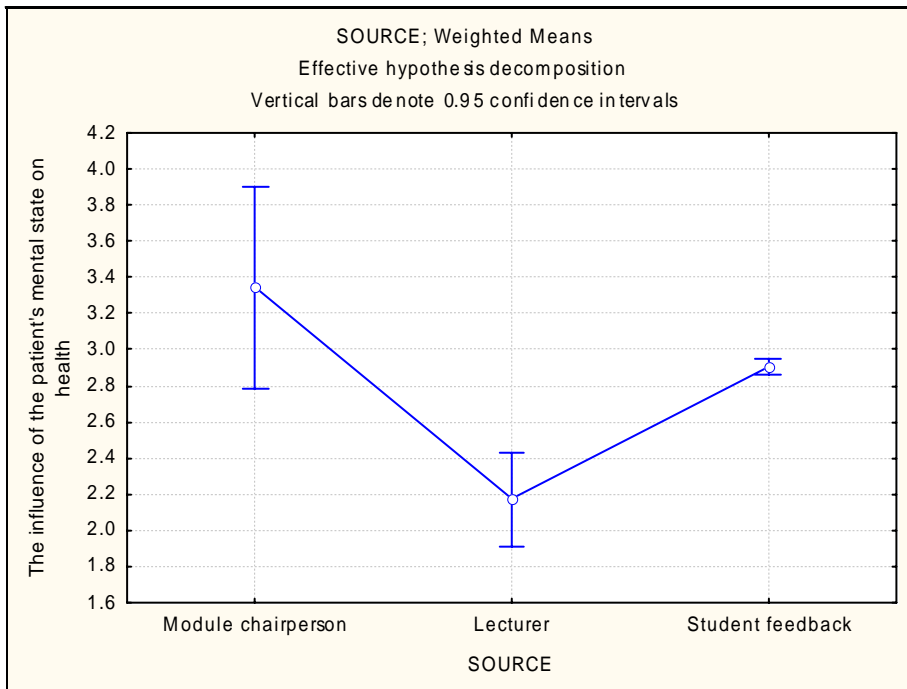
Figure 8.5: Alignment of the views of chairpersons, lecturers and students concerning emphasis placed on the influence of the patient's mental state on health in the theoretical phases of the curriculum. Averages are shown and the error bars depict a 95% confidence interval for the mean.
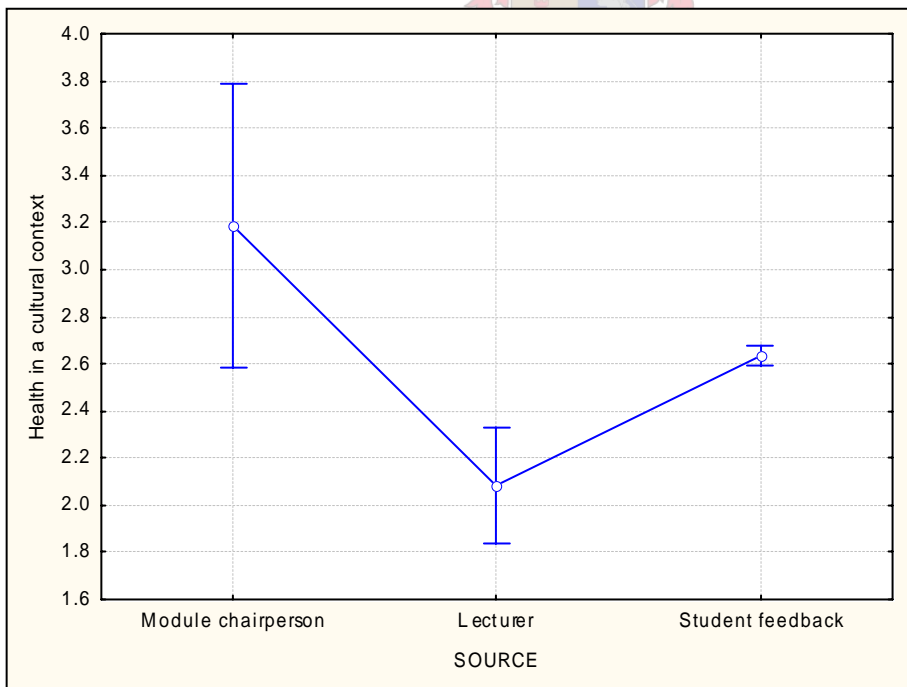
Figure 8.6: Alignment of the views of chairpersons, lecturers and students concerning emphasis placed on health in a cultural context in the theoretical phases of the curriculum. Averages are shown and the error bars depict a 95% confidence interval for the mean.

Figures 8.4, 8.5 and 8.6 follow a similar pattern: the module chairpersons rated the dimensions of the bio-psychosocial model higher than the lecturers that presented the sessions. This may indicate that the intention of incorporating the dimensions of the bio-psychosocial model was not implemented by the lecturers. The students, however, gave a more positive indication that these dimensions were covered in the modules.

Assessment:

The identified dimensions (as described in objectives 23 to 27) of the bio-psychosocial model were addressed in phases II and III, but these dimensions were more clearly addressed in phase III. However, the perceptions of the three sources of data (chairpersons, lecturers and students) demonstrate a statistically significantly difference for the objectives for which statistical significance could be calculated (objectives 23 to 25). Chairpersons gave a more positive indication of the emphasis on the dimensions of the bio-psychosocial model in the modules compared to the responses of the lecturers and the students.
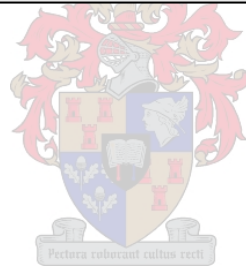
8.1.9 Aim: To educate the student regarding personal accountability

Objective 28: To provide the student with a relevant education in the field of ethics

Data concerning the presentation of ethical issues as part of the content of the theoretical modules were collected from the chairpersons, the lecturers responsible for the sampled contact sessions and the students.

Chairpersons' views:	**Lecturers' views:**
Seven out of 12 chairpersons in phase II and 18/20 chairpersons in phase III considered ethical aspects to be covered or thoroughly emphasised in their modules.	A total of 20.3% of lecturers in phase II and 53.5% of lecturers in phase III reported ethical aspects to be emphasised in the sampled contact sessions that they presented.

Students' views:

Thirty-five percent of students in phase II and 66.4% of students in phase III agreed that ethics was emphasised in the various modules making up the two theoretical phases.

Although the subject of ethics was not addressed in the standard student feedback obtained for the clinical rotations, the following free response obtained from the student feedback forms regarding the clinical rotations provides comment on the students' exposure to ethical issues during the theoretical phases:

> "*The projects were too many to cope with and some tasks (like Ethics) were silly to*
> *ask us to write about (we've already has so many lectures on Ethics that I think we*
> *can all recognise an ethical issue when we come across one).*"

A statistically significant difference between the views of the various data sources for phases II and III could once again be illustrated (Kruskal-Wallace p<0.01). Figure 8.7 illustrates the variation in the views of the module chairpersons, the lecturers and the students regarding the emphasis on ethical aspects in the theoretical modules.
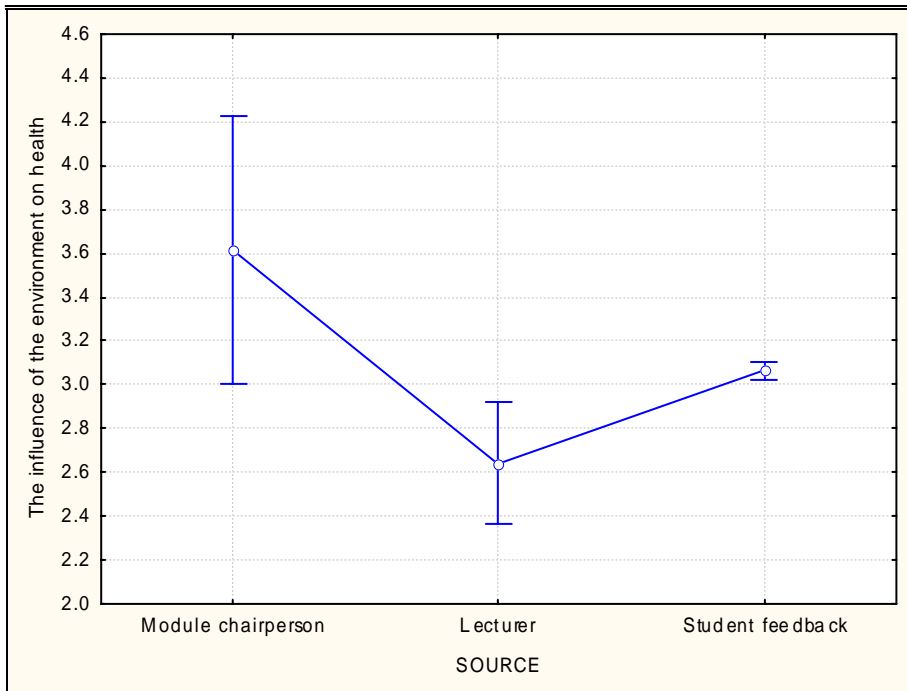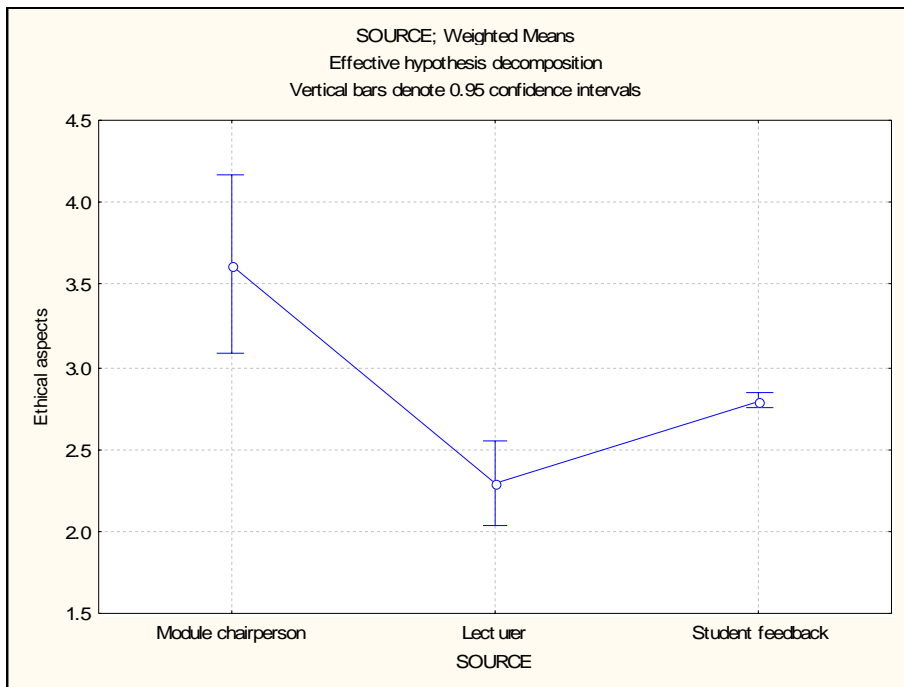
Figure 8.7: Alignment of the views of chairpersons, lecturers and students concerning emphasis placed on ethical aspects in the theoretical phases of the curriculum. Averages are shown and the error bars indicate a 95% confidence interval for the mean.

Assessment:

Ethical aspects in the practice of medicine were dealt with during the theoretical phases of the curriculum, as well as in the early and middle clinical rotations as appropriate to bedside teaching. Module chairpersons reported more positively on the representation of ethical issues in the modules than the lecturers and students.

8.1.10   Aim: To increase the efficiency of the curriculum in terms of costs and other resources

Objective 29: To also use existing facilities outside the main teaching hospital in order to meet the needs of the curriculum

Module chairpersons were asked about the use of facilities that did not form part of the Faculty of Health Sciences in their respective modules in the theoretical phases. No items on the student questionnaires related specifically to off-campus facilities, but students frequently commented on this aspect of their experience of the middle and late clinical rotations.

> **Chairpersons' views:**
>
> Only three module chairpersons in phase III reported the use of facilities that did not form part of the Faculty of Health Sciences. In these three modules, the amount of contact sessions that took place in facilities outside the Faculty of Health Science was 8, 10 and 15% of the total number of contact sessions respectively.

Most of the opportunities for students to work outside the Tygerberg campus were provided during the clinical rotations, particularly during the Obstetrics rotation and in Family Medicine. Students responded to the learning opportunities and conditions encountered off campus in various ways.

Students' views:

This objective was not evaluated by a formulated question, but students commented on their experiences at peripheral sites in the free feedback on the clinical rotations. Most of the free-response comments obtained from the student feedback concentrated on the lack of equality of learning opportunities encountered at peripheral sites:

"The standards in Paarl, Worcester and HH (Hottentots Holland) *Hospitals differ drastically. I feel that students have equal rights to learning opportunities."*

"After my visit to a peripheral hospital (where I worked hard, and it was fun) I was disappointed when I had only 2 opportunities to be on call at Tygerberg …"

"During the clinical rotation, some students are send (sic) *to Brooklyn Chest Hospital. They are forces to miss tutorials and oorgeerondtes* (ward rounds to hand over to staff working the next shift)*. It is unfair that certain students are send to BCH for two weeks whereas other students are allowed to stay at TBH for the full 4 weeks.'*

Concern was also expressed over the conditions and lack of good organisation encountered at some of the sites:

"The road maps to the clinics are not good enough. Especially girls that may get lost on their own is DANGEROUS!!"

Assessment:

The use of off-campus or outside teaching facilities had materialised to only a very small extent in the theoretical phases during the time of data collection. Some students rotating through off-campus sites as part of their middle or late clinical rotations expressed their concern regarding equal learning opportunities at the various sites, as well as regarding poor and even unsafe conditions encountered at these sites.

Objective 30: To use lecturers not employed full time by the university in order to fulfil the needs of the new curriculum

Module chairpersons were asked to report on the number of lecturers not affiliated to the university who are involved in the presentation of the theoretical modules.

Chairpersons' views:

Seven out of 744 contact sessions in phase II and 163/1 062 contact sessions in phase III were presented by 'outside' lecturers during the period of data collection.

Assessment:

Outside lecturers were used with greater frequency in phase III than in phase II.

This concludes the collation and comparison of data from the various sources according to the identified objectives. In the following section, a curriculum scoreboard is set up to narrow the analysis of the data down to a format in which implementation can be directly compared to the aims identified during the planning phase of the 1999 curriculum.
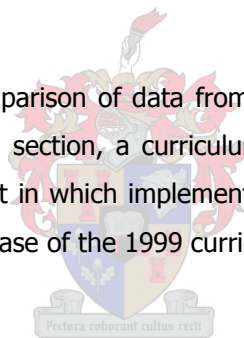
8.2   CURRICULUM SCOREBOARD

The analysis of the data collected relating to the implementation of the curriculum can now be taken one step further by making a direct comparison between the implementation and the planning of the curriculum. This is summarised in a 'curriculum scoreboard,' presented in Table 8.1.

In this scoreboard, the aims and objectives as they were identified during the clarification evaluation described in chapter five are listed in the first two columns. At this stage, it is appropriate to remind the reader that the objectives identified as dimensions of each aim were derived from the documentation of the planning process of the 1999 curriculum as part of the clarification evaluation. I therefore do not claim that the identified objectives are exhaustive of the aims. I refer the reader back to chapter five for a critical analysis and evaluation of the aims and objectives formulated for the purpose of this study.

A brief summary of the implementation of each objective is given in the third column of the scoreboard. This summary is derived from the data collected for this study, as described in chapter seven and collated and further analysed in the first section of this chapter.

The final column of the scoreboard contains a judgment on the implementation of the aims, based on an assessment of the level of achievement of each objective. The judgment is expressed in terms of the classification used by the HEQC in the accreditation of all the MBA programmes offered in South Africa in 2003 (Council on Higher Education, 2003b). The classification was formulated as an evaluation instrument for an accreditation process and, although the outcome of the evaluation leads to accreditation in the case of MBA programmes, the instrument is flexible enough to be validly transferred for the purpose of formulating a judgment of this evaluation.

The HEQC formulates its judgment on criteria of merit that can be expressed as one of the following four possibilities (Council on Higher Education, 2003b, p. 10):

- If each criterion statement is generally met, the outcome is classified as "Meets minimum standards".

- If each criterion statement is generally exceeded, the outcome of the evaluation is classified as "Commend".

- If each criterion statement is generally not met, the outcome is classified as "Needs improvement".

- If each criterion statement is not met at all, the outcome is classified as ""Does not comply".

The criterion statements used by the HEQC for the evaluation of MBA programmes were developed in consultation with representatives of business schools, by comparison with international accreditation systems and within the framework of the HEQC's audit and accreditation frameworks (Council on Higher Education, 2003b, p. 8). For the purpose of formulating judgments on the achievement of the aims defined by the clarification evaluation of the 1999 curriculum in medical education and training, the objectives described for these aims will serve as the equivalent of the notion of 'criterion statements', and the results of the implementation evaluation will provide the basis for judging whether these objectives have been met.
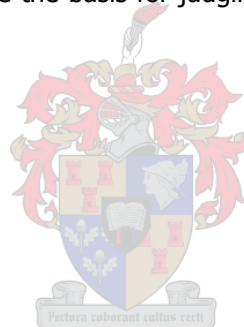
Table 8.1: A scoreboard for the 1999 curriculum: comparing implementation with the aims and objectives that were planned

Aim	Objective	Implementation	Judgment and discussion
To help the student deal with the content load of the curriculum	To present a manageable content load to the student	Fewer than 50% of students in the theoretical phases of the curriculum consider the content load to be manageable In phase II, there is a mismatch between the module chairpersons' and the students' perceptions regarding the amount of work involved	**Needs improvement** Students perceived the content load to be difficult to manage. The identified overload relates to content dealing with the secondary and tertiary levels of care, the study outcomes that can be improved in order to improve the students' perceptions of its relevance and clarity, and the failure to clearly prioritise knowledge, especially in phase III of the theoretical phase of the curriculum Alignment is not satisfactory
	To reduce the amount of irrelevant knowledge conveyed to students at the undergraduate level (At the undergraduate level, the majority of content should be directed at the primary level of care)	Although there was a clear progression from phase II to phase III in the amount of content focusing on primary care, a heavy weight of content focusing on secondary and tertiary levels of care remained	
	To provide the students with relevant outcomes of expected learning	Students in general did not have a high opinion of the relevance of the study objectives provided	
	To provide the students with clear outcomes of expected learning	The students identified the clarity of the study guides as an aspect that could be improved	
	To clearly prioritise knowledge so that the student can direct his/her own learning	More attention to the prioritisation of knowledge is given in phase II than in phase III, where a serious problem regarding the students' ability to prioritise is identified by both the module chairpersons and the students	

Aim	Objective	Implementation	Judgment and discussion
To help the students take responsibility for their own learning	To encourage the students to work independently in the form of structured and well-guided self-study	More self-study was organised in phase II than in phase III. Self-study was also better guided in phase II. However, the students underestimated the importance of self-study in both of the theoretical phases	**Meets minimum standards** Phase III did not build upon the foundation laid by phase II concerning the development of the students' ability to undertake independent learning, as less self-study was organised during phase III than during phase II. However, students in phase III utilised statistically significant more sources of learning. Lecturers and chairpersons indicated attempts to create awareness in the students to accept responsibility for their future learning, but the long-term outcome of this could not be evaluated by this study Alignment is satisfactory
	To encourage the students to use various learning resources other than notes taken during formal lectures	Various sources (an average of more than four per module) were used throughout the theoretical phases. The number of resources utilised by students is relatively equal to the number of resources prescribed for the module by the chairpersons	
	To make students aware of the necessity to continuously update their knowledge	Lecturers and module chairpersons expressed an increasing level of awareness of this objective from phase II to phase III	

Aim	Objective	Implementation	Judgment and discussion
To educate students in accordance with current educational approaches	To employ various teaching strategies in order to encourage students to have a deeper approach to learning	The formal lecture was still the main method of teaching employed in phase III. However, students still perceived the formal lecture in phase II to be more important than the other teaching strategies employed	**Meets minimum standards** Students in phase II regarded the formal lectures as the most important learning activity, despite the variety of teaching strategies presented. In phase III, less variety in teaching strategies was presented. The students' perceptions of the accessibility of lecturers indicate that this aspect of the learning environment can be improved and merits further study. Progression in problem-solving skills between the two theoretical phases of the curriculum could not be demonstrated by this study Alignment is satisfactory
	To optimise the students' access to lecturers	Although the students are mostly comfortable with the lecturers, students did not have a positive perception of the accessibility of lecturers in phase III.	
	To develop the problem-solving skills of students	The expectation that problem-solving activities should progressively increase from phase II to phase III was not realised	

Aim	Objective	Implementation	Judgment and discussion
To prepare the students to function in a primary care setting after graduation	To present content that focuses on the knowledge required by a primary care physician	All of the types of knowledge relevant to a primary care physician were not adequately covered during the theoretical phases of the curriculum	**Meets minimum standards** Some of the groundwork had been laid to prepare students for practice in a primary care setting. Certain types of knowledge identified in the Profile of the Stellenbosch Doctor were not adequately addressed in the theoretical phases. Students had little contact with general practitioners as teachers and role models during the part of the curriculum that was evaluated
	To teach the students about the prevention of disease	This was progressively achieved from phase II to phase III	
	To teach the students about rehabilitation	This aspect was emphasised less in the theoretical phases than prevention, and a clear progression from phase II to phase III could not be indicated	Alignment is satisfactory
	To teach the students to approach medicine in an interdisciplinary manner, as required by primary health care	Interdisciplinary teaching was mainly achieved in phase III	
	To incorporate general practitioners in the presentation of the curriculum in order to provide a primary care perspective to health care	Some general practitioners were incorporated in the teaching of phase III, but the vast majority of the teaching remained the responsibility of specialised medical personnel	

Aim	Objective	Implementation	Judgment and discussion
To foster and sustain diversity in the learning environment	To develop the criteria for admission to and selection for the medical curriculum in order to increase the number of previously disadvantaged students	Admission criteria were adjusted in order to be more representative of the South African population	**Needs improvement** Admission criteria alone may not be sufficient to adjust the racial profile of the students admitted to the curriculum. The outcome of the academic support programmes needs to be evaluated over a longer period Alignment is not satisfactory
	To support the learning of previously disadvantaged students	Support programmes for academically disadvantaged students were in place	
To be responsive to the current socio-political environment	To train the student in both state-owned and privately-owned facilities	This objective was not implemented	**Needs improvement** The objective of training students in facilities not owned by the university or state needs to be reassessed regarding its relevance to the curriculum. The main emphasis of the curriculum remained allopathic medicine, with marginal content reserved for alternative medicine Alignment is not satisfactory
	To provide a basic knowledge of alternative medicine	Alternative medicine was introduced in phase III, but not to a great extent	
To equip the student to deal with the changing profile of patients and their diseases	To present the student with adequate learning material regarding HIV and its related diseases	Content regarding HIV and its related diseases was presented during the theoretical phases	**Meets minimum standards** There is a clear progression regarding the amount of content devoted to these two objectives from phase II to phase III. The module chairpersons perceived more content to be devoted to HIV and its related diseases and trauma than was achieved by the lecturers and perceived by the students Alignment is satisfactory
	To present the student with adequate learning material regarding trauma	Content focusing on trauma was presented during the theoretical phases.	

Aims	Objectives	Implementation	Judgment and discussion
To educate and train the student according to a bio-psychosocial model of medicine	To educate the student about the influence of the environment on health	An emphasis on environmental influence was reported in both of the theoretical phases, increasing progressively from phase II to phase III	**Commend** All aspects of the bio-psychosocial profile were covered, with more emphasis in phase III. Module chairpersons had a more positive perception regarding the implementation of this aspect in the modules than lecturers and students
	To educate the student about the influence of the patient's mental state on health	An emphasis on the influence of the patient's mental state on health was reported in both of the theoretical phases, increasing progressively from phase II to phase III	
	To educate the student about the influence of culture on health	An emphasis on the influence of cultural aspects on health was reported in both of the theoretical phases, increasing progressively from phase II to phase III. This was emphasised less than some of the other aspects of the bio-psychosocial model	Thorough alignment has been achieved
	To educate the student about the influence of disease on society	An emphasis on the influence of disease on society was reported in both of the theoretical phases, increasing progressively from phase II to phase III	
	To educate the student about the broader impact of diseases on the family unit	An emphasis on the broader impact of diseases on the family unit was reported in both of the theoretical phases, increasing progressively from phase II to phase III	

Aims	Objectives	Implementation	Judgment and discussion
To educate the student regarding personal accountability	To provide the student with a relevant education in the field of ethics	Ethical issues were introduced in both theoretical phases, but more prominently in phase III. Certain of the clinical rotations devoted specific attention to these issues, while bedside teaching often includes ethical dilemmas	**Commend** A general awareness of ethical issues in medicine could be discerned, which should enable students to deal better with issues regarding personal accountability Thorough alignment has been achieved
To increase the efficiency of the curriculum in terms of costs and other resources	To use existing facilities outside the main teaching hospital in order to fulfil the needs of the curriculum	This had not materialized effectively in the theoretical phases of the curriculum. Early and middle clinical rotations took place at peripheral sites, but this was not applied uniformly and students did not receive equal opportunities to rotate through all the sites	**Does not comply at the time of data collection.** There is no overwhelming evidence produced by this study that a huge effort had been made during the period of data collection to address issues of efficiency according to the two identified objectives. However, as it is foreseeable that these objectives can be more successfully met during the clinical rotations, this aim could not be adequately evaluated during the time frame of this study Alignment has not been achieved
	To use lecturers not employed full time by the university in order to fulfil the needs of the curriculum	The majority of contact sessions presented by 'outside' lecturers occurred during phase III. Staff not employed by the university were involved in some of the clinical rotations at peripheral sites	

8.3   SUMMARY AND CONCLUSIONS

In this chapter, I presented a synthesis of the data collected from the four sources of data (module chairpersons, lecturers, students and secondary analysis of documents) on two levels. The first level, presented in the first section (8.1), contrasted the perceptions of the data sources with each other in cases where more than one source was utilised to gather information regarding a specific objective of the curriculum. Conclusions regarding this overview of the different viewpoints were drawn and presented as an assessment of each outcome.

In the second level of analysis, presented in section 8.2, a curriculum scoreboard was drawn up, further distilling the data to reach conclusions regarding the degree to which the original aims, as planned, were met by the implementation of the curriculum. The results were presented in the form of a curriculum scoreboard.

From this scoreboard, possible strengths and weaknesses can be picked up when the implemented curriculum is aligned with the planned curriculum. It is clear that the curriculum (the parts that were evaluated) was overloaded with content, making it more difficult for students to appreciate alternative learning activities, especially as presented in phase II of the curriculum. The volume of content that has to be learnt has an influence on the students' approaches to learning. A high volume of content leads to a lack of opportunity to pursue subjects in depth, and in this way surface learning is encouraged (Gibbs, 1992).

There are strong indications that a focus on primary care was achieved during the theoretical phases of the curriculum. A sufficient exposure to primary health care settings is needed during the early, middle and late clinical rotations to complete the preparation of the students to function effectively in a primary health care setting. However, the time frame of this study did not allow the complete set of clinical rotations to be evaluated.

The successful emphasis on a bio-psychosocial model of medicine can be regarded as one of the strengths of this curriculum. All role players expressed a high level of awareness of the identified dimensions of this model. The long-term effect of this model on the performance of the graduates will be well worth studying.

Finally and most importantly, it must be considered that a curriculum is not cast in concrete. A curriculum is a dynamic entity, and the aims and objectives described for a curriculum need to be

continuously reassessed and brought up to date.[49] The results of an implementation may inform the process of continuously improving and adjusting the curriculum. This latter process, however, was not addressed in this cross-sectional study.

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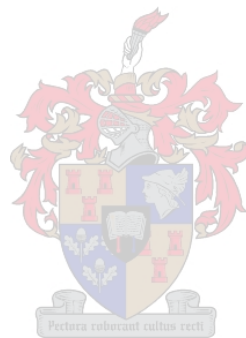
[49] This is the basic principle underlying the concept of a quality cycle described by the Higher Education Quality Commission (HEQC) (Council on Higher Education, 2003, p. 8).

CHAPTER 9: CONCLUSION

In this study, I have used the methods of programme evaluation within the broader context of quality assurance. I have illustrated the use of this method through empirical work focusing on a section of the curriculum for medical education and training offered by the Faculty of Health Sciences of the University of Stellenbosch.

The relevance of this study was set against the following background:

A new curriculum for medical education and training medicine was instituted at the beginning of 1999 because of considerable pressure due to changes in the education environment. These changes were elements such as globalisation, changes in the concepts used in learning and teaching, an increasing emphasis on social responsiveness and accountability, as well as, and specifically, local and international trends in medical education (see chapter two, section 2.2).

The previous curriculum was discipline based and organised by the departments responsible for the various disciplines. The system-based organisation of the new curriculum for medical education and training was integrated between the disciplines and departmental responsibilities became fragmented. This merited a change in the way in which curriculum implementation was monitored.

Furthermore, reforms in higher education brought about increasing demands for accountability, which were formalised in policy during the final decade of the twentieth century. It became clear that accreditation practices would have to be given a much higher priority in the future, and that the previously peer-driven accreditation systems would have to conform to a new, national higher education system of quality assurance under the auspices of the Higher Education Quality Commission (HEQC).

As a researcher, I am not impartial to the object of this evaluation. I have been a lecturer in the present and the previous curriculum and, in this way, can be said to have a vested interest in the outcome of this evaluation. The goal of this evaluation, however, was not to form a judgment of the curriculum, but rather to examine ways in which the quality assurance of the curriculum could be implemented in order to inform curriculum adjustment and planning. Quality assurance should first and foremost benefit the institution itself and not be implemented for the sake of

external audits (Wilkinson, 2003). This benefit can be achieved by rooting quality assurance in curriculum evaluation that suits a particular programme and has a dynamic interaction with that programme.

9.1 THE METHODOLOGY OF THIS STUDY

The implicit theories underpinning the new curriculum in medical education and training introduced by the Faculty of Health Sciences of the University of Stellenbosch in 1999 were examined using the method of clarification evaluation. A Logic Model was formulated for the curriculum as a product of the clarification evaluation and used as an analytic tool to make the planning and implementation of the curriculum more explicit. As part of the Logic Model, the specific aims and objectives of the curriculum were formulated. This answered the first research question ("What are the implicit theories underpinning the new curriculum in medical education and training introduced by the Faculty of Health Sciences of the University of Stellenbosch in 1999?")

The second research question ("Is the theoretical framework of this curriculum aligned with current trends in medical education and training?") was answered by evaluating the identified aims of the curriculum, firstly in terms of its relevance to the then current literature on medical curricula. The planning process was also evaluated by aligning the aims of the Logic Model with the longer term outcomes stated in the Profile of the Stellenbosch Doctor that was formulated by the Faculty of Health Sciences during the planning of the 1999 curriculum.

The second part of the study consisted of the implementation evaluation of the theoretical phases and the early and middle clinical rotations of the 1999 curriculum. The aim of this part of the study was to answer the third research question ("Is the implementation of the new curriculum in medical education and training coherent with its original planning?"). This was executed in accordance with the framework provided by the Logic Model. The following sources of data were utilised:

- Module chairpersons (for the theoretical phases).
- Lecturers (for the theoretical phases).
- Students (for the theoretical phases and the early and middle clinical rotations).

- Analysis of secondary documents (for the theoretical phases and the early and middle clinical rotations).

9.2   OPERATIONALISATION

A mixture of qualitative and quantitative methods was used to evaluate the theoretical phases of the curriculum. Qualitative methods were used to derive appropriate items that were incorporated into tailor-made questionnaires directed at the chairpersons, lecturers and students of phases II and III of the curriculum. Secondary analysis of the results of standard student feedback was used for the evaluation of the early and late clinical rotations.

The data were analysed according to the framework provided by the Logic Model, and a curriculum scoreboard was drawn up to align the planned and the practised curriculum in accordance with the alignment approach to quality that was formulated in chapter four.

9.3   DELIMITATION OF THE STUDY

The study did not evaluate the entire curriculum. Phase I[50] and the late clinical rotations were excluded from the second part of the study (the implementation evaluation). As the evaluation is of the *implementation* and not of *outcomes*, this does not deprive the study of the validity of its methods or conclusions.

By aligning the planned curriculum with the practised curriculum, the evaluation manages to indicate possible gaps or deficits in the implementation of the curriculum. It can be argued that the deficits illuminated by this evaluation were or will be addressed in other parts of the curriculum, and therefore no final judgment regarding the 1999 curriculum can be made.

The alignment approach to quality using the methods of this study is one way of evaluating the quality of a curriculum. This approach is not meant to lead to a rigid, one-way adjustment of implementation to design. Alignment should rather lead to a reconsideration of both the planning

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[50] Phase I consists of basic science subjects, including biology, physics, chemistry and data management.

and the implementation of the curriculum and, in this way, facilitate the improvement of the curriculum, both in planning and in practice.

9.4 RECAPTURING THE OUTLINE OF THE STUDY, AND THE CONTRIBUTIONS OF THE CHAPTERS TO ANSWERING THE RESEARCH QUESTIONS

In chapter one, I described the background of curriculum change at the Faculty of Health Sciences of the University of Stellenbosch that that led to the formulation of the three research questions addressed in this thesis:

a) What are the implicit theories underpinning the new curriculum in medical education and training introduced by the Faculty of Health Sciences of the University of Stellenbosch in 1999?
b) Is the theoretical framework of this curriculum aligned with current trends in medical education and training?
c) Is the implementation of the new curriculum in medical education and training coherent with its original planning?

These questions demanded an evaluation of both the planning and the implementation of the 1999 curriculum. The questions were in line with the phase of curriculum implementation at the time of this study, as the curriculum had not yet been fully implemented and a longer term evaluation of outcomes and the performance of graduates could therefore not be done.

Before answering the research questions through an empirical study, the environment in which the curriculum that is the object of this study is situated was reviewed. The history of the Faculty of Health Sciences of the University of Stellenbosch was briefly recounted in chapter two. The environmental changes that led to the recurriculation and innovation in the final decade of the 20th century were recounted and the process of the planning and implementation of the 1999 curriculum as a response to these environmental changes was described.

In chapter three, the literature on quality in the context of higher education in general and medical education in particular was reviewed. The South African experience of quality in higher education was set against a broader theoretical background, and quality assurance practices in medical education in the international arena were explored before recounting the then current national practices. This provided a further dimension to the background of this study, and described the ongoing issues in quality assurance practices, including the various conceptions of quality and the tension between improvement and accountability.

The design of the evaluation described in this thesis was clarified in chapter four. In this chapter, I described how the construct of a curriculum relates to the methods of programme evaluation. The validity of using the methods of clarification and implementation evaluation to study the planned and the practised curriculum was established. The role of curriculum evaluation as part of quality assurance was recognised, and an alignment approach to quality as 'fitness for purpose' was formulated. It was postulated that an alignment of the planned and the practised curriculum would clarify some of the aspects of the so-called hidden curriculum.

The first part of the empirical study, namely the clarification evaluation, was described in chapter five. A Logic Model of curriculum implementation was formulated as a product of the clarification evaluation and evaluated according to its relevance to the literature on medical curricula published at that time.

It was established that the aims identified by the process of clarification could be clearly linked to the trends described in the most dominant literature on the subject of medical education and training of the day. However, some deficits in the planning process at the stage at which it was studied could also be demonstrated. These included the lack of explicit attention being paid to the importance of the role of basic scientific training, a specific mode of instruction not clearly being identified and clinical skills development not specifically being incorporated into the planning process.

The clarification evaluation established the evaluability of phases II and III of the theoretical component. The Logic Model did not address phase I, which deals with the basic sciences, in sufficient detail in order to perform an evaluation of this part of the curriculum according to the approach to quality formulated for this study. Because of the time frame of this evaluation and a lack of explicit outcomes relating to clinical skills development being defined, the complete set of clinical rotations could also not be evaluated. Only the early and middle clinical rotations were included.

The Profile of the Stellenbosch Doctor was aligned with the aims of the planned curriculum defined by the clarification evaluation. This indicated that the planning process, according to the results of the clarification evaluation, was in line with the intended profile of the graduate.

Having in this way established a set of *criteria* (in the form of objectives) against which the implementation of the curriculum could be evaluated, the methods used for the implementation evaluation of the parts of the 1999 curriculum that were included in this study were set out in

detail in chapter six, and the method of data analysis was described. This chapter illustrated the use of the methods of programme evaluation in an empirical study of curriculum evaluation.

In chapter seven, the results of the analysis of the responses of the module chairpersons, lecturers and students to the questionnaires designed for the evaluation of phases II and III were presented, together with the secondary analysis of the responses of the students to the standard student feedback on the early and middle clinical rotations. A discussion of the results was deferred to the next chapter.

In chapter eight, the results obtained from the various sources of data were collated and discussed according to the framework of the Logic Model. As a final analysis, a curriculum scoreboard was set up to align the planned with the practised curriculum. A judgment of this alignment was made according to the achievement of the objectives and formulated according to the categories used in the HEQC's national accreditation of MBA degree programmes (Higher Education Quality Commission, 2003c).

Table 9.1 provides a summary of the judgments made about the achievement of the objectives of the planned curriculum by the curriculum as it was practised in phases II and III and in the early and middle clinical rotations. The table also presents a judgment of the alignment that was achieved. When reading this table, it should be remembered that the results apply to the sections of the curriculum evaluated by this study during a certain time frame, and do not constitute a judgment on the curriculum as a whole. The alignment of planning and implementation demonstrates a dimension of the notion of quality as 'fitness for purpose' as set out in chapter four.

Table 9.1: The judgment of the achievement of objectives and the alignment of the practised curriculum with the aims defined by the planned curriculum

Curriculum Aim	Judgment of compliance	Judgment of alignment
To help the student deal with the content load of the curriculum	Needs improvement	Alignment is not satisfactory
To help the students take responsibility for their own learning	Meets minimum standards	Alignment is satisfactory
To educate students in accordance with current educational approaches	Meets minimum standards	Alignment is satisfactory
To prepare the students to function in a primary care setting after graduation	Meets minimum standards	Alignment is satisfactory
To foster and sustain diversity in the learning environment	Needs improvement	Alignment is not satisfactory
To be responsive to the current socio-political environment	Needs improvement	Alignment is not satisfactory
To equip the student to deal with the changing profile of patients and their diseases	Meets minimum standards	Alignment is satisfactory
To educate and train the student according to a bio-psychosocial model of medicine	Commend	Thorough alignment has been achieved
To educate the student regarding personal accountability	Commend	Thorough alignment has been achieved
To increase the efficiency of the curriculum in terms of costs and other resources	Does not comply	Alignment has not been achieved

The shaded area in table 9.1 indicates the aims that were implemented successfully.

9.5   CONCLUSIONS

The evaluation of the curriculum forms part of the process of quality assurance. By using an empirical example, this study illustrates the use of the well-established and scientifically valid methods of programme evaluation to align the concepts of the planned with the practised curriculum in order to evaluate a section of a real curriculum for medical education and training. The 'alignment approach' to quality assurance employed in this study is in accordance with the concept of quality as 'fitness for purpose'.

The three research questions were answered in the following way:

a) The theories underpinning the new curriculum in medical education and training were identified and made explicit in the form of a Logic Model of curriculum planning and implementation.

b) This theoretical framework was evaluated against the current trends in medical education and training and found to be aligned with most of these trends. A lack of detailed attention to basic sciences and the development of clinical skills was identified. The lack of specific outcomes addressing these aspects of medical education and training compromised the evaluability of phase I and the complete set of clinical rotations by the method used in this study.[51]

c) The planned curriculum was aligned with the practised curriculum in order to judge whether the implementation of the new curriculum in medical education and training was coherent with its original planning. According to the judgments formulated on the basis of this process of alignment, the following objectives of the planned curriculum were aligned with the evaluated sections of the curriculum as it was implemented:

- To help the students take responsibility for their own learning
- To educate students in accordance with current educational approaches
- To prepare the students to function in a primary care setting after graduation
- To equip the student to deal with the changing profile of patients and their diseases
- To educate and train the student according to a bio-psychosocial model of medicine
- To educate the student regarding personal accountability

An alignment of the planning and implementation of the following objectives was not adequately achieved according to this evaluation:

- To help the student deal with the content load of the curriculum

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[51] Phase I and the late clinical rotations were excluded from this evaluation.

- To foster and sustain diversity in the learning environment
- To be responsive to the current socio-political environment
- To increase the efficiency of the curriculum in terms of costs and other resources

Although performance is expressed here in the form of judgments, the particular aim of this study should be remembered: it is an exploration of a particular method, rather than an audit, and therefore these judgments should be viewed as part of the academic exercise of this thesis.

This study contributes to the discourse on quality assurance of curricula in medical education and training by illustrating that the methods of programme evaluation can be validly applied as a facet of quality assurance in this setting. The links between the planning and implementation of a curriculum are established by the Logic Model, and this enables a responsible judgment on the alignment between the planned and the practised curriculum, which can be used as a measure of the quality of a curriculum in terms of 'fitness of purpose'.

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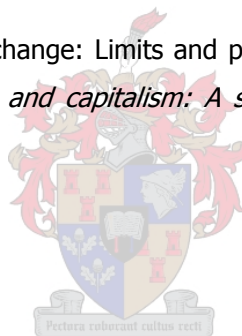Hill, P. (2004, May 28). Gender divide is deep. *Times Higher Education Supplement,* p. 10.

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Addendum A: An overview of the new curriculum instituted at the Faculty of Health Sciences of the University of Stellenbosch at the beginning of 1999

Year	Weeks 1–24	Weeks 25–43
MB. ChB I	Chemistry / Biology / Physics / Data management (1–24)	M1 (25); M2 Cell & Tissue (26–30); M3 Hem (31); M4-M5 Cardio-vascular Respiratory (32–36); M6 Behaviour and Ethics (37–38); Exams (39–40)
MB. ChB	M7-M8 Neuro-sciences Musculo-sceletal; M9-M10 Endocrine Gastro-intestinal; M11 Uro-genital; M12 Principles of Disease processes; M13 Principles Of Therapy; Exams	Early clinical rotations; M1 Cardio-Vascular; M2 Respiratory; Exams
MB. ChB	M4 Gastro-intestinal; Early clinical rotations; M4 Uro-genital; Early clinical rotations; M5 Endocrine; M6 Repro-duction; Early clinical rotations	M6 Repro-Duction (continues); M7 Neuro-sciences; Early rotations; M7 Neuro-sciences (continues); Early clinical rotations; Exams
MB. ChB	Middle clinical rotations; M8 Musculo-Skeletal; M9Hem; Middle clinical rotations; M9 Hematology continues; M10 Infection and Immunology; Middle clinical rotations; M11 Skin; Anaesthetics	Middle clinical rotations; Forensic Medicine; M12 Health and disease in the community; Middle clinical rotations; Exams; Elective
MB. ChB	M12 Health and disease in the community continues; Middle clinical rotations; M13 Health management and Ethics; Middle clinical rotations; Elective; Middle clinical rotations	Exams; Student Internship
MB. ChB	Student Internship	Student Internship

Addendum B:

PROFILE OF THE STELLENBOSCH DOCTOR

> The newly qualified Stellenbosch doctor must possess the necessary knowledge, skills and attitudes to optimally utilise the opportunities available during the intern year in order to be able to function autonomously in the primary health care sector after this period, and must also be equipped with the necessary ability and insight to develop further as practitioner at secondary and tertiary level.

To fulfil these requirements, the recent graduate must exhibit the following professional characteristics:

CHAPTER 1: KNOWLEDGE

- Basic knowledge of necessary medically applicable scientific and mathematical concepts.
- Basic and relevant knowledge of the normal function and morphology of the human body and psyche.
- Relevant knowledge of the abnormal function and morphology of the human body and psyche.
- Knowledge of the maintenance of health and prevention of disease (physical, mental and social).
- Knowledge of the recognition and diagnosis of common diseases and abnormalities of the human body and psyche.
- Basic knowledge of the relevant treatment and rehabilitation options.
- Knowledge of the appropriate use and limitations of special investigations and diagnostic methods.
- Knowledge of factors in the community environment that can influence health.
- Knowledge of finances, management and structures of health care.
- Basic knowledge of ethics and legal aspects that are applicable to medicine.
- Basic knowledge of the interaction between biological, psychological and sociological factors that play a role in health.
- Basic knowledge of alternative and complementary medicine.
- Knowledge of the basic principles of research methodology.

ATTITUDES/VIEWS

- Respect for person and life.
- A loyal and ethically accountable disposition towards the profession, patients and community.
- An acknowledgement of the limitations of own knowledge and skills.
- A positive disposition towards continuing professional development.
- A willingness to be involved and to be of service within the broader community.
- An empathic disposition towards the patient, their family as well as the community and a willingness to be accessible.
- The acceptance of his/her full responsibility within the patient-doctor relationship.
- The willingness to set a positive example regarding social responsibilities and obligations.

SKILLS

- The ability to integrate, interpret and apply knowledge.
- The ability to think and act in a problem solving fashion.
- The ability to communicate effectively with patients from different cultural groups in the process of diagnosis and management.
- Sufficient skills in diagnostic and therapeutic procedures to be able to function autonomously as a doctor in primary care.
- The ability to function holistically within the context of family and community.
- The ability to establish and manage a primary health care infrastructure.
- The ability to interpret and apply relevant literature.
- The ability to function effectively under stressful circumstances.
- The ability to function in the broader team context.
-

Addendum C:

___

Self-evaluation of theoretical modules: survey to be completed by module chairpersons

___

Demographical data:

Title: _____

Name: _____

Module: _____

___

Instructions:

You will be able to fill in the rest of this survey by just ticking (√) the most appropriate box.

Phase of curriculum:

      Phase 1 ☐   Phase 2☐   Phase 3☐

___

Self study:

Indicate which of the following resources students are expected to use during this module:

	Yes	No
Study-guides		
Notes taken in class		
Hand-outs		
Prescribed textbooks		
Other textbooks		
Course-specific computer program		
Internet sites		
Articles in medical journals		
Video material		
Other		

Roughly indicate the percentage of the work covered in this module not discussed in the classroom, but designated to the student as self-study:

<10%	
11-20%	
21-30%	
31-40%	
41-50%	
51-60%	
61-70%	
>71%	

To what extend do you think self-study was guided during this module?

	√
Poorly guided	
Inconsistent: sometimes better, sometimes bad	
Acceptable	
Better than average	
Exceptionally well guided	
Unsure	

Was any specific self-study packages developed or acquired for this module?
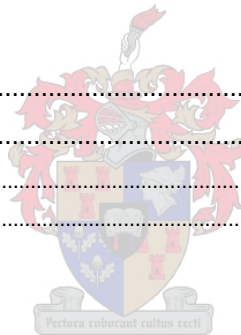
Yes ☐   No ☐   Do not know ☐

↓

If yes, briefly describe:

....

....

………

………

Core curriculum:

Rate the priority of the content of this module (guided self-study included) as described by the following categories:

1 – No emphasis is put on this kind of knowledge during this module

2 – Students are referred to resources for self-study of this type of knowledge

3 – Information of this kind is covered during this module, but not emphasized

4 – This type of knowledge is very well represented in this module

5 – This is the type of knowledge that most of this module consists of

	1	2	3	4	5
Conditions that must be diagnosed and treated by a general practitioner	☐	☐	☐	☐	☐
Conditions that a general practitioner must be able to recognize and refer	☐	☐	☐	☐	☐
Conditions that occur commonly	☐	☐	☐	☐	☐
Important, but less common, conditions that a general practitioner must be able to recognize and treat	☐	☐	☐	☐	☐
Conditions with a high morbidity and mortality	☐	☐	☐	☐	☐
Conditions requiring specialist diagnosis and treatment	☐	☐	☐	☐	☐

The level of knowledge transferred in this module is best reflected in the following distribution:

	0-20%	21 – 40%	41 – 60%	61 – 80%	81 – 100%
Primary care:					
Secondary care:					
Tertiary care:					

Rate the representation of the various types of knowledge transferred during this module on a scale of   1-5:

*1 = not represented at all*

2 = poorly represented

3 = suitably represented

4 = comprising the majority of content

5 = over represented

		1	2	3	4	5
1.	Knowledge of medically relevant basic scientific concepts	☐	☐	☐	☐	☐
2.	Knowledge of medically relevant mathematical concepts	☐	☐	☐	☐	☐
3.	Knowledge of normal function of the human body and psyche	☐	☐	☐	☐	☐
4.	Knowledge of normal morphology	☐	☐	☐	☐	☐
5.	Knowledge of abnormal function of the human body and psyche	☐	☐	☐	☐	☐
6.	Knowledge of abnormal morphology	☐	☐	☐	☐	☐
7.	Knowledge of the maintenance of health and prevention of disease	☐	☐	☐	☐	☐
8.	Knowledge required recognizing and diagnosing common diseases and abnormalities	☐	☐	☐	☐	☐
9.	Knowledge of treatment	☐	☐	☐	☐	☐
10.	Knowledge of rehabilitation	☐	☐	☐	☐	☐
11.	Knowledge of special investigations	☐	☐	☐	☐	☐
12.	Knowledge of special diagnostic methods	☐	☐	☐	☐	☐
13.	Knowledge of health-related community and environmental factors	☐	☐	☐	☐	☐
14.	Knowledge of relevant ethical aspects	☐	☐	☐	☐	☐
15.	Knowledge of relevant legal aspects	☐	☐	☐	☐	☐
16.	Knowledge of finances, management and structure of health care	☐	☐	☐	☐	☐

17. Knowledge of health-related psychological factors ☐ ☐ ☐ ☐ ☐

18. Knowledge of health-related sociological factors ☐ ☐ ☐ ☐ ☐

19. Knowledge of alternative and complementary medicine ☐ ☐ ☐ ☐ ☐

20. Knowledge of basic principles of research methodology ☐ ☐ ☐ ☐ ☐
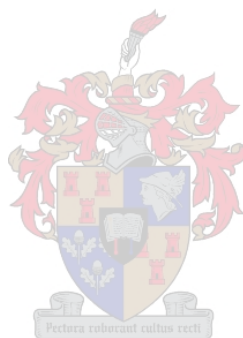
In your opinion, was knowledge in this module clearly prioritised as 'must know', 'should know' and 'may know or interesting to know'?

	√
Yes	
Not always	
Seldom	
No	
Not sure	

Which one of the following statements would you consider more applicable to this module

	√
The amount of work covered in all the themes of this module are consistently reasonable	
Some of the themes could have been more basic	
Most of the themes are overloaded with information	
The amount of work covered during this module is more than the students can assimilate during the time allocated	
Not sure	
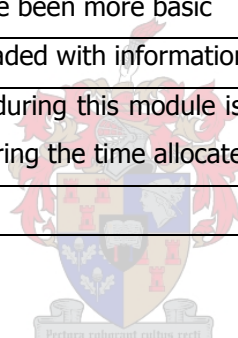
Clarity of study guidelines:

Do you regard the **clarity** of the study manual for this module as:

	√
Poor	
Inconsistent: sometimes better, sometimes bad	
Acceptable	
Better than average	
Exceptional	

Do you regard the **explicity** of the study manual for this module as?

	√
Poor	
Inconsistent: sometimes better, sometimes bad	
Acceptable	
Better than average	
Exceptional	
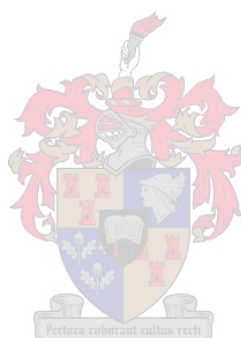
Cultivating life-long learners:

Rate the following statements on a scale of 1 – 5

1 = none

2 = very little

3 = a fair amount

4 = this occurs very strongly in this module

5 = does not apply to this module

	1	2	3	4	5
In this module, a lot of emphasis is placed on changes and development in medical science.	☐	☐	☐	☐	☐
During this module, the problem solving skills of learners are developed	☐	☐	☐	☐	☐
During this module, learners will acquire additional skills in the use of information sources	☐	☐	☐	☐	☐

Learner-centred teaching:

Rate the representation of the various teaching techniques used during this module on a scale of 1-5:

1 = not represented at all

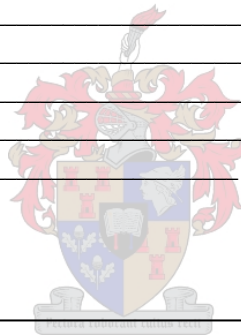*2 = poorly represented*

3 = well represented

4 = comprising the majority of presentation techniques

5 = over represented

	1	2	3	4	5
Formal lectures	☐	☐	☐	☐	☐
Informal lectures/ tutorials/ interactive sessions	☐	☐	☐	☐	☐
Facilitated group work (a lecturer is present)	☐	☐	☐	☐	☐
Unfacilitated group work (no lecturer is present)	☐	☐	☐	☐	☐
Self study	☐	☐	☐	☐	☐
Other	☐	☐	☐	☐	☐

If other, please describe briefly:

_____

_____

_____

_____

_____

_____

_____

Exposure to general practitioners as role models:

How many of the contact sessions presented in this module were conducted by a general practitioner?

☐

_____

Infrastructure transformation:

What number of contact sessions, if any, was conducted in the clinical skills laboratory?

☐

Are any lectures not affiliated to this faculty utilized?

Yes	
No	

If yes, how many of the sessions do they conduct?

Community-based training:

Are any facilities outside the university utilized?

Yes	
No	

If yes, describe briefly:

……………..……

……………..……

……………..……

……………..……

Training during this module takes place at the following venues:

	%
Primary care facilities	
Secondary care facilities	
Tertiary care institution	

Exposure to alternative medicine:

Are the students exposed to any forms of alternative medicine during the course of this module?

Yes	
No	

If yes, name the fields of alternative medicine students are exposed to in this module:

	Amount of contact sessions
a)	
b)	
c)	
d)	
e)	

Does an alternative healer conduct any of the sessions?

Yes	
No	

During this module, *how much emphasis* was placed on the following?

	1 No emphasis	2 Little emphasis	3 A signifi-cant emphasis	4 A very strong emphasis	5 Unsure
Aspects of prevention of disease					
Trauma					
HIV+ and its related diseases					
The role and function of the multi-disciplinary team					
The patient as part of society					
The broader impact of diseases on the family unit					
The broader impact of diseases on society					
The influence of the environment on health					
The influence of the patient's mental state on health					
Health in a cultural context					
Ethical aspects					

Any comments?

How long did it take you to complete this questionnaire?

Minutes

Would you agree to another module chairperson peer – evaluating this module?

Yes	
No	

Would you be willing to peer – evaluate another module by filling in this type of survey?

Yes	
No	

THANK YOU!

Addendum D:

Lecturers' survey

Dear dr/prof x

Your contact session entitled ABC has been selected by a random process to be included in my studies on the implementation of the new curriculum. This research is approved and supported by the faculty, and we hope that it will have a positive impact on the future quality of our teaching.

As much information as possible is gathered from other sources (including the study guide) but there are some essentials that are best learned from the lecturer himself/herself. Therefore I would appreciate it greatly if you will take a few minutes to complete this very brief survey concerning the contact session mentioned.

*Only two topics are covered: the **Type of student contact** employed by you during this particular contact session, and some specific aspects of **Content** that cannot be otherwise learned.*

To make this as user-friendly as possible, you may complete this survey directly on the attached word file and e-mail it back to me at this address (ew@sun.ac.za).

Please contact me if you experience any difficulties. Your co-operation is extremely valuable and well appreciated.

Elizabeth Wasserman.

Name of lecturer:

Phase of curriculum:

Module:

Theme:

Sub-theme:

Title of contact session:

1. Type of student contact:

Please mark (e.g. with an **x**) the most appropriate description of **this contact session**:

	x
Formal lecture	
Interactive lecture	
Group work facilitated by lecturer: structured	
Group work facilitated by lecturer: unstructured	
Group work not facilitated by lecturer: structured	
Group work not facilitated by lecturer: unstructured	
Self-study	
Tutorial	
Other (please describe briefly):	

2. Notes handed out in class:

Did you hand out any notes for this contact session?

Yes	
No	

If yes, please select and mark the most appropriate description of the notes handed out in class:

	X
Notes were comprehensive of the content of the session, and could be used as the primary source of information.	
Notes represented the overheads/slides used for the lecture, and students were expected to add their own notes to it.	
Notes detailed specific topics presented during the session.	
Other form of notes:	

3. Self study:

If this was not a self-study session, please skip this question and go to the next one (4).

How did you guide this self-study? (You may mark more than one answer if appropriate)

	X
Resources listed in study guide	
Outcomes set out in the study guide	
Formative evaluation of self-study provided	
Other: please describe	

4. Resources:

Please indicate which of the following resources students are expected to use for this contact session (*You may mark more than one)*:

	x
Study-guides	
Notes taken in class	
Hand-outs	
Prescribed textbooks	
Other textbooks	
Course-specific computer program	
Internet sites	
Articles in medical journals	
Video material	
Other: please describe	
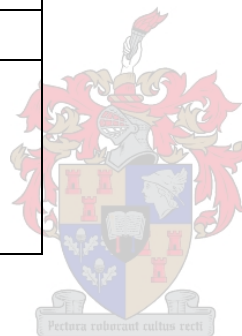
5. Teaching strategies:

Did you use any of the following teaching strategies during **this session**? (You may mark more than one, or none if not applicable)

	x
Problem solving	
Brain-storming to create "structures" or "frameworks", either in groups or alone	
Mini-projects, either in groups or alone	
Background knowledge tested before embarking on teaching	
Anything else that you considered innovative and stimulating? Please describe briefly:	

6. Content:

6.1 Rate the **priority** of the content of this contact session (guided self-study included) on a scale of 1 to 5 (**1**: *no representation of this type of condition,* → **5**: *this type of condition is very well represented*)

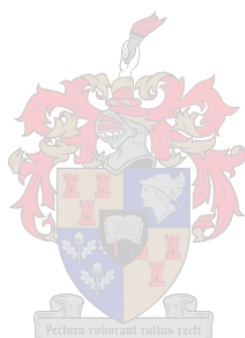|	1	2	3	4	5
Conditions that must be diagnosed and treated by a general practitioner					
Conditions that a general practitioner must be able to recognise and refer to a specialist					
Conditions requiring specialist diagnosis and treatment					
Conditions requiring specialist treatment but supportive management by a general practitioner					

6.2 During this contact session, *how much emphasis* was placed on the following?

(Please mark relevant blocks with an **x**.)

	1 No emphasis	2 Little emphasis	3 A signifi-cant emphasis	4 A very strong emphasis	5 Unsure
Trauma					
HIV/AIDS					
The role and function of the multi-disciplinary team					
Aspects of prevention of disease					
Ethical aspects					
Changes and development in medical science.					
The patient as part of society					
The broader impact of diseases on the family unit					
The broader impact of diseases on society					
The influence of the environment on health					
The influence of the patient's mental state on health					
Health in a cultural context					

Any comments?

Thank you!

ADDENDUM E:

Addendum E

Student opname/Student survey

Implementasie evaluasie van nuwe
kurrikukulum / Implementation
evaluation of new curriculum

Voltooi asseblief hierdie kort vraelys. Hierdie data
word gebruik in 'n implementasie evaluasie studie
van ons nuwe kurrikulum. Dit is ook 'n belangrike
doelwit van hierdie studie om
kwaliteitsversekerings meganismes vir mediese
onderrig daar te stel.

Please complete this brief questionnaire. This data
will be used for an implementation evaluation
study of our new curriculum. Establishing
mechanisms for quality assurance of medical
education is also an important part of the objective
of this study.

-Dr. Elizabeth Wasserman

Instruksies:
**Antwoord die vrae op die vorm aan julle
verskaf. Dit is nie nodig om jou naam te
skryf nie.**

Instructions:
**Answer the questions on the form provided.
You do not need to write your name.**

Afdeling A / Section A:

Beoordeel die volgende stellings na gelang van jou eie opinie of
indrukke:
1 = Stem glad nie saam nie
2 = Stem nie saam nie
3 = Onseker
4 = Stem saam
5 = Stem volkome saam

Rate the statements according to your opinion or impression:

1 = Disagree strongly
2 = Disagree
3 = Uncertain
4 = Agree
5 = Agree strongly

---

1. Jy moes baie selfstudie doen gedurende
   hierdie module.

   *You had to do a lot of self-study during this
   module*

---

2. As jy **slegs** die lesings bygewoon het, en **slegs**
   die notas uitgedeel deur die dosent of die notas
   wat jy self in die klas gemaak het bestudeer
   het, sou jy nog steeds goed kan doen in die
   eksamen.

   *If you **only** attended the lectures, and studied
   only the notes provided by the lecturer or notes
   you made in class yourself, you would still be
   able to do well in the exam.*

---

3. Die selfstudie was duidelik uiteengesit en
   goed begelei.

   **Self – study was clearly set out and
   well guided**

---

4. Die inhoud van hierdie module is duidelik
   geprioretiseer as 'moet weet', 'behoort te
   weet' en 'kan weet'

   *The content of this module was clearly
   prioritized as 'must know', 'should know'
   and 'may know'.*

5. Die hoeveelheid werk aangebied in hierdie module is hanteerbaar.

It is possible to cope with the amount of work presented in this module.

6. Die studiegids is toepaslik tot die inhoud van die module soos deur dosente aangebied.

The study guide is relevant to the content of the module as presented by the lecturers.

7. Die doelwitte in die studiegids is duidelik en verstaanbaar uiteengesit.

The objectives in the study-guide is clearly set out and easy to understand.

8. Die meeste werk is behandel gedurende formele lesings.

Most of the work was covered in formal lectures.

9. Jy het gemaklik gevoel om vrae in die klas te vra.

You felt comfortable to ask questions in class.

10. Dit is maklik om toegang te kry tot lektore wanneer jy 'n problem het om te bespreek.

It is easy to gain access to the lecturers when you have a problem to discuss.

11. Sommige van die kontak sessies of studie materiaal het aspekte bevat van alternatiewe medisyne, byvoorbeeld homeopatie en tradisionele medisyne.

Some of the contact sessions or study material contained aspects of alternative medicine, for example homeopathy or traditional medicine.

12. Voorkomende geneeskunde is beklemtoon.

Emphasis was placed on preventative medicine

318

13. Rehabilitasie is bespreek waar toepaslik (byvoorbeeld die waarde van fisioterapie in sekere toestande)

Rehabilitation was discussed where relevant (for example the benefits of physiotherapy in certain conditions)

14. Kontaksessies het dikwels materiaal oor trauma – geassosieerde   toestande bevat.

Contact sessions/study material frequently contained information on trauma –related conditions.

15.   Kontaksessies het dikwels materiaal oor MIV/VIGS– geassosieerde toestande bevat.

Contact sessions/study material frequently contained information on HIV/AIDS –related conditions.

16. Gedurende hierdie module is die invloed van die omgewing op gesondheid benadruk.

During this module, emphasis was placed on the influence of the environment on health.

17. Gedurende hierdie module is die invloed van die pasiënt se gemoedstoestant op sy/haar gesondheid benadruk.

During this module, emphasis was placed on the influence of the patient's mental state on his/her health.
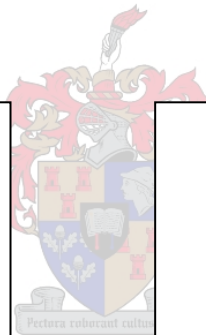
18. Gedurende die module is die invloed van siekte op die familie en die samelewing goed verduidelik.

During this module, the impact of disease on the family unit and society was optimally explained.

19.   Gedurende die module, is kulturele aspekte wat gesondheid mag beïnvloed dikwels uitgelig.

During this module, cultural aspects influencing health was frequently discussed.

20.   Etiese aspekte is bespreek waar dit toepaslik was.

Ethical aspects were discussed in   class wherever appropriate.

Afdeling B / *Section B*

Daar is geen vra in hierdie afdeling nie / No questions in this section

21. Los oop / *Skip*

22. Los oop / *Skip*

23. Los oop / *Skip*

24. Los oop / *Skip*

25. Los oop / *Skip*

Afdeling C / *Section C*

Behandel vraag 26 en 27 soos een vraag,en dui aan watter van die volgende bronne jy gebruik het gedurende hierdie module. Merk soveel blokkies (of geen!) as wat jy wil.

Please treat question 26 and 27 as one, and indicate which of the following resources you use in this module. You can mark as many blocks as you want (or none!).

Merk die bronne wat jy gebruik het gedurende hierdie module / *Mark the resources you have used during this module:*

26. a) Video materiaal / *Video material*
   b) Notas afgeneem in die klas / *Notes taken in class*
   c) Ander studente se notas / *Other students' notes*
   d) Artikels in mediese joernale / *Articles in medical journals*
   e) Voorgeskrewe handboek / *Prescribed textbook*

27. a) Ander teksboeke / *Other textbooks*
   b) Kursus – spesifieke web-geonderstuunde program / *Course- specific web-enhanced program*
   c) Ander Internet adresse / *Other Internet sites*
   d) Uitgehandigde stukke / *Hand-outs*
   e) Studie gids / *Study-guide*

28. **In watter van die volgende aktiwiteite was jy betrokke gedurende die verloop van hierdie module? (merk soveel as wat van toepassing is).** / *In which of the following activities were you involved during the course of this module? (Mark as many as may apply)*

a) Probleem oplossing / *Problem solving*
b) Gestruktureerde groepwerk / *Structured group work*
c) Informele groepwerk / *Informal group work*
d) Mini – projekte, in groepe of alleen / *Mini-projects, either in groups or alone*
e) Toetsing van agtergrondkennis voor onderrig begin / *Background knowledge tested before embarking on teaching*

---

29. Los oop / *Skip*

30. Los oop / *Skip*

Afdeling D / *Section D*

31. **Verdeel die tyd wat jy spandeer het om kennis op te doen gedurende hierdie module rofweg persentasiegewys in die volgende kategorieë.**
Skryf dan die persentasie neer in die blokkies.
Maak seker dat die totale presentasies optel tot 100! / *Roughly divide the time you spend on acquiring knowledge for this particular module into the following categories as percentages.*
Write the percentages in the allocated blocks.
Make sure that the total percentages adds up to 100!

a) **Bywoning van lesings**/ *Attending lectures: _ %*
b) **Werk in groepe** / *Working in groups:_ %*
c) **Werk op jou eie** / *Working on your own: _ %*
d) **Web – geondersteunde leer (die gebruik van rekenaar – geondersteunde bronne)**/ *Web - assisted learning (using computer-based resources): _ %*

L 32. Los oop / *Skip*

33. Los oop / *Skip*

BAIE DANKIE, JOU BYDRAE WORD WAARDEER!

THANK YOU, YOUR CONTRIBUTION IS MUCH APPRECIATED!

Addendum F: List of statements used in the standard questionnaires of the Faculty of Health Sciences to obtain student feedback regarding the early and middle clinical rotations.

Feedback was captured on a five-point Likert scale (1=agree strongly, 5=disagree strongly).

1.	The outcomes were provided by all the lecturers
2.	The outcomes contributed to meaningful study
3.	All the prescribed material contributes to meaningful study
4.	It is clear how the acquired skills will be applied to practice
5.	It is worthwhile to attend the activities (ward rounds, discussions, etc.)
6.	The facilities where this module is presented facilitates meaningful study
7.	There were adequate opportunities to practise skills under simulated conditions
8.	There were adequate opportunities to practise skills in the clinical environment
9.	Staffed involved in the module were willing to assist
10.	Supervision by staff was adequate
11.	The student had to carry the responsibility of attaining the outcomes during the course of the module
12.	Assignments (e.g. clinical tutorials, reports etc.) were clear enough for students to be sure of what was expected of them.
13.	Assessment was fair
14.	Assessment is linked to the outcomes
15.	Feedback on the activities and assessment enabled me to assess my progress
16.	The module was well organised
17.	The workload in the module was fair.